Energy Master Plan

Independence Power & Light

Energy Master Plan
Project No. 103983

9/20/2018

September 20, 2018

Mark Randall
Assistant City Manager, City of Independence
Director, Independence Power & Light
111 East Maple Avenue
Independence, MO 64050

Re: Energy Master Plan

Dear Mr. Randall:

The City of Independence ("City"), through Independence Power & Light ("IPL"), retained Burns & McDonnell Engineering Company ("Burns & McDonnell") to provide planning assistance for both short-term and long-term power supply needs. IPL requested that Burns & McDonnell perform an Energy Master Plan ("Study") to assess the options that may be available to IPL for providing reliable, low cost, and environmentally compliant power to its customers.

The report attached hereto provides the detailed evaluations conducted by Burns & McDonnell. Based on the analysis herein, Burns & McDonnell offers the following recommendations for IPL and the City to consider.

1. The Blue Valley units have reached the end of their technical and economic useful lives. IPL should consider retiring the units from service as soon as practical.
2. IPL should continue to operate and maintain the combustion turbines owned by IPL as they are low cost resources for providing capacity and provide enhanced reliability to IPL's system. The value of the combustion turbines to the overall power supply portfolio should continue to be evaluated within future energy master planning efforts.
3. IPL should issue a power supply request for proposals ("RFP") soliciting other utilities and power providers to submit offers for short-term contracts, long-term contracts, and/or ownership interests for capacity and energy. The RFP should focus on resources that provide capacity for IPL to meet its capacity obligations, with less focus on energy.
4. Based on the results of the RFP, IPL should choose one or more options that provide IPL the flexibility to adjust to future electric industry market conditions, such as demand response, energy efficiency, and energy storage. Securing large or long-term resources may be detrimental to providing IPL the flexibility it needs to adapt to future conditions. After the proposals have been evaluated, IPL will be able to select the best mix of capacity resources to position the utility for future success.
5. On-system generation provides IPL increased reliability and protection from wholesale price volatility due to transmission congestion. The combustion turbines will eventually reach the end of their useful lives. IPL should continue to evaluate the combustion turbine sites for eventual replacement and repurposing with new generation resources in the future. The value of repurposing the combustion turbine sites with new generation should continue to be evaluated within future energy master planning efforts.

Burns & McDonnell appreciates the opportunity to assist IPL with this important endeavor. If you have any questions regarding the information presented within this Study, please contact me at 816-822-3459 or mborgstadt@burnsmcd.com.

Sincerely,

Mike Borgstadt, PE
Project Manager

MEB/meb

Enclosure: Energy Master Plan

Energy Master Plan

prepared for

Independence Power & Light
Energy Master Plan
Independence, Missouri

Project No. 103983

9/20/2018

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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LIST OF ABBREVIATIONS

Abbreviation	**Term/Phrase/Name**
2018 AEO	2018 Annual Energy Outlook
AMI	Advanced Metering Infrastructure
ARP	Acid Rain Program
BART	Best Available Retrofit Technology
BAU	Business-as-Usual
BES	Bulk electric system
BLR	Balance of loads and resources
Btu/kWh	British thermal units per kilowatt-hour
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CAES	Compressed air energy storage
CCGT	Combined cycle gas turbine
CCR	Coal Combustion Residue
CFL	Compact fluorescent lamp
City	City of Independence
CO	Carbon monoxide
CO_2	Carbon dioxide
CPP	Clean Power Plan
CSAPR	Cross-State Air Pollution Rule
CTG	Combustion turbine generator
DLC	Direct Load Control
DOE	United States Department of Energy
Dogwood	Dogwood Energy Facility
DVC	Dynamic voltage control
EGU	Electric generating units
EIA	Energy Information Administration
ELG	Effluent limitation guidelines
EPA	Environmental Protection Agency

Abbreviation	**Term/Phrase/Name**
FGD	Flue gas desulfurization
GHG	Greenhouse Gas
GMO	KCPL's Greater Missouri Operations Company
GW	gigawatt
HELP	Home Energy Loan Program
HVAC	Heating, ventilation, and air conditioning
IOU	Investor-owned utility
ITP10	2017 SPP Integrated Transmission Planning 10-Year Assessment
KCPL	Kansas City Power & Light Company
kV	kilovolt
kW-month	kilowatt-month
LCOC	Levelized cost of capacity
LED	Light-emitting diode
LMP	Locational Marginal Pricing
LRE	Load responsible entity
MATS	Mercury and Air Toxics Standards
MMBtu/hr	million British thermal units per hour
MPSC	Missouri Public Service Commission
MW	Megawatt
MWh	Megawatt-hours
NAAQS	National Ambient Air Quality Standards
NERC	North American Electric Reliability Council
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NITS	Network Integrated Transmission Service
NNSR	Nonattainment New Source Review
NO_x	Nitrogen oxides
NPV	Net present value
NYMEX	New York Mercantile Exchange

Abbreviation	**Term/Phrase/Name**
O&M	Operations and Maintenance
O3	Ozone
PACE	Property Assessed Clean Energy
PCT	Programmable communicating thermostats
PILOT	Payment in Lieu of Property Taxes
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
PPA	Power Purchase Agreement
ppb	parts per billion
PRM	Planning Reserve Margin
Prop C	Proposition C
PSD	Prevention of Significant Deterioration
PTE	potential-to-emit
RAR	Resource Adequacy Requirement
RES	Renewable Energy Standard
RFP	Request for Proposal
RHR	Regional Haze Rule
RICE	Reciprocating internal combustion engine
RTO	Regional transmission organization
SO_2	Sulfur dioxide
SPC	Southern Power Company
SPP	Southwest Power Pool
Study	Energy Master Plan
TO	Transmission Owner
tpy	tons per year
U.S.	United States
WAPA	Western Area Power Administration

STATEMENT OF LIMITATIONS

In preparation of this report, Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") has relied upon information provided by Independence Power & Light and other third-party sources. While there is no reason to believe that the information provided is inaccurate or incomplete in any material respect, Burns & McDonnell has not independently verified such information and cannot guarantee or warranty its accuracy or completeness.

Burns & McDonnell's estimates, analyses, and recommendations contained in this report are based on professional experience, qualifications, and judgment. Burns & McDonnell has no control over weather; cost and availability of labor, material, and equipment; labor productivity; energy or commodity pricing; demand or usage; population demographics; market conditions; changes in technology; and other economic or political factors affecting such estimates, analyses, and recommendations. Therefore, Burns & McDonnell makes no guarantee or warranty (actual, expressed, or implied) that actual results will not vary, perhaps significantly, from the estimates, analyses, and recommendations contained herein.

Burns & McDonnell has not been engaged to render legal services. The services Burns & McDonnell provides occasionally require the review of legal documents, statutes, cases, regulatory guides, and related matters. The opinions, analysis, and representations made in this report should not be construed to be legal advice or legal opinion concerning any document produced or reviewed. These documents and the decisions made in reliance of these documents may have serious legal consequences. Legal advice, opinion, and counsel must be sought from a competent and knowledgeable attorney.

1.0 EXECUTIVE SUMMARY

1.1 Introduction & Objective

Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") was retained by the City of Independence ("City") through Independence Power & Light ("IPL"), to provide planning assistance for both short-term and long-term power supply needs. IPL requested that Burns & McDonnell perform an Energy Master Plan ("Study") to assess the options that may be available to IPL for providing reliable, low cost, and environmentally compliant power to its customers.

The electric industry is experiencing significant changes due to economic and political influences that can affect decisions made by a utility for providing power to its customers. The primary objective of an energy master plan is to provide an economic evaluation of a utility's power supply portfolio over both short-term and long-term planning horizons, with a specific focus on short-term decisions that will position a utility for long-term success. Each utility will have unique issues that will drive its decision-making process.

An energy master plan consists of numerous components and is an exhaustive evaluation of a utility's existing and future power supply. This Study consisted of multiple investigations including a condition assessment of IPL's existing power generation fleet (Blue Valley and the combustion turbines), a new resource technology assessment evaluating potential replacement options, a power production staffing review, and a detailed economic evaluation.

The following provides a summary of the key findings of the Energy Master Plan.

1.2 Conclusions & Recommendations

The following provides the key conclusions and recommendations based on the analysis conducted herein.

1. Blue Valley
    a. There appear to be lower cost power supply options for providing capacity than Blue Valley.
    b. IPL should consider the retirement of the Blue Valley units as soon as practical.
    c. If Blue Valley is designated for retirement, IPL will need to conduct numerous efforts to transition to a new power supply portfolio as described herein.
2. Combustion Turbine Generators ("CTG")

  a. The CTGs appear to provide low cost capacity as well as local system reliability resources. IPL should continue to maintain the combustion turbines.
  b. IPL should consider more regular test runs for the combustion turbines to troubleshoot reliability concerns.
  c. IPL should consider air permitting adjustments, specifically Prevention of Significant Deterioration (“PSD”), to alleviate operating risks with uncertainty around the definition of routine maintenance. This will allow IPL to be able to perform maintenance and repairs without the potential of triggering New Source Review which could result in fines, consent decrees, potential air quality controls, or forced retirements.
  d. Re-evaluate combustion turbines in next master plan. Continue monitoring the condition of the CTGs and the cost of maintenance against the cost to replace their capacity and the cost to perform transmission network upgrades triggered by their retirement.
3. Power Supply Request for Proposal (“RFP”)
  a. IPL should begin the process for conducting a power supply request for proposal.
  b. The RFP should focus on low cost capacity resources, not necessarily energy resources. IPL will need capacity to meet resource adequacy requirements if Blue Valley is retired; however, IPL receives adequate energy from existing long-term contracts.
  c. Renewable resources currently have attractive pricing for energy, however they only receive capacity accreditation for a small fraction of their nameplate capacity. Additional renewable energy contracts may increase utility costs without providing needed capacity.
  d. A combination of resources should be considered including 1) contracts vs. ownership and 2) short-term, mid-term, and long-term resources
  e. Use results of power supply RFP to compare against additional Dogwood Energy Facility (“Dogwood”) investment.
4. New On-System Generation
  a. While new on-system generation is not the lowest cost option presently, IPL should continue to evaluate the existing combustion turbine sites for re-purposing with reciprocating engines. This will allow for continued evaluation in future master plans and prepare IPL for future on-system generation if, and when, it becomes needed for reliability or economics. Continued operation of generation resources within IPL’s footprint provides IPL 1) protection against price separation between generation resource revenues and the cost of serving load (i.e. placing generation near a utility’s service territory provides a hedge against the costs associated with serving load), 2) continued

experience operating and maintaining generation resources, and 3) enhanced reliability during transmission outages.

5. Other Considerations Moving Forward
    a. Evaluate the results of the Energy Master Plan within the Electric Rate Study.
    b. IPL will need to consider short-term decisions to allow flexibility for future options, especially as technologies such as reciprocating engines and battery storage continue to improve.
    c. Capital expenditures deployed today may limit future opportunities. IPL will need to consider potential future capital investment limitations when deciding on how much to invest today.
    d. IPL will need to consider its risk tolerance with a significant amount of capacity in a single resource, namely Dogwood. Should IPL decide to purchase a larger share of Dogwood, it will have approximately 100 megawatts ("MW") or more in a single power plant. At the end of Dogwood's useful life, IPL will be faced with replacing nearly one-third of its peak demand.
    e. Consider a mix of resources to account for variability in load forecast. Many other municipal utilities have been fulfilling their planning reserve margins with short-term and mid-term capacity contracts, rather than actual assets. This has provided them the flexibility to adjust capacity purchases based on short-term demand fluctuations.
    f. While the evaluation indicates a larger share of Dogwood is lower cost (i.e. 50 MW provides a lower NPV than 25 MW), this may present additional risk to IPL. The lower costs are realized due to increased energy sales within the Southwest Power Pool ("SPP") market sold for a profit. While this may provide an opportunity for IPL to offset costs, it also presents a risk that IPL will have invested more capital than required to meet its capacity obligations. Market energy economics can fluctuate, especially if natural gas prices increase and make Dogwood less cost competitive compared to other generation within SPP. The specific level of Dogwood investment, if any, will need to be evaluated against other proposals from the power supply RFP.
    g. Continue to position IPL to be able to maintain on-system power generation for both economics and reliability.

2.0 INTRODUCTION

Burns & McDonnell was retained by the City through Independence Power & Light, to provide planning assistance for both short-term and long-term power supply needs. IPL requested that Burns & McDonnell perform an Energy Master Plan to assess the options that may be available to IPL for providing reliable, low cost, and environmentally compliant power to its customers. The electric industry is experiencing significant changes due to economic and political influences that can affect decisions made by a utility for providing power to its customers.

2.1 About Independence Power & Light

Independence is the fifth largest city in the state of Missouri with a population of approximately 121,000. The City owns and operates its electric system with IPL responsible for the operation and maintenance of the system. IPL was established in 1901 and serves over 57,000 electric customers located within the corporate limits of the City. In calendar year 2016, IPL had energy requirements of 1,073,930 Megawatt-hours ("MWh"). The all-time system peak of 315 MW occurred in August 2003. IPL currently has approximately 380 to 385 MW of Accredited Capacity.

IPL is a Transmission Owner ("TO") member of SPP. IPL utilizes Network Integrated Transmission Service ("NITS") and allows SPP to control IPL's transmission system. IPL has 161 kilovolt ("kV") interconnections with Kansas City Power & Light Company ("KCPL"), Associated Electric Cooperative Inc. and KCPL's Greater Missouri Operations Company ("GMO"; a.k.a., Aquila Networks – Missouri Public Service). The IPL transmission system consists of one 161 kV switching station, three 161/69 kV substations, 25 miles of 161 kV lines and 51 miles of 69 kV lines.

IPL operates a 13.2-kV distribution system. The distribution system consists of eleven 69/13.2 kV substations and 795 miles of 13.2-kV overhead and underground lines.

IPL operates nine generating units located at various locations on IPL's system. In addition, the City owns a 12.3 percent share of the Dogwood Energy Facility and has several long-term power purchase agreements.

2.2 Study Objectives

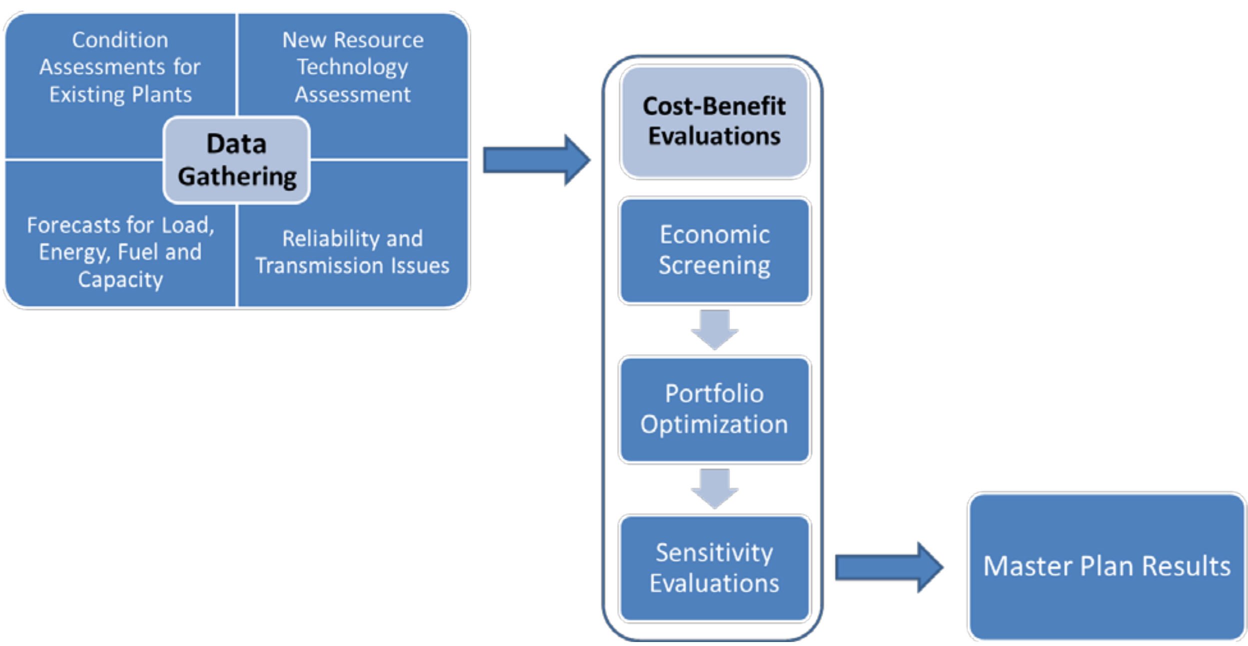
The primary objective of an energy master plan is to provide an economic evaluation of a utility's power supply portfolio over both short-term and long-term planning horizons, with a specific focus on short-term decisions that will position a utility for long-term success.

Each utility will have unique issues that will drive its decision-making process. Consistent with typical utility planning, the overall objectives of this Study include the following:

- Evaluate the condition of existing generating units, including expected or anticipated costs to maintain reliable operations into the future
- Provide recommended modifications, upgrades, and staffing levels for continued economic and reliable operation of on-system generating units
- Evaluate viable alternative generating technologies to replace IPL's existing generating units
- Evaluate demand side and energy efficient programs to reduce needed capacity and energy resources
- Compare the economics of continued use of the existing generating units to viable alternatives
- Recommend the preferred energy portfolio to supply City's electric customers over the next 20-years
- Provide a 20-year economic evaluation of alternative generation portfolios

To satisfy the Study objectives, Burns & McDonnell utilized the energy master plan process outlined in Figure 2-1. The efforts conducted to satisfy each step in this process are discussed in detail throughout the remainder of this report.

Figure 2-1: Energy Master Plan Process



3.0 ELECTRIC POWER INDUSTRY REVIEW

The following provides a review of overall electric power industry trends, the SPP energy market, and IPL's current power supply.

3.1 Overall Electricity Industry Trends

The electricity industry continues to be impacted by numerous trends. The following provides a brief discussion of the overall trends that are impacting electric utilities and generators.

- Environmental regulations: Both federal and state environmental regulating agencies continue to pursue more stringent environmental regulations regarding emissions from power generating facilities, specifically coal-fired power plants, albeit federal stringency has eased or been reversed on some regulations under the current Environmental Protection Agency ("EPA") administration. Volatility in environmental regulatory policy raises concern regarding applicability of and compliance to existing environmental regulations.
- Clean Power Plan: One of the most controversial regulations from the EPA, the Clean Power Plan ("CPP"), targeted a reduction in carbon dioxide ("CO_2") emissions. This regulation was stayed (postponed indefinitely) by the United Sates ("U.S.") Supreme Court as appeals to the rule worked their way through the lower court system. Changes in EPA administration with the election of President Trump have rendered the CPP dormant and short-term federal CO_2 regulation significantly reduced. The question of long-term CO_2 regulation at the federal level remains unanswered and will be subject to future EPA leadership changes and political climate.
- Low natural gas prices: Natural gas prices remain low as production continues to outpace demand requirements. Industry futures, such as the New York Mercantile Exchange ("NYMEX"), feature relatively flat Henry Hub natural gas prices through 2020, then growing at an average of 2 percent through 2030.
- Continued renewable development: The use of wind and solar resources continues to increase. Many state and federal regulators continue to pursue increased renewable energy requirements. Technological advancements are expected to further lower prices of renewable energy, but the phase-out of federal renewable tax credits brings uncertainty regarding future pricing.
- Relatively low load growth: While much of the U.S. has seen economic growth since the economic recession in the 2008 and 2009 timeframe, the recovery of demand and energy has been much slower. Increased conservation programs have also contributed to lower load growth.

- Low wholesale market energy prices: The combination of low natural gas prices, increased renewable development, and relatively low load growth has kept wholesale market energy prices low compared to historical averages.
- Coal-fired retirements: With the combination of all the above factors, the investment in costly environmental compliance solutions at coal-fired power plants has reduced the overall economic benefit of coal-fired generation. Across the United States nearly 100 gigawatts ("GW") of coal-fired retirements have occurred, are pending, or have been announced; representing approximately 33 percent of the total coal fleet.
- Nuclear retirements: Similar factors driving coal-fired retirements are additionally placing pressure on nuclear power plants. Across the United States, approximately 5 GW of baseload nuclear plants have retired since 2013. An additional 22 GW of nuclear retirements are pending or have been announced; representing approximately 20 percent of the total nuclear fleet.
- Increased interest in "firm" natural gas pipeline capacity: A multitude of factors including coal-fired retirements, recent extreme winter weather, and increased dependence of natural gas for the electric industry have led to increased interest in firm capacity. If firm natural gas transport contracts are required for power generators, it could increase the cost of electrical production significantly.

3.2 Responsibilities of Electric Utilities

Electric utilities are responsible for providing low-cost, reliable, safe, and environmentally-compliant electric service to their customers (load). In order to accomplish this, utilities are responsible for meeting two requirements associated with load: demand and energy. Demand is the amount of electricity customers use at any one point in time and is typically measured with units of megawatts. The second portion of electric service is energy. Energy is a measure of how much electricity is used over time and is typically measured in units of MWh.

Electric utilities are responsible for maintaining enough generation (capacity) to meet forecasted demand. Capacity typically must be dispatchable to get accreditation toward utility capacity requirements. Renewable generation is typically intermittent and thus does not provide significant capacity. Electric utilities are also responsible for providing sufficient energy to meet customers' needs. Electrical energy can come from units owned by the utility, contracts, net metering, conservation, or the wholesale market.

3.2.1 North American Electric Reliability Council Requirements

The North American Electric Reliability Council ("NERC") was certified as the national Electric Reliability Organization as mandated by the Energy Policy Act of 2005. This designation allows NERC to develop and enforce compliance with mandatory electric reliability standards in the United States. Any electric utility operating within the United States must comply with reliability standards set by NERC.

Maintaining stable operation of the electric grid is one of NERC's top priorities, and thus has multiple requirements associated with grid stability. One of these requirements includes maintaining capacity in excess of forecasted peak load. These planning reserves ensure capacity is available if electric load is much higher than forecasted or if some generation resources are offline due to forced outage. An additional requirement is maintaining a set amount of operating reserves. Operating reserves are typically electric generators that can quickly react to fluctuations in electric demand or disturbances in the electric grid. Operating reserves provide the electric grid flexibility in real-time operation and serve to balance the supply and demand of electricity. These reserves are maintained by a balancing authority that is tasked with real-time operation of the electric grid.

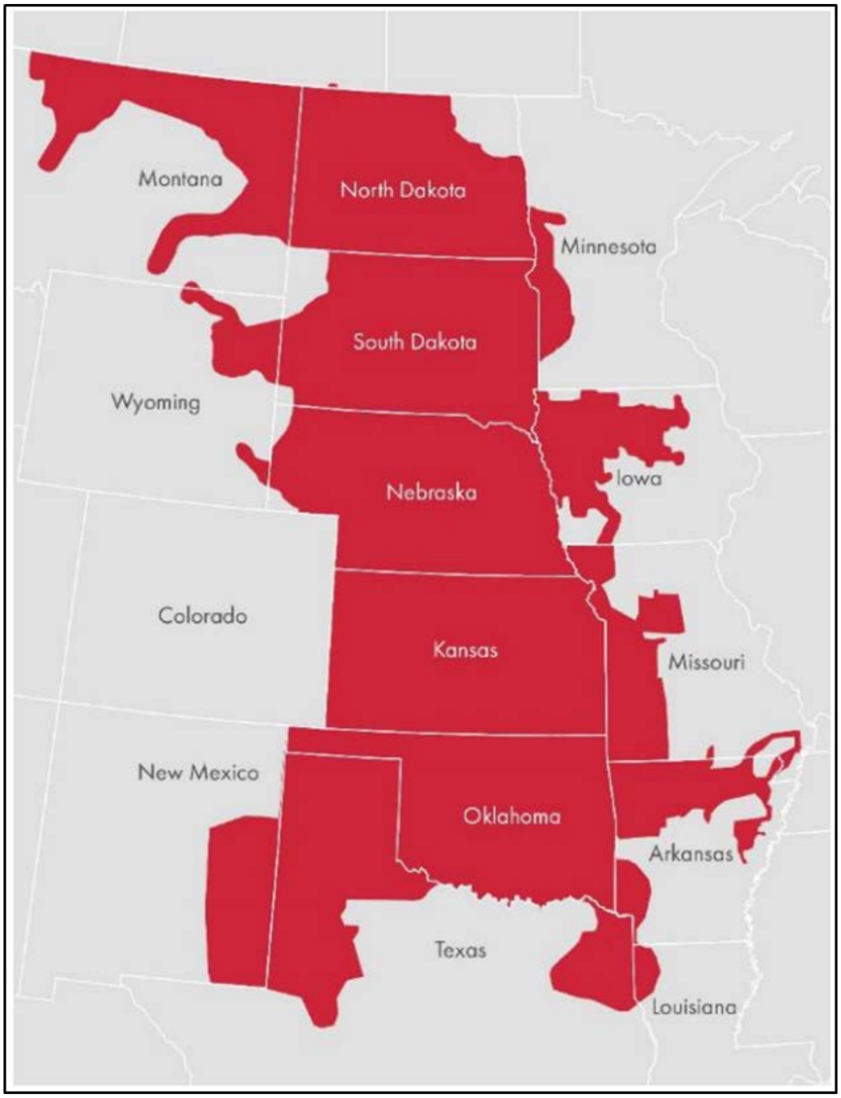
Another area NERC regulates to maintain reliable operation of the electric grid is transmission planning. NERC mandates analysis of a transmission operator's system under various operating conditions (contingencies). The contingencies represent various failures the electric grid may encounter in day-to-day operation. The number of contingencies the electric grid can withstand while maintaining electric service to customers is defined as its reliability standard. NERC regulation requires transmission operators to plan to an N-1 reliability standard. This means the electric grid must be able to withstand a single failure while maintaining electric service to customers without shedding firm load. Transmission operators can plan to a higher standard of reliability, but NERC regulation only requires N-1 reliability.

NERC additionally requires transmission operators to have a system restoration plan approved by their reliability coordinator. The plan must cover how the transmission operator's system will restore service to an area when the bulk electric system ("BES") is shut down and the use of black start resources is required. Black start resources are electric generators that can start without relying on the electric grid and provide energy to restore the electric grid if a blackout occurs. The black start resource does not have to be located within the transmission operator's system but must be designated within the plan. NERC requires each Transmission Operator that relies on another entity's black start resource to have written Black Start Resource Agreements or mutually agreed upon procedures or protocols, specifying the terms and conditions of their arrangement. For example, in the past, IPL has attempted to contract with other local utilities to provide black start capability, however were unsuccessful at reaching an agreement at that time.

3.3 Southwest Power Pool Energy Market

Southwest Power Pool is a regional transmission organization ("RTO") that oversees operation of the region's electricity grid, administers the region's wholesale electricity markets, and provides reliability planning for the region's bulk electricity system. SPP is additionally in charge of monitoring the region's transmission network and developing transmission upgrade plans. SPP initiated its integrated marketplace on March 1, 2014. The SPP Integrated Marketplace is in charge of dispatching electric generators to meet electric loads within the SPP footprint. In addition to meeting forecasted loads, SPP must also dispatch units to meet operating reserves. Southwest Power Pool utilizes a unit commitment process that dispatches resources to minimize the cost of serving load while considering congestion and reliability requirements. On October 1, 2015, Western Area Power Administration ("WAPA"), Basin Electric Cooperative, and Heartland Consumers Power District officially joined SPP and were integrated into SPP's transmission system. The SPP market is made up of many utilities operating in 14 states as presented in Figure 3-1.

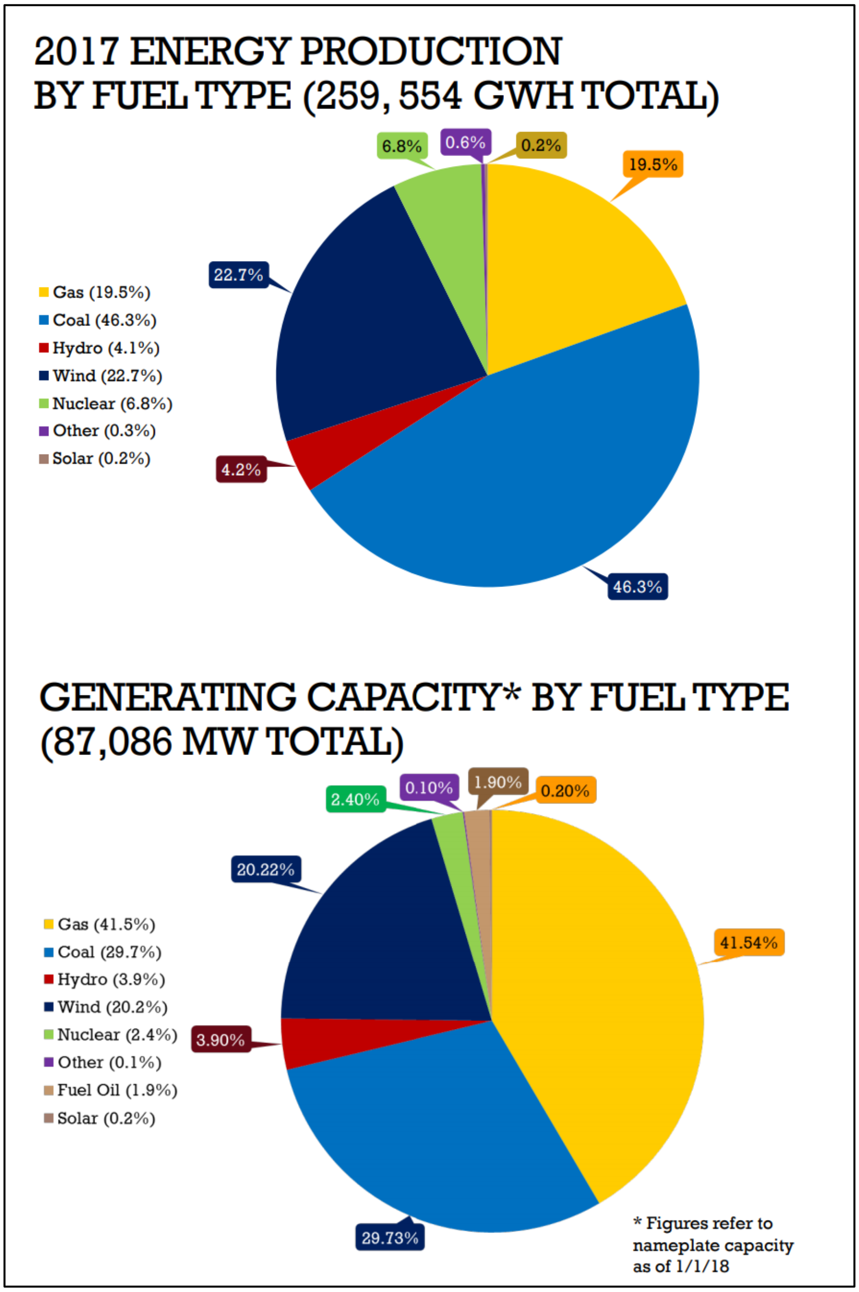
Figure 3-1: SPP Market Area



Source: Intro to SPP Presentation

The SPP market has a wide range of capacity and energy resources including fossil fuel, renewable, and nuclear generation. The recent capacity and energy mix of resources within SPP is presented in Figure 3-2. In 2017 coal provided approximately 30 percent of capacity in SPP, whereas coal provided 46 percent of the energy produced in 2017. Utilities participating within the SPP Integrated Marketplace receive electricity from a diverse mix of resources.

Figure 3-2: SPP Energy and Capacity Resource Mix



Source: Intro to SPP Presentation

Wholesale electricity markets are maturing, and utilities are becoming more comfortable with market operations. It is common for utilities today, and required as a member of SPP's Integrated Marketplace, to acquire all energy from the market to serve load and sell all energy from owned generation resources into the market. Generation resources can be self-scheduled by the asset owner(s) or called upon for dispatch when economical or required to satisfy reliability needs. The past few years have seen wholesale energy prices decline significantly when compared to the 2000 to 2008 timeframe. The decline in pricing is due to several factors including:

- Economic downturn and relatively slow economic and load growth
- Significant addition of wind resources from approximately 2 GW total in 2007 to approximately 18 GW total in 2017
- Sustained low pricing of natural gas

3.3.1 Wholesale Electricity Market

The SPP wholesale energy market contains sellers (producers) and buyers (consumers) trading energy based on Locational Marginal Pricing ("LMP"). At distinct locations (nodes) within the SPP footprint, LMPs are defined and reflect the price of producing electricity, energy demand, and use and limits of the transmission system at that respective location. LMPs consist of three components: the energy component, the congestion component, and the loss component. The energy component represents the marginal cost of producing energy and is uniform across the SPP footprint. Utilities hedge against volatility in the energy component with diverse portfolios of electric generation. The congestion component represents the costs associated with transmission limitations, and congestion occurs when the transmission system is unable to deliver the least-cost electricity to loads. Congestion can be caused by lack of transmission, transmission or generator outages, too much generation at one location, a preferred energy source being located far from customers, and many other scenarios. The loss component assigns a price to electric losses that occur when transporting electricity on the transmission system. Utilities hedge against spikes in the congestion and loss components of LMPs by maintaining generation close to their load which mitigates the potential for LMP price separation between generation and loads. Each LMP indicates the price of delivering electricity to the next megawatt of load at its respective location. Each generator has an LMP node and sells electricity to SPP at that node's rate. Loads across SPP are assigned to an LMP node and buy energy from SPP at their respective node's rate.

The SPP Integrated Marketplace includes the ability for electric generators to bid ancillary services. This provides an additional avenue for electric generators to earn revenue. Examples of ancillary services include:

- Regulation and frequency response
- Spinning Reserves
- Non-spinning reserves

These services help maintain the stability of the electric grid, and as a balancing authority, NERC regulation requires SPP to maintain adequate amounts of ancillary services. While these services are required by NERC regulations, ancillary services represent only one to two percent of total market revenue within the SPP Integrated Marketplace. Additionally, only certain types of electric generators can bid ancillary services.

3.3.2 Resource Adequacy Requirement

Any asset owner represented in the SPP Integrated Marketplace that has a registered physical asset that is a load, or an export interchange transaction, is a load responsible entity ("LRE"). Per Attachment AA of SPP's Open Access Transmission Tariff, all LREs are subject to a Resource Adequacy Requirement ("RAR") equal to the LRE's net peak demand plus a specified planning reserve margin ("PRM") multiplied by the net peak demand. All LREs must maintain firm capacity equal to or above their respective RAR. Firm capacity cannot be double counted by two LREs. Southwest Power Pool currently has a 12 percent PRM, and thus LREs are responsible for holding 12 percent of their Net Peak Demand in reserve capacity. Additionally, the RAR specifies that LREs must maintain firm transmission delivery to their system equal to their forecasted net peak demand. This is only applicable to resources located outside of LRE's system. Capacity required to meet an LRE's reserve requirement needs only to be deliverable[1] to SPP's footprint and does not need firm transmission service. A utility's peak demand is driven by summer weather and can vary significantly from year-to-year. Typical utility practice is to develop a weather-normalized forecast for meeting the RAR which is discussed later in Section 4.2.

3.4 Power Supply Options

Electric utilities have the ability to acquire their capacity and energy from a variety of sources. Depending on economic, geographic, reliability, or ancillary factors, the best method to obtain capacity and energy is determined largely on a case-by-case basis.

With the widespread growth of RTOs, electric utilities are increasingly going to the market for energy and short-term capacity needs. Lower wholesale energy market prices and a surplus of capacity from existing generation resources provide opportunities for utilities to lower their power supply costs compared to other resources, such as aging power plants or new resources. However, relying on market transactions may expose an electric utility to volatility in the market and does not provide the certainty of long-term contracts. The year-to-year availability of short-term capacity purchases is trending downward and

[1] SPP performs an annual "Deliverability Study" to evaluate and determine the deliverability of each resource registered in the Integrated Marketplace to the SPP Balancing Authority Area. The results of this study allow an LRE to rely on available capacity to satisfy the PRM portion of the RAR.

remains heavily dependent on a multitude of factors such as load growth and power plant retirements. Increases in the number of baseload retirements, large buildouts of intermittent resources, or faster-than-expected load growth are factors that may negatively impact market transactions for capacity. As of the 2018 SPP Resource Adequacy Report, an increasing amount of dispatchable resources within the SPP footprint have excess capacity. The excess firm capacity available through 2023 is featured below in Figure 3-3.Over the next five years, SPP is projected to have a PRM above 22 percent. This is a 10 percent surplus over the SPP requirement and shows the glut of capacity within SPP. This may provide utilities within SPP access to low-cost capacity over the next five years. Since SPP does not have a capacity market, obtaining short-term capacity from the market must be procured under a contractual agreement. The process requires a contract to procure capacity for a minimum of 4 consecutive months.

Figure 3-3: SPP Resource Adequacy Table

Demand Summary	2018	2019	2020	2121	2022	2023
Peak Demand (Forecasted)	53,165	53,319	53,570	53,927	54,527	54,816
Controllable and Dispatchable DR - Available	(909)	(884)	(935)	(960)	(975)	(992)
Controllable and Dispatchable DEG - Available	(295)	(309)	(292)	(290)	(291)	(293)
External Firm Power Purchases	(1,317)	(1,317)	(1,317)	(1,317)	(1,317)	(1,317)
External Firm Power Sales	0	0	0	0	0	0
Net Peak Demand (Forecasted)	50,644	50,809	51,026	51,360	51,944	52,214
Firm Capacity (Units - MW)	**2018**	**2019**	**2020**	**2121**	**2022**	**2023**
Firm Capacity Resources	65,485	66,107	66,295	66,268	66,284	66,466
Other Capacity Adjustments - Additions	313	319	319	319	333	347
Other Capacity Adjustments - Additions	(723)	(646)	(533)	(556)	(569)	(569)
Confirmed Retirements	0	(740)	(951)	(1,041)	(1,041)	(1,153)
Unconfirmed Retirements	0	(153)	(299)	(355)	(416)	(741)
Scheduled Outages	(165)	(113)	(31)	(69)	(69)	(64)
Transmission Limitations	0	0	0	0	0	0
External Firm Capacity Purchases	602	402	404	349	359	346
External Firm Capacity Sales	(623)	(1,022)	(1,022)	(586)	(586)	(586)
Firm Capacity	64,889	64,154	64,182	64,329	64,295	64,046
SPP Planning Reserve Margin	28.1%	26.3%	25.8%	25.3%	23.8%	22.7%
Resource Adequacy Requirement	56,721	56,906	57,149	57,523	58,177	58,480
SPP Excess Capacity - LRE	8,168	7,248	7,033	6,806	6,118	5,566

Source: 2018 SPP Resource Adequacy Report

The following generally summarizes methods that are available for utilities to source capacity and energy to meet their load requirements:

- On-System Resources
  - Build a new resource on-system to provide capacity for the SPP resource adequacy requirement

  - Energy from these resources serve as a hedge against wholesale energy prices and congestion charges. Profits from generation can help offset other utility costs.
- Bi-lateral contract
  - Contract directly between a generator and consumer for firm capacity and/or energy
    - Energy from these assets serve as a hedge against wholesale energy prices
- Partial-requirements contract
  - Provides the balance (remainder) of capacity and energy requirements not met by existing resources or contracts
- Financial contract
  - Participants buy or sell energy commodities at a future date and time
  - These contracts are purely a financial hedge and typically do not directly serve energy or capacity requirements

3.4.1 On-System Resources

Historically, the traditional approach for a utility to meet a capacity need was through the addition of a generator on-system. This provides the benefit of having long-term security regarding the availability of the capacity. Additionally, transmission concerns are lessened with an on-system addition versus an off-system resource. Certain on-system additions can earn revenue from the SPP Ancillary Services Market and can additionally meet the black start requirement designated by NERC.

3.4.2 Bilateral Contract

Bilateral contracts function similarly to market purchases but are for extended periods. These contracts involve a direct transaction of electricity between a seller (generator) and buyer (load). Contracts vary in length and can extend as long as the life of a unit. These contracts can also be an energy-only, capacity-only, or energy and capacity contracts. These contracts are a type of Power Purchase Agreement (“PPA”) and can serve as a hedge against volatility in the energy market.

3.4.3 Partial Requirements Contract

Partial requirements contracts serve to provide the balance of any requirements a utility has not met with existing resources or contracts. Services may include energy, capacity, transmission, or balancing.

3.4.4 Financial Contract

NYMEX defines a financial contract as “a legally binding obligation for the holder of the contract to buy or sell a particular commodity at a specific price and location at a specific date in the future.” In other words, the participants are buying and selling energy commodities at a future date and time. At the contract's expiration date, the contract position is closed out financially compared to the current price at that time. No physical energy is scheduled or delivered with a financial contract, and therefore, these contracts do not serve to meet energy or capacity requirements. These contracts primarily provide more certainty regarding future energy expenses and can cap exposure to volatility in the energy market.

3.4.5 Types of Electric Generators

The following are examples of methods to generating electricity:

- Coal-fired power plant: Coal is burned in a boiler to heat water into steam and drive a steam turbine connected to a generator.
- Nuclear power plant: Heat from a nuclear reaction is used to heat water into steam and drive a steam turbine connected to a generator.
- Gas-fired power plant
    - Simple cycle gas turbine ("SCGT"): Natural gas is burned to drive a combustion turbine connected to a generator.
    - Combined cycle gas turbine ("CCGT"): Similar to a SCGT unit, natural gas is burned to spin a combustion turbine. However, waste heat is collected from the hot exhaust gasses to boil water into steam and drive a steam turbine generator.
    - Reciprocating Engine: Natural gas, or fuel oil, is burned to drive a large reciprocating engine connected to a generator.
- Renewable generation
    - Solar photovoltaics: Solar energy is converted to electricity with the most common application using solar photovoltaic panels.
    - Wind turbines: Wind propels turbines connected to a generator to generate electricity.
    - Hydropower: Water propels turbines connected to a generator to generate electricity.

- Energy Storage
  - Compressed air energy storage: Air is pumped into storage, typically a large underground cavern, when wholesale electricity prices are inexpensive and later released to generate electricity when wholesale electricity prices are relatively higher.
  - Battery storage: batteries are charged when wholesale electricity prices are inexpensive and discharged when wholesale electricity prices are relatively higher.
  - Pumped-Storage Hydropower: Water is pumped into an upper storage reservoir when wholesale energy prices are inexpensive and later released to generate electricity when wholesale energy prices are relatively higher.

Each of these types of power generation technologies have unique characteristics when supplying capacity and energy. Resources that can be dispatched on demand are typically given full capacity recognition. Renewable resources, specifically wind and solar generation, are intermittent resources and cannot be dispatched. Due to this constraint, SPP has a specific process for recognizing capacity from renewable generation. For new facilities, the facility owner can elect to recognize 5 percent of a wind facility's output and 10 percent of a solar facility's output. After several years of operation, capacity accreditation is based on a facility's output during peak load hours This process gives greater capacity credit to renewable resources that generate electricity during an LRE's peak load hours.

3.4.6 Demand-side Management and Energy Efficiency

Demand response programs are intended to reduce system or sub-system load during peak demand hours. These programs require control and communications technology along with ongoing administration and management from the utility. Example demand response programs include:

- Programmable communicating thermostats ("PCT")
- Dynamic rates such as time-of-use rates, critical peak pricing, peak time rebates, etc.
- Voluntary customer load reduction/shifting in response to utility request
- Interruptible rates
- Dynamic voltage control ("DVC")
- Energy storage (batteries, compressed air, pumped hydro, etc.)

Energy efficiency programs involve a reduction in overall energy consumption, typically through the installation of more efficient appliances and devices. These programs typically involve a one-time expense from the utility, in the form of a rebate or other incentives. Possible energy efficiency programs include:

- Lighting replacements or fixture upgrades
- Electric water heater upgrades to more efficient units
- Refrigerator and freezer upgrades to more efficient units
- Heating and cooling (air conditioning) upgrades to more efficient units
- Large motor and irrigation pump upgrades to more efficient units
- Home energy audits – additional insulation/weatherization
- Garage refrigerator removal program

4.0 IPL EXISTING POWER SUPPLY REVIEW

A key objective of this Study was to determine the power supply alternatives available to IPL to provide low-cost, environmentally friendly, and reliable electric energy service. IPL's current resources are aging and are expected to require significant investment to maintain adequate safety and reliability. The objective of this Study was to evaluate the economics of capacity and energy from IPL's on-system resources against new, on-system resources or other third-party, off-system resources.

4.1 Existing Resources

IPL provides energy and capacity to its members through owned resources and power supply contracts. IPL's peak demand was 315 MW (2003 and 2007). Total coincident peak-demand since 2012 has ranged from 272 MW to 305 MW (excluding planning reserve requirements). IPL is currently forecasting long-term load growth of 0.35 percent, which is consistent with other utilities' load forecasts. Table 4-1 summarizes IPL's existing power supply portfolio for meeting its load and energy requirements.

Table 4-1: IPL Existing Power Supply Portfolio[2]

Unit	Age (years)	Resource Fuel	Nominal Capacity (MW)	Accredited Capacity (MW)
On-System Owned Resources				
Blue Valley 1	60	Natural Gas	22	22
Blue Valley 2	60	Natural Gas	22	22
Blue Valley 3	53	Natural Gas	54	54
Sub J-1	49	Fuel Oil	13	13
Sub J-2	49	Fuel Oil	12	12
Sub I-3	46	Fuel Oil	17	17
Sub I-4	46	Fuel Oil	16	16
Sub H-5	46	Natural Gas / Fuel Oil	17	17
Sub H-6	44	Natural Gas / Fuel Oil	18	18
Off-System Owned Resources				
Dogwood	17	Natural Gas	76	76
Power Purchase Agreements				
Nebraska City 2 (expires 2049)		Coal	57	57
Iatan 2 (expires 2050)		Coal	52	52
Solar (expires 2042)		Solar	11.5	1
Marshall Wind (expires 2036[1])		Wind	20	1
Smoky Hills (expires 2029[1])		Wind	15	4

[2] The existing wind PPAs were assumed to be replaced with contracts of equivalent capacity and terms upon expiration. This effectively extended the wind contracts through the planning horizon. Upon the expiration of the existing contracts, IPL should solicit power supply proposals to evaluate the current market prices at that time.

As illustrated by the table above, IPL has a diverse power supply portfolio consisting of coal, natural gas, renewable, and peaking resources. The J-2 CTG at Substation J is capable of black start and is included in IPL's latest NERC EOP 005-002 filing. From a reliability perspective, the CTGs at Substation I are valuable resources and are directly connected to a critical load center. The CTGs at Substation H provide the most operational flexibility as they are powered by natural gas instead of fuel oil like Substation J and I.

Both the Nebraska City 2 and Iatan 2 PPAs consist of coal resources and are valid through the current planning horizon. Solar facilities on IPL's system have a nameplate capacity of 11.5 MW but have only been recognized to have 1 MW of capacity for meeting peak load. The Marshall Wind PPA has a nominal capacity of 20 MW and accredited capacity of 1 MW, and the Smoky Hills PPA has a nominal capacity of 15 MW and accredited capacity of 4 MW, both due to SPP rules regarding accredited capacity for renewables.

4.2 Load Forecast

SPP requires that all members conduct an annual load forecast that has a well-defined methodology. IPL's annual forecast was developed internally at the utility. The load forecast was based on a recent projection for IPL's demand and energy requirements through 2036; thereafter the load forecast was escalated at 0.35 percent. The forecasts for peak demand and energy are summarized on an annual basis over the study period and are provided in Figure 4-1 and Figure 4-2 respectively.

Figure 4-1: IPL Peak Demand Forecast

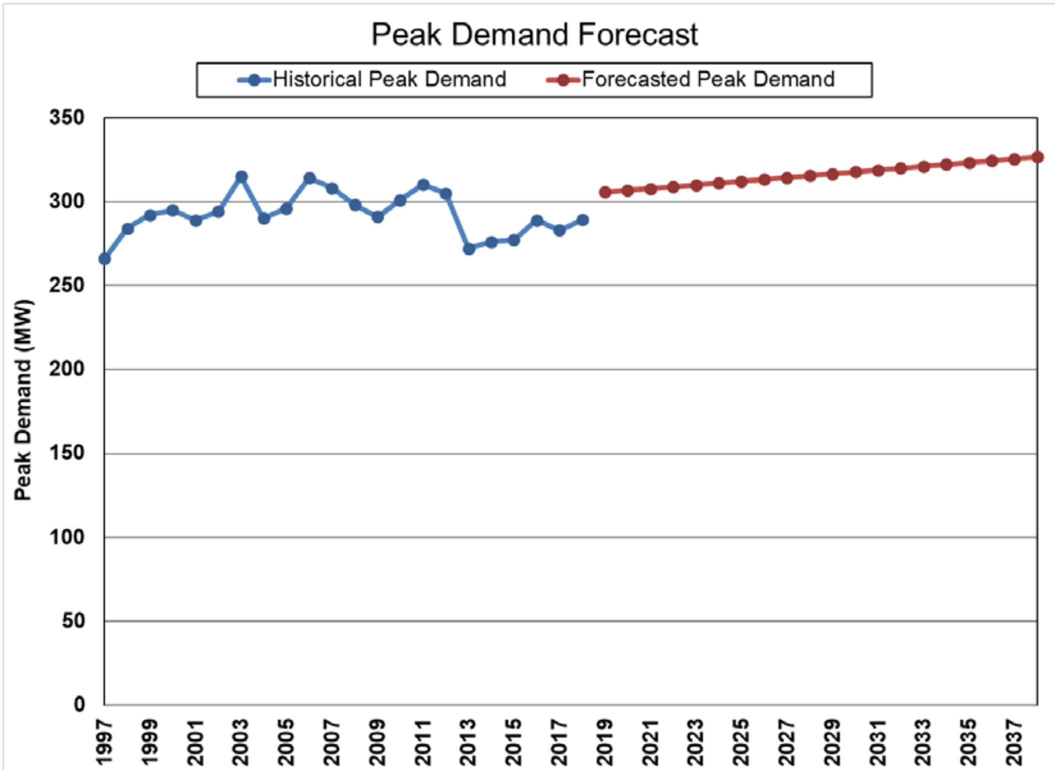
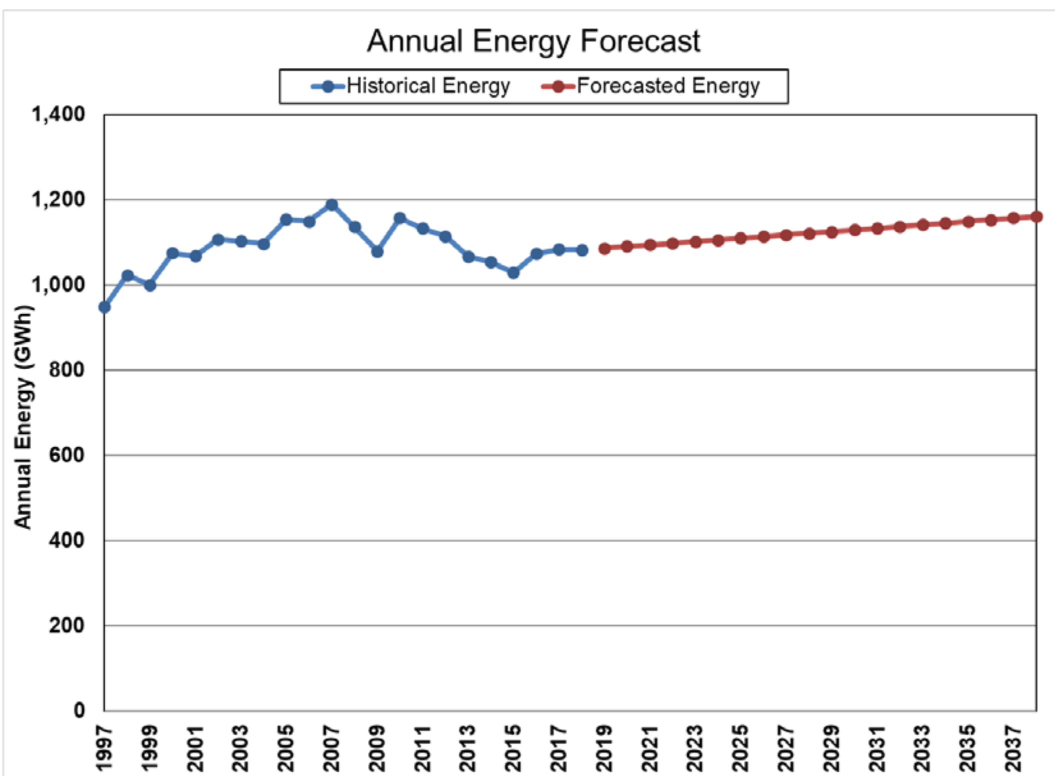


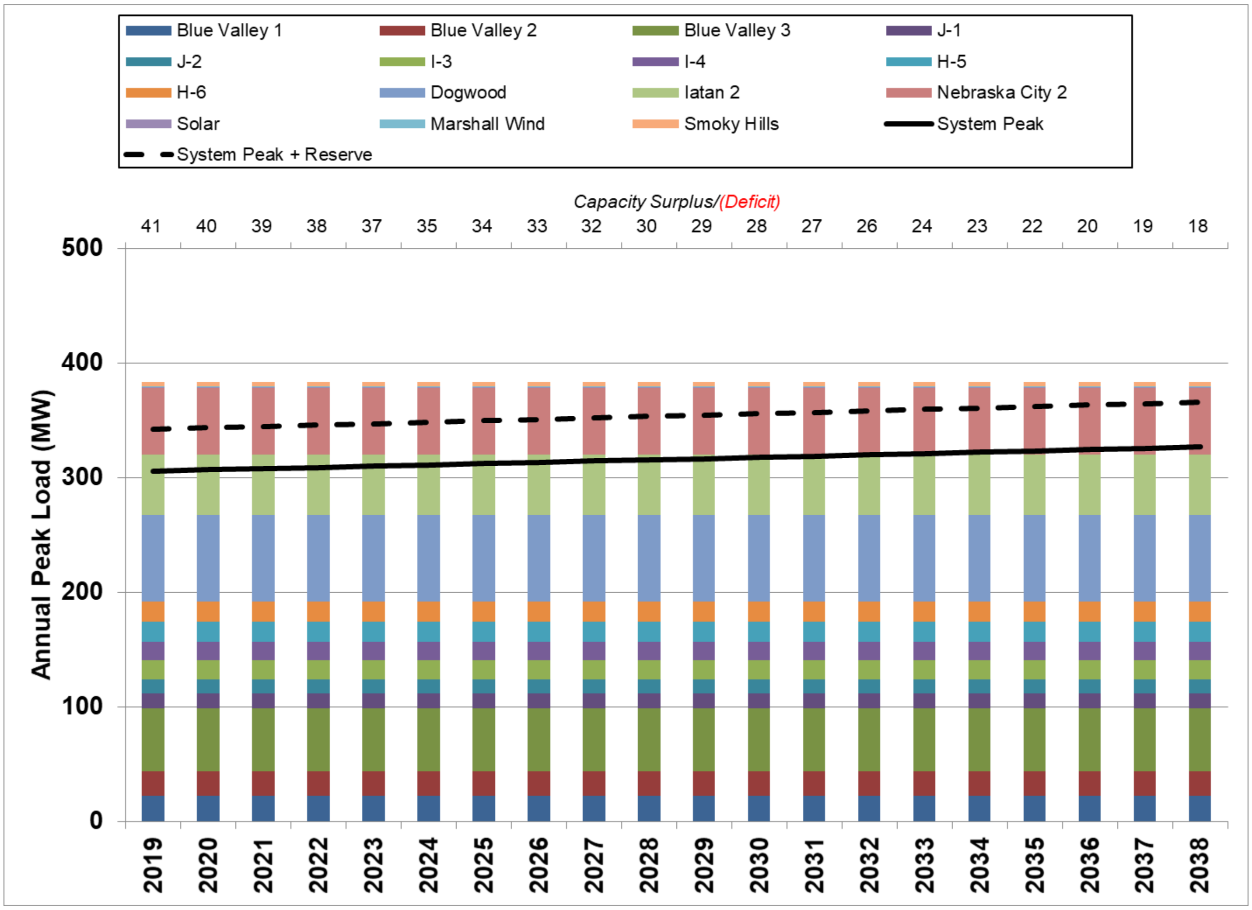
Figure 4-2: IPL Annual Energy Forecast



4.3 Balance of Loads and Resources

A balance of loads and resources ("BLR") chart based on the load forecast and existing resources that IPL will have available to meet its obligations are presented in Figure 4-3. In the Business-as-Usual ("BAU") scenario, IPL will be long on capacity in the mid-term and long-term based on existing resources and current load projections.

Figure 4-3: IPL Balance of Loads and Resources



As mentioned previously, IPL is required to maintain capacity equal or above its Resource Adequacy Requirement. The current requirement specifies that SPP members must maintain reserve capacity 12 percent above their summer peak load. For example, in 2019 IPL's load forecast predicts a summer peak load of 305.6 MW. To meet SPP requirements, IPL must maintain 36.7 MW of reserve capacity (12 percent of summer peak) in addition to the forecasted peak load. This brings IPL's capacity requirement to a total of 342.3 MW for 2019.

4.4 Missouri Proposition C

In 2008 residents of the State of Missouri passed Proposition C ("Prop C") which instituted Renewable Energy Standard ("RES") Requirements for investor-owned utilities in Missouri. IPL is not required to meet these requirements as a municipal utility but voluntarily chooses to meet them. Prop C requires 10 percent of total retail electric sales to be supplied by renewable energy resources through 2020 and 15 percent after 2020. Additionally, a minimum of 2 percent of renewable electric generation must be supplied from solar energy. Renewable resources located in the State of Missouri are given an additional 25 percent credit toward meeting the RES portfolio requirement. Renewable energy resources are defined as electric energy produced from the following sources:

- Wind
- Solar, including solar thermal sources, photovoltaic cells, or photovoltaic panels
- Dedicated crops grown for energy production
- Cellulosic agricultural residues
- Plant residues
- Methane from landfills, agricultural operations, or wastewater treatment
- Thermal depolymerization or pyrolysis for converting waste material to energy
- Clean and untreated wood, such as pallets
- Hydropower (not including pumped storage) that does not require a new diversion or impoundment of water that has generator nameplate ratings of 10 MW
- Fuel cells using hydrogen produced from any of the previous sources
- Other sources of energy not including nuclear that become available after November 4th, 2008, and are certified as renewable by rule by the division

4.5 Demand Side Management & Energy Efficiency Programs

As part of the Energy Master Plan, Burns & McDonnell evaluated IPL's existing DSM and EE programs along with potential programs to help reduce peak system loads. Additionally, Burns & McDonnell specifically identified programs that may benefit lower-income households when considering alternative programs.

4.5.1 IPL Residential Customer Programs

4.5.1.1 Air Conditioners

IPL offers rebates for new residential and multi-family central air conditioners that are ENERGY STAR® qualified as detailed below in Table 4-2. To receive the rebate, the IPL residential customer must install a new outdoor condenser and a new indoor matched evaporator coil on a single-family or multi-family residence.

Table 4-2: Residential Central Air Conditioner Rebate

AHRI Standard SEER Rating and EER Rating
Both SEER and EER minimum ratings must be met.

	SEER	EER	Ton	Amount
CEE Tier 1 and ENERGY STAR®	14.5	12.0	1.5, 2 or 2.5	$109
	14.5	12.0	3 or 3.5	$165
	14.5	12.0	4 or larger	$219

	SEER	EER	Ton	Amount
CEE Tier 2	15.0	12.5	1.5, 2 or 2.5	$150
	15.0	12.5	3 or 3.5	$227
	15.0	12.5	4 or larger	$301

	SEER	EER	Ton	Amount
CEE Tier 3	16 or higher	13 or higher	1.5, 2 or 2.5	$192
	16.0	13.0	3 or 3.5	$289
	16.0	13.0	4 or larger	$384

4.5.1.2 Heat Pumps

IPL offers rebates for new residential and multi-family all-electric heat pumps and heat pumps with fossil fuel back up that are ENERGY STAR® qualified as detailed in Table 4-3. To receive the rebate, the IPL residential customer must install a new outdoor heat pump and a new indoor matched coil on a single-family or multi-family residence.

Table 4-3: Residential Heat Pump Rebate

AHRI Standard SEER Rating and EER Rating
Both SEER and EER minimum must be met.

	SEER	EER	Ton	HSPF	Amount	All Electric
ENERGY STAR®	14.5	12.0	1.5, 2 or 2.5	8.2	$259	$309
	14.5	12.0	3 or 3.5	8.2	$390	$465
	14.5	12.0	4 or larger	8.2	$519	$619

	SEER	EER	Ton	HSPF	Amount	All Electric
CEE Tier 2	15.0	12.5	1.5, 2 or 2.5	8.5 or higher	$300	$350
	15.0	12.5	3 or 3.5	8.5 or higher	$452	$527
	15.0	12.5	4 or larger	8.5 or higher	$601	$701

4.5.1.3 Heat Pump Water Heaters

IPL offers a $300 rebate for new residential and multi-family electric heat pump water heaters that are ENERGY STAR® qualified. The unit is to be used for domestic purposes only and must be the sole source of heated water within the home.

4.5.1.4 Home Energy Loan Program (“HELP”)

IndependenceHELP is a partnership between Independence Power & Light and City Credit Union to provide low-interest loans for eligible energy efficiency measures. There is no upper income limit for this program. The loan limit for HELP is $15,000.

Those who may qualify are owner-occupants of residences located in the City of Independence. Residents who qualify for free or lower cost weatherization programs are encouraged to take advantage of those programs before seeking loans through Independence HELP.

4.5.1.5 Property Assessed Clean Energy Program

The City of Independence is a participant in multiple Property Assessed Clean Energy (“PACE”) programs, including the Missouri Clean Energy District and the Show Me PACE District. These programs provide an alternative method of financing EE and renewable energy projects. PACE programs function by creating an assessment tied to the value of prospective EE and renewable energy projects. These assessments are directly tied to the property and repaid via that property’s tax bill. The voluntary assessment, which is secured by a senior lien on the property, does not require an up-front payment.

Participation in PACE programs requires an application process and prospective projects must receive approval from the PACE district board.

4.5.2 IPL Business Customer Programs

4.5.2.1 Prescriptive Rebates

IPL's commercial rebates are designed to help commercial customers implement energy efficiency measures that can reduce electric use and operating costs by offering financial incentives to offset initial investment. Rebates are available for air-conditioning upgrades for both new construction and retrofit. The specific categories, rebate levels, and performance levels are outlined in the prescriptive rebate application. Business and industrial customers are eligible for a maximum of $20,000 or 30 percent of the total project cost (whichever is less), per program year.

4.5.2.2 Custom Rebates

Rebates are available for projects that do not fit into prescriptive rebate categories. These are facilitated through direct discussions with IPL.

4.5.2.3 Infrared Scanning

IPL offers infrared scanning for equipment, motors, and electrical systems for commercial and industrial utility customers, to help minimize the cost, downtime, and power interruptions caused by unexpected repairs to equipment.

Infrared scanning helps identify hot spots in order for preventative maintenance to be done. The temperature values shown in infrared scanning are reviewed and analyzed to identify problem areas, which would otherwise be undetectable.

4.5.2.4 Energy Audits

IPL provides free walk-through energy audits of commercial facilities. The purpose of the audits is to help assist customers identify areas within their facilities that may be improved to help reduce energy losses.

4.5.2.5 PACE Programs

The City of Independence additionally offers PACE programs to business customers. Similar to residential PACE programs, business customers would receive financing through an assessment tied to the value of prospective EE and renewable energy projects. The financing requires no up-front payment and would be repaid via that property's tax bill. Business customers follow the same application and approval process as residential customers to obtain PACE financing.

4.5.3 Other Utility Programs

An important distinction to note is between the municipal utilities and the investor-owned utilities ("IOU"). IOUs are subject to Missouri Public Service Commission ("MPSC") oversight, and therefore are able to take advantage of the Missouri Energy Efficiency Investment Act passed in 2009. This bill allows utilities to implement and recover costs related to MPSC-approved energy efficiency and demand response programs. Since IPL is not regulated by the MPSC, these cost-recovery methods are not guaranteed. For IPL to invest into additional energy efficiency or demand response programs, they should demonstrate a cost-to-benefit ratio of at least one, meaning they are financially beneficial. Presently, low wholesale energy and market capacity prices are a significant challenge to expanding energy efficiency and demand response programs due to the relatively low savings associated with reduced consumption. This combined with IPL's restricted ability to recover program costs without impacting rates provides significant challenges to expanding energy efficiency and demand response offerings.

Table 4-4 compares IPL to a sample of Missouri electric service providers that offer energy efficiency rebates or programs. A brief description of a few of the programs follows.

Table 4-4: Energy Efficiency Program by Utility

		Municipal Utilities			Investor-Owned Utilities		
	Program/Measure	IPL	City of Springfield	City of Columbia	Ameren	KCP&L	Empire District
RESIDENTIAL	Air Conditioner	$384	$500	$1,600	$500	$400	$450
	Heat Pumps	$701	$500	$1,600	$900	$1,200	
	Heat Pump Water Heaters	$300			$500	$500	
	Home Energy Loan Program	$15,000		$15,000			
	Energy Saving Tips	✓	✓	✓	✓	✓	✓
	Energy Savings Kit					✓	
	Insulation		✓	✓		✓	
	Landscaping (Shade Tree)			✓			
	Lighting Programs (CFL/LED)				✓		
	Low Income Weatherization				✓	✓	✓
	Pool Pumps				$350		
	Room Air Conditioner				$50		
	Room Air Purifier				$50		
	School Kit Programs				✓		
	Smart Thermostat		$75		$50	Nest	
COMMERCIAL	Air Conditioner			$3,010			
	Heat Pumps			$3,010			
	Energy Efficiency Loan			$30,000			
	Energy Audits	✓	✓	✓	✓	✓	✓
	Infrared Scanning	✓		✓			
	Commercial Cooking				✓	✓	
	Compressed Air					✓	
	Electric Water Heating				✓		
	HVAC	✓			✓	✓	✓
	Landscaping (Shade Tree)			✓			
	Lighting	✓	✓	✓	✓	✓	✓
	Motors			✓	✓	✓	✓
	Multi-Family Housing Program				✓	✓	
	Refrigeration				✓	✓	
	Smart Demand Response					✓	
	Smart Thermostat		$75			✓	

Dollar values shown are upper limits within a range of offers

4.5.3.1 Energy Saving Kit Programs

Many utilities offer energy efficiency 'kits' to promote awareness and conservation of energy. The kits are typically offered for free and distributed to households on request or through school programs designed as a learning activity. The kits may include light-emitting diode ("LED") and compact fluorescent lamp ("CFL") lightbulbs, LED night lights, energy-efficient showerheads and faucet aerators among other items.

4.5.3.2 Low-Income Weatherization and Insulation Programs

The EPA estimates that significant heating and cooling savings can be achieved by homeowners by air-sealing their homes through added insulation of attics, floors, and crawl spaces. Insulation programs help energy consumers to reduce their energy bills through reduced consumption. Additional assistance may be provided to low-income families.

4.5.3.3 Smart Thermostat

Increasingly, utilities are offering incentives for consumers to install smart thermostats. These thermostats provide an easy and convenient way to manage home heating and cooling. At a minimum, the smart thermostats allow the utility customers to program their heating and cooling more efficiently. Some utilities, such as KCPL offer additional incentives to enroll in demand reduction programs that allow the utility to schedule heating and cooling to reduce consumption during high-usage periods. For these programs, the smart thermostats must be Wi-Fi connected to allow the utility to control the heating, ventilation, and air conditioning (“HVAC”) system, typically during extremely hot weather which creates high demand. Utilities typically require a program administrator, program training, and software implementation to effectively control smart thermostats.

4.5.3.4 Commercial Rebate

Utilities also design energy efficiency programs that incentivize business customers to install and/or replace equipment with more energy-efficient measures. Typical measures include lighting and lighting systems, water heating, refrigeration, and manufacturing equipment such as motors and air compressors.

4.5.3.5 Energy Saving Landscaping

Utilities promote energy conversation through energy-efficient landscaping. An example program gives participating customers a free “shade tree” to plant. The utility will visit the customer’s property and recommend the best location to plant the tree.

4.5.3.6 Lighting Programs

Utilities incentive customers to purchase new energy-efficient lighting such as CFL or LED lightbulbs. These incentives are usually subsidies or rebates. This type of program could target low-income areas by placing subsidized bulbs in local stores.

4.5.3.7 Demand Response

Large-scale demand response programs involve the coordinated control of commercial, institutional, and industrial systems aimed at reducing utility electricity consumption during peak usage or pricing hours. A program administrator or the utility enlists voluntary participation from customers to reduce demand and in return the customer receives payments to enroll in the program.

During a dispatch event, when the need for additional energy is anticipated, advanced notice is provided to program participants to reduce electric use. Equipment such as lighting, pumps, motors, HVAC, and refrigeration can be utilized during dispatch events to reduce load. Customer-sited generation can also be used in response to dispatch events.

4.5.3.8 Direct Load Control

Direct Load Control ("DLC") is a form of demand side management that allows an electric utility to reduce instantaneous peak demand while shifting demand to non-peak hours. DLC involves installing a switch that can be remotely controlled by an electric utility on an energy-intensive appliance. Customers voluntarily opt-in to the DLC program, and the electric utility installs a switch on the targeted device (typically air conditioning or electric hot water heater). In times of high demand, a program administrator can send a remote signal and temporarily switch off DLC-enabled appliances. DLC programs require dedicated staff and software to maintain and administer the program. Most forms of DLC additionally require Advanced Metering Infrastructure ("AMI") to be implemented. There are DLC programs on that market that do not require AMI, but these programs still require dedicated staff and software and typically control devices through internet connections. Additionally, customers may be reluctant to give control of household appliances to the electric utility and this may be a barrier to adoption. DLC provides electric utilities a meaningful way to reduce peak loads, but a thorough cost-to-benefit evaluation is necessary to gauge the program's potential for cost savings.

4.5.4 EE/DSM Recommendations

IPL's current energy efficiency programs are consistent with programs offered by comparable in-state municipal utilities. Programs such as low-income weatherization or subsidizing LED/CFL lightbulbs in local stores could be implemented to target low-income customers. Additionally, IPL has limited staff dedicated to the implementation of EE and DSM at the present time. Additional staff, training, software, and infrastructure would be required to realize substantial load and energy savings through widespread adoption. The costs associated with these improvements, coupled with current low capacity and market energy prices, provide low cost-to-benefit prospects for EE and DSM programs at the current time. As seen in recent years, the energy market can rapidly change, and Burns & McDonnell recommends IPL take actions to preserve the ability to pursue EE and DSM programs as opportunities arise.

As IPL continues the evaluation of AMI implementation, IPL should also consider the potential for DLC programs. IPL should continue to evaluate existing EE and DSM programs, along with new programs. Furthermore, IPL may consider performing customer surveys to gauge the potential efficacy of implementing EE and DSM programs. To expand further prospects for EE and DSM programs, IPL should consider taking steps to develop a robust process for evaluating and maintaining EE and DSM programs. This would provide IPL flexibility in meeting its future capacity and energy requirements.

5.0 ENVIRONMENTAL ASSESSMENT

An important part of an energy master plan is assessing the current condition and factors that may impact a utilities existing power supply. Any electric power plant in the United States is subject to regulations from the EPA under the Clean Air Act and Clean Water Act. Evaluating state of environmental compliance of IPL's existing plants is necessary to determine future operation. The environmental compliance status is then used to determine any costs associated with environmental retrofits or operational restrictions placed on units. Burns & McDonnell completed an environmental assessment of IPL's on-system generation. The assessment found IPL's on-system generation may be subject to the following environmental regulations:

- Effluent limitation guidelines ("ELG")
- Coal Combustion Residue ("CCR") regulations
- Clean Water Act Section 316(b)
- Air regulations as applied through the Clean Air Act, including but not limited to:
    - Cross-State Air Pollution Rule ("CSAPR") requirements
    - National Ambient Air Quality Standards ("NAAQS") for sulfur dioxide ("SO_2"), nitrogen oxides ("NO_x"), ozone ("O_3"), and particulate matter less than 2.5 microns and 10 microns in diameter ("$PM_{2.5}$" and "$PM_{10,}$" respectively)
    - National Emissions Standards for Hazardous Air Pollutants ("NESHAPs") for power plants (Mercury and Air Toxics Standards ("MATS"))
    - Regional Haze Rule ("RHR") and Best Available Retrofit Technology ("BART") requirements
    - Greenhouse Gas ("GHG") regulations

5.1 ELG Regulations

ELG regulations restrict pollutant discharges from ash ponds and limits certain pollutants from flue gas desulfurization ("FGD") scrubber blowdown. These regulations apply to units that actively burn coal. Since IPL's on-system units do not burn coal, IPL's on-system generation is not impacted by the ELG rule.

5.2 CCR Regulations

The final CCR rule establishes a federal minimum standard for disposal of CCR material in surface impoundments and landfills. Since IPL has an existing CCR compliance plan for Blue Valley in place, and IPL's on-system units do not burn coal, additional impacts from the CCR rule are not anticipated and are outside of the scope of this report.

5.3 Clean Water Act Section 316(b) Regulations

The final Clean Water Act Section 316(b) rule establishes were published in 2014. No changes are anticipated to the Clean Water Act Section 316(b) regulations; therefore, no impacts are expected on IPL's on-system generation.

5.4 CSAPR Regulations

CSAPR requires 27 states to reduce power plant emissions that contribute to ozone and fine particle pollution in other states. CSAPR applies to new units and existing electric generating units ("EGU") greater than 25 MW. Reductions in SO_2 and NO_X emissions are required through annual (SO_2 and NO_x) and ozone season (NO_x only) allowances limitations. In the CSAPR regulations, the EPA's approach is based on state-wide SO_2 and NO_X emission budgets. Each state's budget consists of the emissions that the EPA estimates will remain after the state has made the reductions required to reduce its significant contribution to non-attainment and interference with maintenance of the relevant NAAQS in other states in an average year. The EPA established each state's budget by eliminating unit-level allowances, then totaling the unit-level allowances for each state. The allowances are then allocated to affected sources based on the state-wide allowances.

Affected units that do not operate for two consecutive years will continue to receive allowance allocations for a total of up to five years of non-operation. After the fifth year of non-operation, the shutdown unit's allowances will instead be allocated to the state's new unit set-aside or other set-asides.

Blue Valley 3 is the only on-system IPL unit affected by CSAPR and currently receives allowances under the program. Upon non-operation of Blue Valley 3 for two consecutive years, the unit will continue receive allowance allocations for up to five-years of non-operation. In this period the allowances could be transferred to other facilities/units owned by IPL or could be sold to others for profit. After the 5-year window, the allowances for each year will not be allocated to Blue Valley 3. If a new unit is built at the Blue Valley site, the old unit will continue to receive allowances in the 5-year window. The new unit will additionally receive allowances from Missouri's new unit set-aside. If there is overlap between the old unit's 5-year window and the new unit's operation, the retired unit's allocations could be used for additional operation of the new unit or any of IPL's existing units but will still expire in the sixth year of non-operation.

No changes are expected in the foreseeable future to CSAPR regulations. A new generator with a capacity of 25 MW or less or a larger unit that sells less than 219,000 MWh per year to the grid, would not be subject to either CSAPR.

5.5 Acid Rain Program

The Acid Rain Program ("ARP"), established under Title IV of the 1990 Clean Air Act Amendments, requires major emissions reductions of SO_2 and NO_x from the electric power sector. The SO_2 program was phased in with the final 2010 SO_2 cap set at 8.95 million tons and uses a cap-and-trade scheme similar to CSAPR. NO_x reductions under the ARP are achieved through a program that applies to a subset of coal-fired electric generating units. The program is closer to a rate based regulatory system and specifies a maximum acceptable emissions rate. The NO_x program was phased in with the final stage effective in 2000. The second stage sets emission limits for several types of coal-fired boilers. The ARP only applies to electrical generating units that are over 25 MW.

Blue Valley 3 is IPL's only on-system unit affected by ARP and currently receives SO_2 allowances under the program. Blue Valley 3 is additionally held to Phase II NO_x emissions limits. No changes are expected to the ARP, and since Blue Valley 3 burns natural gas, no additional impacts are expected from the ARP.

5.6 National Ambient Air Quality Standards

The EPA is required to set limits on ambient air concentrations for each criteria pollutant (SO_2, NO_2, carbon monoxide ("CO"), O_3, lead, and particulate matter) to protect the public's health and welfare. The EPA is required to review these NAAQS and the latest health data periodically and modify the standards if needed. On January 22, 2010, the EPA finalized a new 1-hour primary NAAQS for NO_2 (100 parts per billion ("ppb")). On June 2, 2010, the EPA finalized a new 1-hour primary NAAQS for SO_2 (75 ppb). At this time, the EPA also rescinded the 140 ppb 24-hour SO_2 standard and the annual 30 ppb SO_2 standard.

At this point, there are no clear driver for additional air quality controls for NAAQS compliance, and therefore do not impact IPL's on-system generation.

5.7 NESHAP for Power Plants

The MATS rule sets standards for all hazardous air pollutants emitted by coal- and oil-fired electric generating units with a capacity of 25 MW or greater. Since IPL has no units fired by coal, and the fuel oil units are below 25 MW, MATS regulations do not impact IPL's on-system units.

5.8 Regional Haze Rule

On July 1, 1999, the EPA issues the Regional Haze Rule (40 CFR Part 51, Subpart P) aimed at protecting visibility in 156 Federal Class I areas. Subsequently, the EPA issued proposed guidelines for determining BART, which provides guidance to states in determining the air pollution controls needed to reduce visibility-impairing pollutants. On July 6, 2005, the EPA finalized amendments to its Regional Haze Rule and its BART Guidelines.

BART is defined as "an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant." BART requirements will apply to facilities that were not yet operating on August 7, 1962 but were in existence (or under construction) on August 7, 1977 (the date of enactment of the Clean Air Act Amendments of 1977) and that have the potential to emit more than 250 tons per year of any visibility-impairing pollutant (SO_2, NO_X, or particulate matter). If any visibility-impairing pollutant is emitted above this threshold level, then that source is BART-eligible. Next, it must be determined whether emissions from a BART-eligible facility are reasonably anticipated to contribute to, or cause, visibility impairment in any Federal Class I area. A BART review is required for each visibility-impairing pollutant. On July 26, 2017, the Missouri Department of Natural Resources issued notification that clarifies Missouri's intentions to address BART requirements through Missouri's federal implementation plan for CSAPR.

5.9 GHG Regulations

Under the Obama Administration, the EPA produced GHG regulations under the Clean Power Plan. The CPP targeted reductions in CO_2 emissions from electric generators and is one of the most controversial regulations from the EPA. The regulation was stayed (postponed indefinitely) by the U.S. Supreme Court as appeals to the rule worked their way through the lower court system. Changes in EPA administration with the election of President Trump have rendered the CPP dormant and short-term impacts of federal CO_2 regulation significantly reduced. The EPA recently proposed the Affordable Clean Energy ("ACE") Rule to replace the CPP. The ACE rule proposes reducing GHG emissions through heat-rate efficiency improvements. The current proposal would allow for efficiency improvements to plants without triggering a New Source Review. Since this is a draft proposal, the plan is subject to change, and requires regulatory approval before implementation. Initial industry reactions contained concern regarding the legality of the rule, and as with any federal regulation, will be subject to litigation and may require time to progress through federal courts. Due to the uncertain status of EPA regulations, the question of long-term CO_2 regulation at the federal level remains unanswered and will be subject to future EPA leadership changes and political climate.

5.10 Title V Operating Permit

As required by Title V of the Clean Air Act, major sources and select minor sources must obtain a Title V Operating Permit. The operating permit is a legally-enforceable document that clarifies what the facility must do to control air pollution for major sources of air pollution (more than 100 tons per year of any pollutant). Title V requires major sources and certain other sources to operate in compliance and have specific compliance demonstrations in place. In addition, Title V sources must certify at least annually compliance with permit requirements. In many states, only Title V sources must pay fees annually, based on the tons of criteria pollutants actually emitted over the past year. In the case of Missouri, intermediate as well as Title V facilities have to pay fees, therefore limiting emissions would not necessarily reduce annual emissions fees, but could result in less compliance requirements for the facilities. Permit renewal fees would be reduced, however, based on the fee structure for Title V versus intermediate operating permit application fees.

5.11 Prevention of Significant Deterioration

All four facilities (Blue Valley and Substations H, I, and J) are currently classified as major facilities for the PSD program, which are regulations that apply in attainment areas to major sources to keep the area in attainment. PSD major facilities also carry extra risk for non-compliance. However, actual emissions at each facility are well below PSD thresholds. If IPL were to implement a permit limit on each facility less than the PSD major source thresholds, then flexibility for future operation increases greatly. While this action would reduce the number of hours the facilities could operate, the facilities would avoid costly environmental retrofits which would greatly impact the financial viability of each facility.

5.11.1 Background on the Prevention of Significant Deterioration Program

PSD air construction permits are required for new major sources or a major source making a major modification in areas that meet the National Ambient Air Quality Standards (attainment areas). Jackson County is in attainment for all pollutants except sulfur dioxide (SO_2); therefore, the PSD program would not apply to SO_2 emissions within Jackson County, but Nonattainment New Source Review (“NNSR”) could apply to SO_2 emissions if a project exceeded the NNSR project thresholds. The discussion that follows is for attainment pollutants.

The first step of PSD applicability is to determine the major source threshold. There are two options: 100 tons per year (“tpy”) for a “listed” source and 250 tpy for a “non-listed” source, for each criterial pollutant. Blue Valley is a listed source since it has fossil fuel-fired boilers totaling more than 250 million British thermal units per hour (“MMBtu/hr”). All three substations (H, I, and J) are non-listed sources (SCGTs).

Once a source is PSD major, future projects are evaluated against the "major project at a major source" thresholds. A PSD minor facility has a much higher threshold before triggering a PSD permit. See Table 5-1.

Table 5-1. PSD Thresholds

Pollutant	Major Source Threshold	Major Project at a Major Source Threshold	Major Project at a Minor Source Threshold
Nitrogen dioxides (NO_x)	100 tpy for a listed source 250 tpy for a non-listed source	40	99 tpy for a listed source 249 tpy for a non-listed source
Sulfur dioxide (SO_2)		40	
Particulate matter less than 10 microns in diameter (PM_{10})		15	
Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)		10	
Carbon monoxide (CO)		100	
Volatile organic compounds (VOC)		40	
Greenhouse gases (GHG) aka carbon dioxide equivalents (CO_2e)	Not applicable	75,000 but only if another pollutant is also above the major project threshold	75,000 but only if another pollutant is also above the major project threshold

5.11.2 Components of a PSD Permit

PSD permits require a case-by-case analysis of add-on controls, an air dispersion model, and public notice, among other complexities. Additionally, PSD major facilities are subject to increased scrutiny when undergoing maintenance and repair projects. "Routine" maintenance is exempt from PSD, but "routine" is not clearly defined. This has led to dozens of EPA multi-million-dollar settlements with utilities for activities such as boiler retubing, controls upgrades, and activities to reduce downtime or increase reliability. PSD permits can take from 12 to over 18 months for issuance.

5.11.3 Benefits of PSD Minor Status

5.11.3.1 Substation CTG Facilities

Projected operation of the CTGs located at IPL substations anticipates the capacity as emergency or peaking and not baseload operation. By taking a PSD minor limit at each substation, the feasible options for future site use increase. The sites will not be at risk for PSD lookback for "routine" modifications. The sites can repurpose or rebuild under a state (non-PSD) construction permit. Compliance with the PSD cap would be demonstrated with 12-month rolling emission calculations using data already collected for each site (hours of operation, fuel usage). New equipment can be installed as long as it complies with state and federal emission limits (such as ultra-low sulfur diesel fuel, low NOx burners, etc. as applicable).

5.11.3.2 Blue Valley Facility

Projected operation of the Blue Valley site anticipates the capacity as emergency or peaking and not baseload operation. This site will achieve the same benefits as listed above for the substation but would also qualify as a Title V minor facility, since the PSD major source and the Title V major source thresholds are both 100 tpy.

5.12 Recommendations for Permitting Modifications

In order to remove uncertainty around the interpretation of "routine" maintenance, Burns & McDonnell recommends IPL re-evaluate the permit for the facilities, pending any retirement decisions. Actual emissions, as listed in the current Title V permit for each facility, are well below PSD major source thresholds even though the potential-to-emit ("PTE") is above the threshold. If the units remain in operation and are not designated for retirement, Burns & McDonnell recommends that IPL apply for a construction permit at each facility to limit emissions below PSD major source thresholds. By taking this action, options for future use of each facility will increase. Each facility could operate with current equipment for approximately 1,000 hours per year before exceeding the PSD major source thresholds, well below the current dispatch levels. Furthermore, IPL could avoid the uncertainty around the interpretation of "routine" maintenance, since the units would no longer be classified as PSD major. A summary table of the PTE thresholds and the actual plant emissions from the 2015 Emissions Inventory Questionnaire (EIQ) is included below in Table 5-2.

Table 5-2. 2015 Emissions Summary

	2015 Emissions (tpy)							
	Blue Valley		Substation H		Substation I		Substation J	
Pollutant	Potential-to-emit	2015 Actual	Potential-to-emit	2015 Actual	Potential-to-emit	2015 Actual	Potential-to-emit	2015 Actual
PM_{10}	35.29	195.2	30.1	1.2	28.6	0.06	28.52	0.04
$PM_{2.5}$	35.29	164.07	29.4	0.35	28	0.05	27.88	0.04
SO_2	2.78	3,119.87[a]	4.54	0.03	4.35	0.05	4.33	0.03
NO_x	790.60[b]	438.12[a]	2,296[b]	17.11	2,183[b]	0.87	2,173.90[b]	0.68
VOC	26.57	2.47	6.21	0.11	1.79	--	1.76	--
CO	111.80[b]	15.94	215.07[b]	4.35	10.14	--	10.1	--
PSD Program Details								
	Blue Valley		Substation H		Substation I		Substation J	
Listed Facility	Yes		No		No		No	
PSD Major Source Threshold (tpy)	100		250		250		250	
Max hours to stay Minor Source	1,108		954		1,003		1,007	

(a) 2015 emissions include coal combustion, which ceased in September 2015. 2016 emissions should be below PSD major source thresholds.
(b) Potential emissions exceed the PSD major source thresholds because emissions are currently unlimited and calculated at 8,760 hours per year.

6.0 TRANSMISSION SYSTEM RELIABILITY

In addition to evaluating power supply options within an energy master plan, it is important to also investigate the potential operating reliability impacts associated with changes within the power generation portfolio. IPL currently operates its transmission system with N-2 contingency reliability, without shedding load, through transmission interconnections with other SPP members and on-system generation resources. An N-2 contingency means the transmission system can withstand two near-simultaneous failures at any point in the bulk electric system and maintain reliable electric service to customers without having to shed load. The NERC standard for Transmission System Planning Performance Requirements (TPL-001-4) specifies the minimum standard for reliability without shedding firm load is an N-1 contingency. Utilities must plan for more extreme events (N-2) and must develop action plans to maintain reliability of the electric grid. Action plans may consist of shedding firm load, system switching, and/or dispatch of generating resources. Planning for an N-2 contingency without shedding firm load is more reliable than the NERC standard.

6.1 Transmission Impacts Study

IPL retained Burns & McDonnell to study the transmission impacts from potential changes in generation resources on the IPL system. The full study is included in Appendix A. The following three scenarios were evaluated to determine the impacts to reliability with changes of the generation resources on the IPL Transmission System:

1. Retire all IPL generation
2. Retire the Blue Valley Plant
3. Retire all CTGs at Sub H, Sub I, and Sub J

As units are retired that are located on IPL's transmission system, IPL will be more reliant on importing power from neighboring areas. Due to this, the retirement of units may require additional investment in transmission infrastructure to maintain the same level of reliability (N-2) that has historically been in place. Without the implementation of additional transmission infrastructure in conjunction with the retirement of the units, IPL may fundamentally be changing its reliability practices to an N-1 scenario. To evaluate this, power flow analysis was conducted on a 2029 Summer Peak condition for each of the scenarios outlined above. The transmission study evaluated the system under various outage conditions to determine the level of reliability. The study found that IPL's system would not be able to continue with N-2 reliability with some generation retired, the degree of which varies across the scenarios. Specific transmission system infrastructure improvements were then identified that would be required to provide

N-2 reliability. Burns & McDonnell estimated costs of associated with transmission upgrades in each scenario, and these costs are utilized within the economic evaluation. The following types of upgrades were identified as potential solutions:

- Rebuild: rebuild transmission lines with higher-rated conductors
- Uprate: upgrade limiting equipment to withstand higher temperatures, power, etc.
- New transformer: install a new transformer on the system
- Capacitor Banks: install capacitor banks to provide reactive power support

Table 6-1 includes the total estimated system upgrade costs for each scenario. The upgrade costs included within Scenario 2 (retiring Blue Valley) are associated with meeting requirements under IPL's existing interconnection agreements with neighboring utilities. The upgrade costs are tied to the retirement of Blue Valley and are required to comply with transmission interconnection agreements.

Table 6-1: Total Estimated System Upgrade Costs

Upgrade	Cost ($MM)		
	Scenario 1 Retire BV & CTGs	Scenario 2 Retire BV	Scenario 3 Retire CTGs
IPL Facilities			
Rebuild	$26.24	$0.00	$14.38
Uprate	$0.42	$0.00	$0.02
New transformer	$3.90	$0.00	$0.00
Capacitor Banks	$2.00	$0.80	$1.20
Affected System Facilities			
New transformer	$3.90	$0.00	$3.90
Total	**$36.46**	**$0.80**	**$19.50**

7.0 CONDITION ASSESSMENT SUMMARY

The following sections provide a summary of the condition assessments performed on the units at Blue Valley, the on-system CTGs, and the Power Production Staffing analysis. Appendix B presents the complete analysis for the Blue Valley Condition Assessment, Appendix C includes the complete analysis for the IPL CTG Condition Assessment, and Appendix D contains the complete IPL Power Production Staffing analysis.

7.1 Blue Valley Condition Assessment

The following sections are based on the observations and analysis from the study included in Appendix B.

7.1.1 Blue Valley Condition Assessment Conclusions

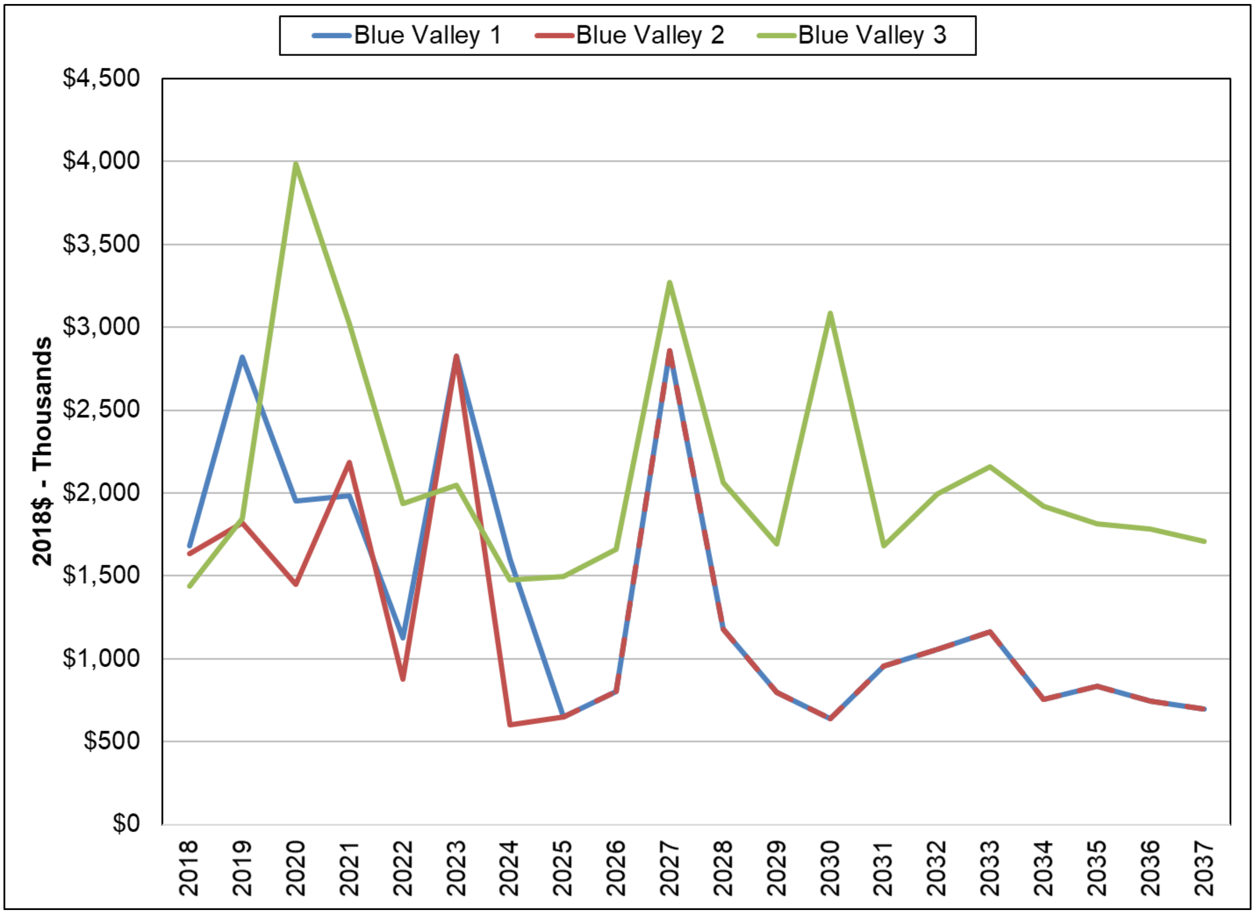
Blue Valley Unit 1 and Unit 2 were placed into commercial service in 1958 while Unit 3 was commissioned in 1965 meaning the newest unit is 53 years old. The typical power plant design assumes a service life of approximately 30 to 40 years, therefore the Units have exceeded the typical service life of a power generation facility. Many power plant operators have extended the service life of units past the design life by replacing or refurbishing many components under routine maintenance procedures. The following conclusions were reached in the condition assessment of the Units at Blue Valley:

- The units appear to have been maintained well, at or exceeding typical industry standards, over the last 50 years to be in as good of condition as the units are presently.
- Some of the major components and equipment for the units will need to be repaired or replaced to provide reliable operation of the units over the next 20 years. If the units are to only operate for the next 10 years, then significantly less project costs will be needed. Finally, if the units are to operate for only 5 more years, then fewer project costs are required, although still significant.
- The units have experienced a significant increase in forced outage rates over the past few years, likely due to changes in operational mode and reduced service hours which impacts the overall calculation of the forced outage rate.
- As indicated within the fleet benchmarking analysis, the facility has significantly higher baseline fixed O&M costs when compared to similar natural gas-fired STG units of comparable age.
- Based on the analysis of the operations and maintenance (“O&M”) costs of STG natural gas units in the U.S. that were used as a comparison in this benchmarking study, overall maintenance costs increase as the units age by roughly 1.5 percent per year, which is to be expected. Burns & McDonnell expects the facility to follow a similar trend.

7.1.2 Blue Valley Capital & Maintenance Cost Forecasts

Appendix B includes the forecasted annual capital and non-labor maintenance costs for Blue Valley Unit 1 through Unit 3 over a 5-year, 10-year, and 20-year operating horizon. These forecasts provide the life-cycle costs for each unit and include savings associated with reduced maintenance spending as units approach their retirement date. For example, the total non-fuel and non-labor costs to continue operation for each of the Blue Valley units is included below in Figure 7-1, assuming a 20-year operating horizon.

Figure 7-1: Blue Valley Forecasted Non-Labor Maintenance and Project Costs



7.2 Combustion Turbine Condition Assessment

The following sections are based on the observations and analysis from the condition assessment of the combustion turbines included in Appendix C.

7.2.1 Combustion Turbine Condition Assessment Conclusions

IPL's CTGs were placed into commercial service between 1968 and 1972 meaning the newest unit is 46 years old. The typical power plant design assumes a service life of approximately 30 to 40 years, therefore the units have exceeded the typical service life of a power generation facility. Many power plant operators have extended the service life of units past the design life by replacing or refurbishing many components under routine maintenance procedures. The following conclusions were reached in the condition assessment of the IPL's CTGs:

- Many of the major components and equipment for the units will need to be repaired or replaced to provide reliable operation of the units over the next 20 years. If the units are to only operate for the next 10 years, then significantly less project costs will be needed. Finally, if the units are to operate for only 5 more years, then very limited project costs are required.
- The reliability of the units is significantly less than the peer benchmark. Burns & McDonnell believes in order to resolve this issue, the units would have to be significantly overhauled from an instrumentation perspective as this has been the root cause for many forced outages.
- As indicated within the fleet benchmarking analysis, the facilities are operating with equivalent forced outage rate and equivalent availability factor metrics that are higher and lower, respectively, than the peer group. This discrepancy is a direct result of the number of service hours on each machine. The benchmarking data also indicates that as power plants age, their overall maintenance costs increase, which is to be expected. Burns & McDonnell expects the Facilities to follow a similar trend.

Based on the information provided to Burns & McDonnell for review, interviews with site personnel, and the site visit, Burns & McDonnell recommends the projects included in Table 7-1.

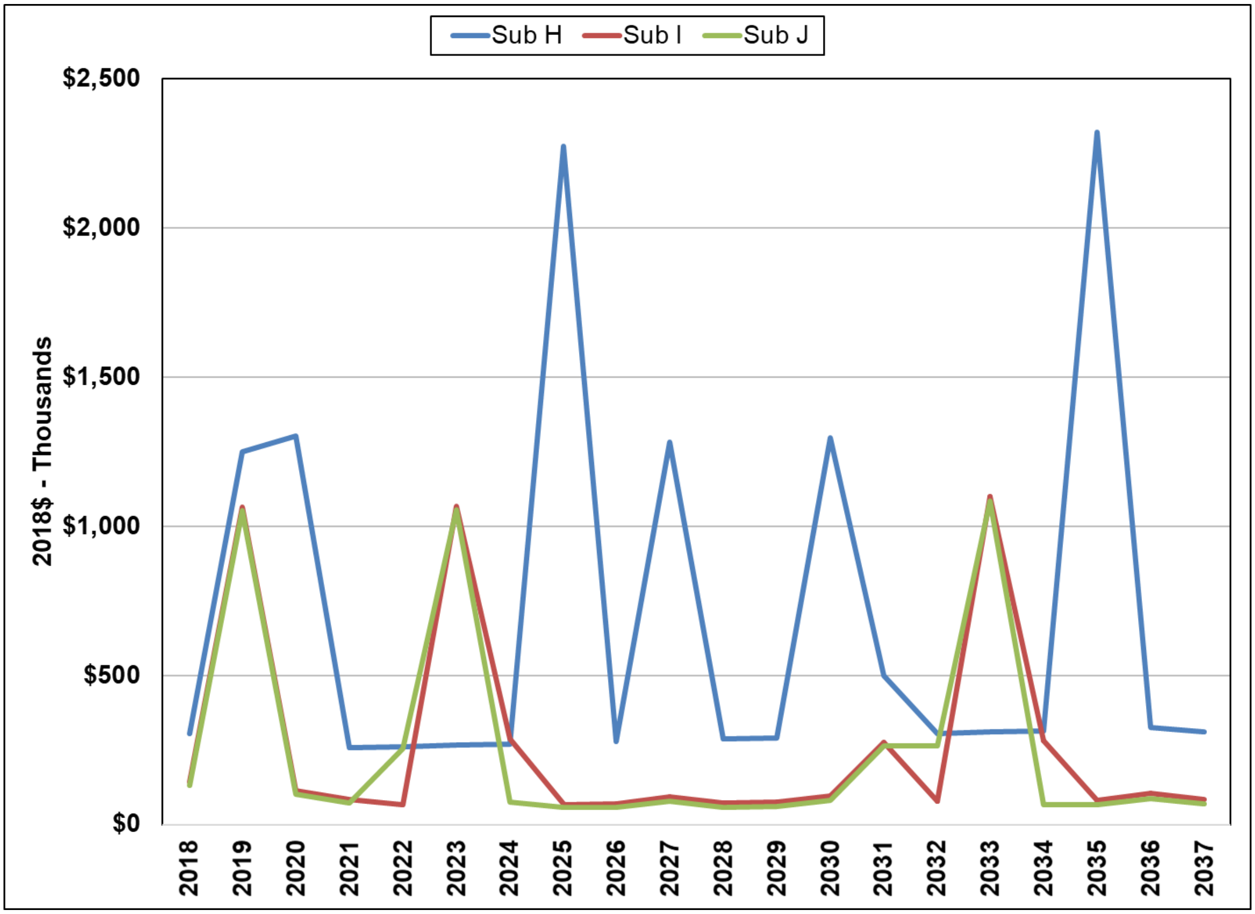
Table 7-1: Substation J, I, and H Major Projects

	Unit					
Horizon/Maintenance Activity	**J1**	**J2**	**I3**	**I4**	**H5**	**H6**
5-Year Operating Horizon						
	No major projects identified					
10-Year Operating Horizon						
Replace the Controls Wiring Harness	X	X	X	X	X	X
Replace Station Batteries	X	X	X	X	X	X
Perform Combustion Inspection					X	X
20-Year Operating Horizon						
Perform a Combustion Inspection	X	X	X	X	X	X
Replace Control System	X	X	X	X	X	X
Perform a Hot Gas Inspection					X	X
Rewind Stator or Field Allowance					X	X

7.2.2 Combustion Turbine Capital & Maintenance Cost Forecasts

Appendix C presents the forecasted annual capital and maintenance costs for the CTGs at Substation H, Substation I, and Substation J over a 5-year, 10-year, and 20-year operating horizon. These forecasts provide the life-cycle costs for each unit, and include savings associated with reduced maintenance spending as units approach their retirement date. The annual forecasted expenses to maintain each of the on-system CTGs for 20 years is included below in Figure 7-2.

Figure 7-2: CTG Forecasted Non-Labor Maintenance and Project Costs



7.3 IPL Plant Staffing Level Analysis

As part of IPL's Energy Master Plan process, Burns & McDonnell performed a Power Production Staffing Benchmarking Analysis to provide recommendations for plant staffing levels for various on-system power production operating scenarios. Labor Path 1, the Business as Usual case, assumes current staffing levels are maintained, Labor Path 2 assumes continued operation of Blue Valley and the Substation CTGs. Labor Path 3 assumes continued operation the Substation CTGs with Blue Valley retired. The staffing levels recommended by this evaluation are included below in Table 7-2. The annual costs associated with each staffing scenario are included in Table 7-3. More details about the IPL Power Production Staffing analysis can be found in Appendix D.

Burns & McDonnell identified three potential staffing paths:

- Labor Path 1
  - Maintain historical staff levels
- Labor Path 2[3]
  - Continued operation of Blue Valley and Substation CTGs
  - Maintain existing staffing
  - Labor expenses gradually reduced in short-term horizon
- Labor Path 3
  - Blue Valley retired end of 2019
  - Maintain existing staffing through retirement of Blue Valley
  - Labor expenses reduced to CTG-only staffing in 2024

Table 7-2: IPL Labor Path Analysis

Staffing Analysis	Labor Path 1	Labor Path 2	Labor Path 3
Labor Path Description	Business-as-Usual	Benchmark Staff STG/CTG Operation	CTG Only Operation
Position Classifications			
Management/Administration/Engineering	9	8	5
Operations	22	22	8
Maintenance	21	13	9
Stores	3	1	1
Fuel	5	0	0
Total	60	44	23

Table 7-3: Annual Labor Path Costs

Scenario	FTEs	Yearly Cost (2018$)
Maintain existing staffing levels	60	$9,056,520
Staffing Alternative 1 (STG/CTG)	44	$6,641,448
Staffing Alternative 2 (CTG)	23	$3,471,666

[3] During the course of the Energy Master Plan, IPL experienced opportunities to allow for similar staffing levels as outlined within Labor Path 2 above. Furthermore, at the conclusion of the Energy Master Plan, the staffing levels for IPL's power production staff were similar to that of Labor Path 2.

8.0 TECHNOLOGY ASSESSMENT

A critical component of an energy master plan is determining the resources that may be able to be developed, constructed, and placed in service. These facilities may be owned by the utility itself or as a minority participant. The intent of a technology assessment is to identify power generation and storage technologies that may be available to a utility and develop cost and performance estimates for each of those technologies, as applicable. The cost and performance information is then used within further economic evaluations to determine the individual technology's fit into the utility's power supply portfolio. The following section provides a summary of the Technology Assessment completed for the Study. Appendix E presents the complete analysis of the Technology Assessment.

8.1 Generation Resource Alternatives

IPL retained Burns & McDonnell to evaluate power generation technologies in support of its Energy Master Plan efforts. The initial phase of the generation Technology Assessment was recently conducted as a screening-level evaluation to provide a comparison of technical features, cost, performance, and emissions characteristics of 1) natural gas-fired options, such as simple cycle, combined cycle, and reciprocating engine plants, 2) renewable resources including wind and solar, and 3) energy storage options including battery storage, pumped-storage hydro, and compressed air energy storage technologies. Each technology has unique characteristics that provide value to a utility's portfolio but are incurred at a cost. Natural gas resources are flexible and can provide peaking, intermediate, and baseload operation, but are dependent on natural gas prices. Generally, costs notwithstanding, renewable resources are good for providing energy, but since they are not dispatchable resources, they are poor sources of capacity. Energy-storage technologies provide the ability to perform energy arbitrage, but pumped-storage hydro and compressed air energy storage ("CAES") require highly-specific geologic conditions.

Compressed air energy storage was considered for the network of limestone mines in the Kansas City metropolitan area. These were deemed not suitable for CAES due to the lack of overburden material, lack of sheer strength, and the mines were not designed to contain fluids/air or accommodate cyclical pressures changes.

Pumped-storage hydropower can have massive environmental implications and risks, requires large construction funds, and is heavily dependent on optimal geographic features such as large rivers and topography with large elevation differences. For these reasons, pumped-storage hydropower is not considered a viable energy storage technology for IPL.

After initial screening based on Burns & McDonnell's experience with planning and project execution, the following resources were selected for further evaluation within this assessment. These technologies provide representative alternatives for meeting IPL's needs, such as capacity, operational flexibility, and project development feasibility, under a variety of portfolio considerations within the economic evaluation:

- SCGT technologies
    - 40-MW aeroderivative SCGT
    - 220-MW F-class frame SCGT
- Reciprocating internal combustion engine ("RICE") technology
    - 2 x 18-MW engine plant
    - 6 x 18-MW engine plant
- CCGT technologies
    - 634-MW 1x1 J-class with duct firing
    - 1,270-MW 2x1 J-class with duct firing
- Battery Storage (15-MW/60-MWh)
- Battery Storage (1-MW/ 1-MWh)

Power production facilities are typically constructed at either greenfield or brownfield sites. A greenfield site is defined as a new site that includes no existing infrastructure such as electrical interconnections, (switchyards and/or substations), natural gas supply lines, or water supply. A brownfield site is defined as an existing power plant site, that in this case, would consist of redeveloping, or repurposing, an existing IPL generation site. The combined cycle option is the only option considered within the assessment that assumes a greenfield site. Due to economies of scale, very large combined cycle units are more economical, but installation is unlikely to occur at an existing IPL generation site. For comparison to other options, it is assumed the large combined cycle unit would be developed and constructed by a third-party with IPL purchasing only a portion of the new unit. For technologies that may be implemented at the Owner's existing sites (i.e. brownfield sites), Burns & McDonnell made adjustments/reductions to the capital costs assuming key infrastructure is already located on-site (gas pipeline, transmission lines, etc.). For the greenfield estimate, an allowance for off-site infrastructure was included within the cost estimate.

Table 8-1 presents a summary of output, heat rate (British thermal units per kilowatt- hour ("Btu/kWh")), estimated capital costs, variable O&M costs, and fixed O&M costs for each of the technologies under evaluation, respectively. This information was gathered from the Technology Assessment located in Appendix E.

Table 8-1: New Generation Resource Performance and Cost Summary

Peaking Resource Performance and Cost Summary				
Category	**40-MW LM6000 SCGT**	**220-MW F-class SCGT**	**2x18MW Recip Engine**	**6x18MW Recip Engine**
Capacity (MW)	40	220	36	108
Heat Rate (Btu/kWh)	9,260	9,870	8,320	8,320
Estimated Capital Costs				
Total Capital Costs (2018 MM$)	$66	$130	$65	$138
Base Plant O&M Costs				
Fixed O&M Cost (2018 MM$/Yr)	$0.6	$0.6	$0.6	$0.8
Major Maintenance Cost (2018$/MWh)	$5.47	$1.78	$1.58	$1.58
Variable O&M Cost (2018$/MWh)	$0.90	$0.90	$5.60	$5.60

New CCGT Resource Performance and Cost Summary		
Category	**1x1 J-Class CCGT Fired**	**2x1 J-Class CCGT Fully Fired**
Capacity (MW)	634	1,270
Heat Rate (Btu/kWh)	6,730	6,700
Estimated Capital Costs		
Total Capital Costs (2018 MM$)	$627	$940
Base Plant O&M Costs		
Fixed O&M Cost (2018 MM$/Yr)	$4.74	$5.35
Major Maintenance Cost (2018$/MWh)	$1.37	$1.28
Variable O&M Cost (2018$/MWh)	$1.81	$1.67
Incremental Duct Fired Variable O&M (2018$/MWh)	$1.39	$1.41

Energy Storage Resource Performance and Cost Summary		
Category	**15 MW / 60 MWh Li-Ion Battery Storage**	**1 MW / 1 MWh Li-Ion Battery Storage**
Capacity (MW)	15	1
Estimated Capital Costs		
Total Capital Costs (2018 MM$)	$34.98	$1.13
Base Plant O&M Costs		
Fixed O&M Cost (2018$/kW-Yr)	$13.34	$34.35
Variable O&M Cost (2018$/MWh)	$3.74	$3.74

8.2 Implications of Repurposing IPL Sites

The option to repurpose one of IPL's existing sites with new units requires considering environmental constraints or permits needed to accommodate the new units.

8.2.1 Environmental Permitting

As discussed in Section 5.0, IPL should apply for a construction permit at each facility to limit emissions below PSD major source thresholds. Applying for this permit for the facilities that will continue to operate in future years will limit the potential risk of PSD lookbacks for modifications to the units.

Depending on the MW to be added to an existing site, a PSD air permit may not be required, especially if shutting down any existing steam units at a facility. The major source threshold for non-steam producing units (such as SCGT or RICE units) is 250 tons per year and once any existing units are shut down, the PSD threshold would become 250 tons of any pollutant. As a minor PSD facility/project, Best Available Control Technology would not be required, but in accordance with Missouri Department of Natural Resource regulations, air dispersion modeling would be likely. Planning for a non-PSD permit in Missouri should be approximately 6 months, including public notice.

9.0 POWER SUPPLY ECONOMIC EVALUATION

An important part of the energy master plan process is developing assumptions and forecasts regarding key variables. Fuel prices have a significant impact on electric utilities and developing a fuel forecast is a key step in developing an energy master plan. The assumptions developed in the following sections were used in the power supply economic evaluation. In addition to assumptions, the following section provides the methodology and results of the power supply economic evaluation.

9.1 General Power Supply Assumptions

The economic evaluation began with the development of baseline assumptions and constraints applicable to IPL. The following general assumptions were used:

- The study period covers years 2019 through 2038
- The study uses calendar years for results and financial reporting
- IPL's 2017 hourly load profile was used as the representative hourly profile throughout the study period with 0.35 percent annual load growth
- The general escalation rate was assumed to be 2.5 percent
- The discount rate was assumed to be 5 percent
- IPL's interest rate for financing was 5 percent
- New resources financed over 30 years
    - Additional Dogwood purchase was financed over 20 years

These assumptions, and others described herein, served as a basis for the power supply evaluation.

9.2 Forecasts

In order to conduct a long-term resource planning assessment for power supply, several forecasts have to be developed for evaluation. For this study, Burns & McDonnell developed key forecasts for fuel costs and market energy costs using reputable publicly available sources. The following sections provide a summary of the forecasts developed and utilized within this Study. Further details of the forecasts are presented in Appendix F.

9.2.1 IPL Proposition C Compliance

IPL currently has contracts for renewable generation from Smoky Hills, Marshall Wind, and on-system solar. The IPL-provided load forecast was used as the basis for IPL retail electric sales and 4 percent was removed from the forecast to account for power system losses. The wind facilities had an assumed capacity factor of 48 percent and the solar facility had an assumed capacity factor of 20 percent. An overview of the forecasted load and renewable generation along with Prop C compliance is included below in Figure 9-1. An additional portion of Prop C includes a solar generation requirement. An overview of the forecasted solar generation requirement versus contracted generation is included below in Figure 9-2. Based on the current load forecast and contracted renewable energy, IPL will be in compliance with the Prop C RES portfolio requirements through the entire planning period (2038) assuming similar wind contracts are executed after the existing contracts expire.

Figure 9-1: IPL Renewable Generation versus Prop C Standard

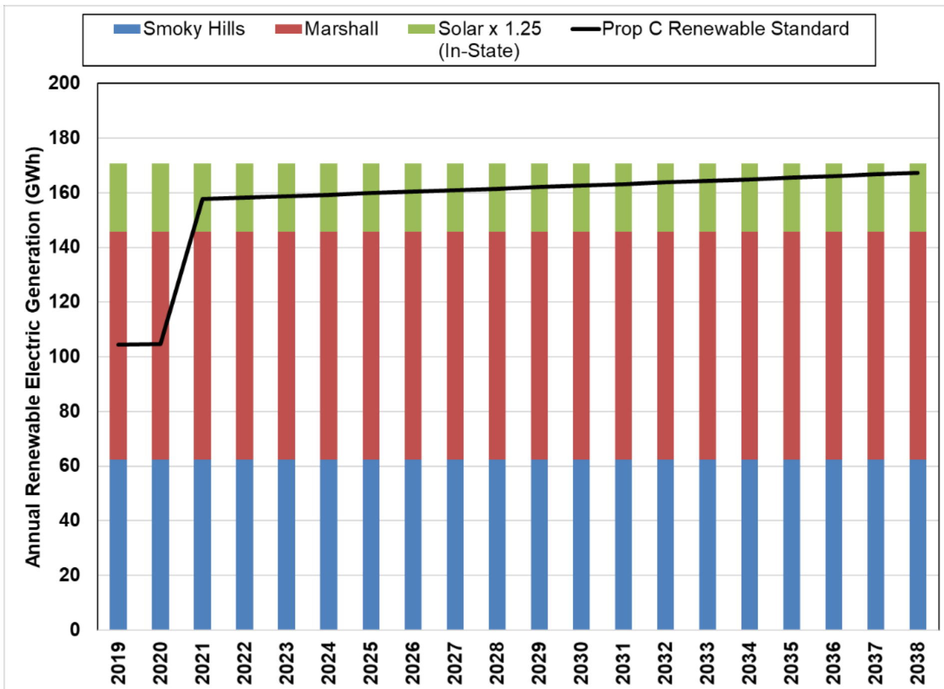
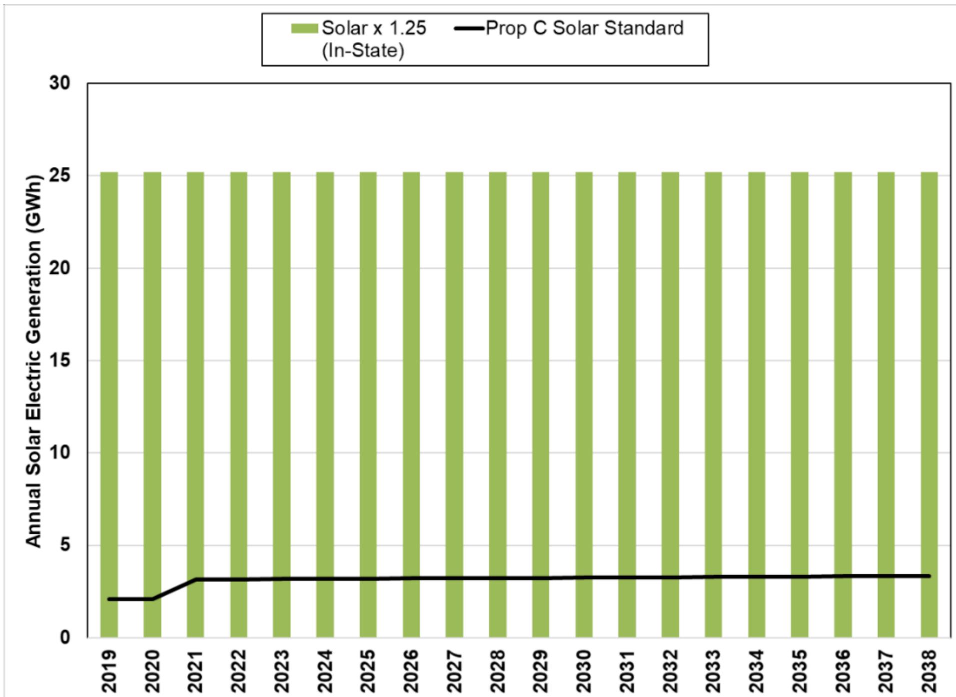


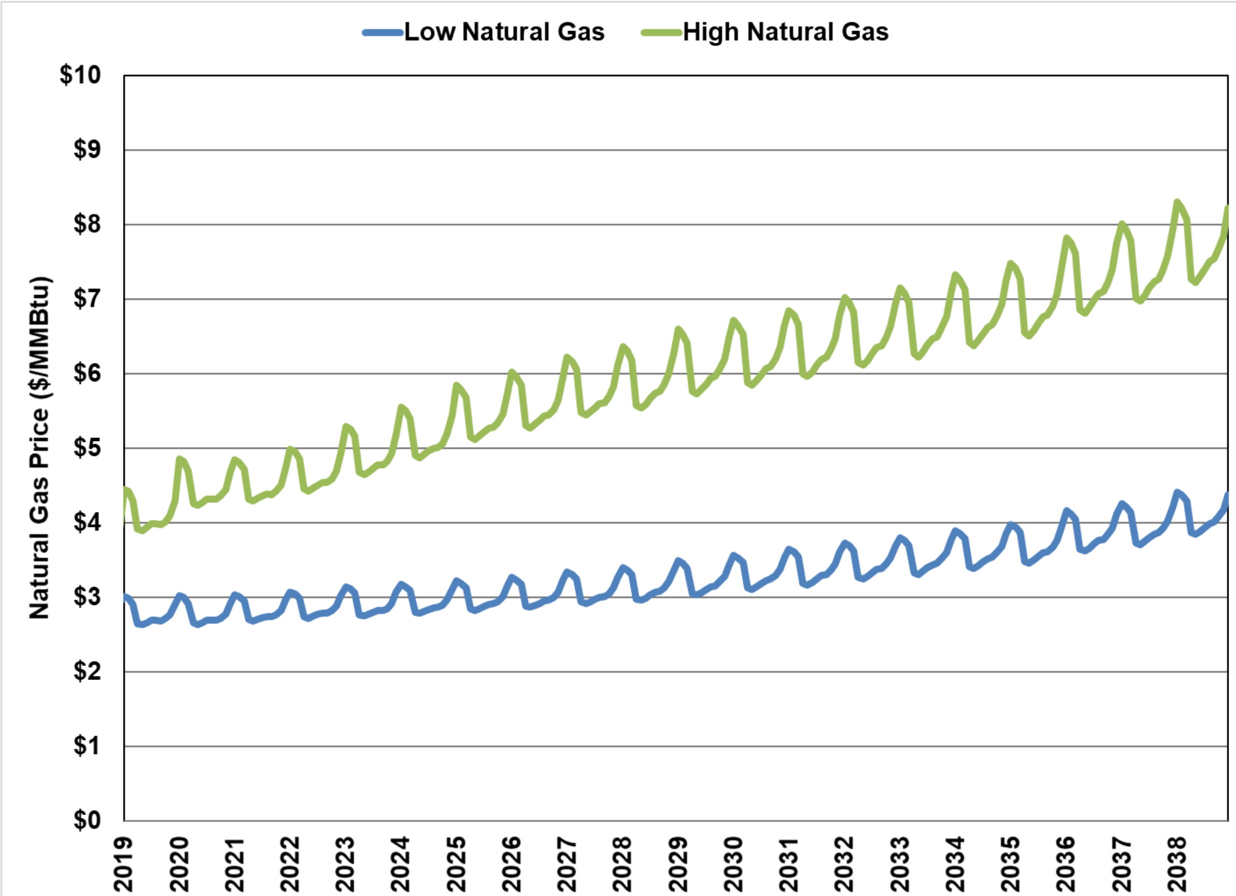
Figure 9-2: IPL Solar Generation versus Prop C Standard



9.2.2 Fuel Cost Forecast

Burns & McDonnell utilized natural gas fuel costs developed by the U.S. Department of Energy's ("DOE") Energy Information Administration ("EIA") and NYMEX. On an annual basis, the EIA publishes an Annual Energy Outlook that provides modeled projections of domestic energy markets through 2050. The AEO is an industry-standard benchmark for utility forecasting. NYMEX is the world's largest physical commodity futures exchange. The NYMEX Henry Hub Natural Gas Futures are the third-largest physical commodity futures contract in the world by volume and are widely used as a national benchmark price for natural gas. Utilizing multiple forecasts that are considerably different provides the ability to assess the resource plans under varying assumptions. Varying natural gas prices was performed as a sensitivity analysis and provides for a more robust evaluation to determine whether one resource path appears more favorable under a different set of economic forecasts. Figure 9-3 presents the low and high Henry Hub natural gas price forecasts. The low forecast used NYMEX forwards through 2030 and then escalated at the same rate as the 2018 Annual Energy Outlook ("2018 AEO"). The high forecast used the 2018 AEO values adjusted to match the monthly profile of the NYMEX forwards. The Henry Hub natural gas forecasts were used as the basis to develop IPL-delivered natural gas forecasts. The IPL-delivered forecasts factored in all the costs associated with transporting natural gas to IPL's system, and these forecasts were used in later modeling.

Figure 9-3: Henry Hub Natural Gas Fuel Cost Forecast



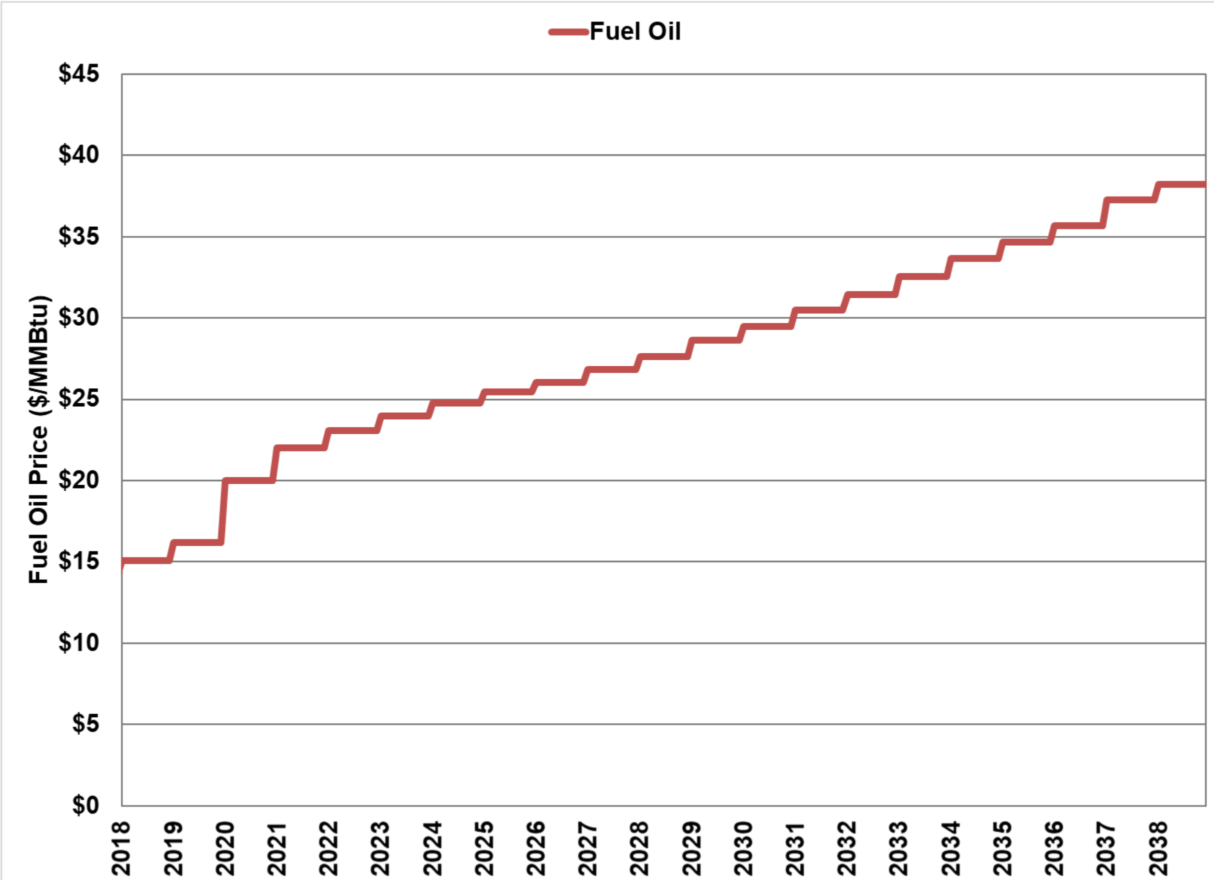
Since a significant portion of IPL's generating capacity and energy is supplied from Iatan 2 and Nebraska City 2, both coal-fired resources, a forecast was developed for the price of delivered coal. The coal forecast was developed from both plant's current delivered price and escalated annually at values from the 2018 AEO coal forecast. The 2018 AEO coal forecast along with the delivered price to Iatan 2 and Nebraska City 2 is included in Figure 9-4. The 2018 AEO coal forecast represents the average price of delivered coal for the US overall. Due to the specific type of coal utilized at Iatan 2 and Nebraska City, IPL incurs coal prices which are significantly less than the national average as illustrated within the forecasts.

Figure 9-4: Coal Fuel Cost Forecast

[redacted]

Since IPL has multiple on-system oil-fired resources, a fuel oil forecast was also developed. Fuel oil is a distillate (direct byproduct) of crude oil and is directly tied to the price of crude oil. Substantial variations in the price of crude oil will directly impact the price of fuel oil. The fuel oil forecast was developed from December 2017 delivered fuel oil prices and escalated annually at inflation values from the 2018 AEO fuel oil forecast. The fuel oil forecast is included below in Figure 9-5.

Figure 9-5: Fuel Oil Cost Forecast



9.2.3 Market Energy Cost Forecast

In addition to developing fuel forecasts, it is important to project anticipated wholesale electricity prices for use within the economic evaluation. Burns & McDonnell developed a wholesale market energy cost forecast using hourly dispatch software (PROMOD nodal) over the 20-year study period.

9.2.3.1 Model Development

PROMOD is security-constrained economic dispatch software used to simulate energy markets. SPP spends significant effort developing future scenarios to assess the overall transmission system and determine potential areas of concern for reliable operation. SPP assesses the impacts to the transmission system considering power plant retirements/additions and load changes. For a member of SPP, it is important to leverage these efforts to maintain consistency between the utility and SPP's planning efforts. Therefore, Burns & McDonnell utilized the 2017 SPP Integrated Transmission Planning 10-Year Assessment ("ITP10") model as a baseline to develop energy market prices for this Study. The ITP10 model has three different futures as outlined below in Table 9-1.

Table 9-1: SPP ITP10 Futures

Driver	Future 1	Future 2	Future 3
CO_2 Regulations reflective of the Clean Power Plan	Yes (Regional compliance)	Yes (State compliance)	No
Low Wind Pricing	Yes	Yes	Yes
Low Natural Gas Prices	Yes	Yes	Yes
Load Growth	Normal	Normal	Normal
Solar Development (Substantial)	Primarily Large Scale	Primarily Large Scale	Large Scale & Rooftop

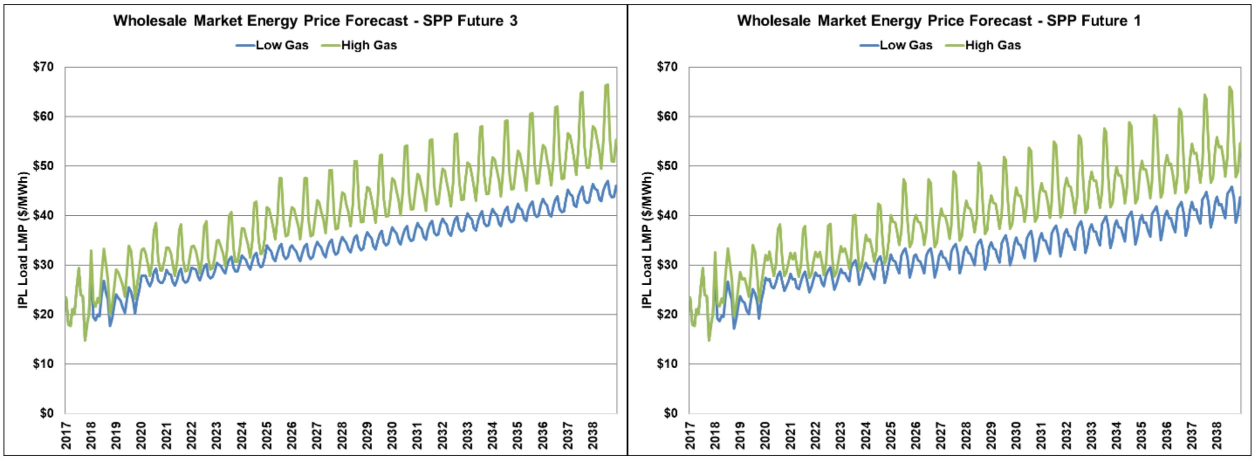
SPP Futures 1 and 3 were used in the IPL Energy Master Plan. The ITP10 model was updated to reflect the fuel and IPL load forecasts previously discussed. Additionally, the carbon emission costs in SPP Future 1 were removed due to the effective dormancy of the CPP. Key aspects of the two futures are as follows:

- SPP Future 3 (Base Case)
  - Reference case and assumes no major changes to existing policies
  - Includes all statutory / regulatory renewable mandates and goals
  - Assumes 4 GW of unit retirements in SPP
  - Assumes low wind pricing and low natural gas costs
- SPP Future 1 (Increased Renewable Case)
  - Includes all of the assumptions of Future 3
  - Assumes substantial large-scale (utility-scale) solar development, with minimal rooftop solar development
  - Additional 1 GW of unit retirements in SPP

These futures provide a contrasting view of future market conditions within SPP. The low and high natural gas price forecasts were utilized to develop a corresponding market energy forecast. For both futures, PROMOD nodal analysis was run for the two model years available, 2020 and 2025. A PROMOD analysis was performed for each gas price forecast and future (eight runs total). The market energy prices for the remainder of the 20-year study were interpolated and extrapolated, an industry standard method.

Figure 9-6 presents the market energy cost forecast for each SPP future utilized within this assessment. The reported prices are at IPL's load hub within SPP and are indicative of what IPL would pay for wholesale energy. These market forecasts served as the basis for the economic dispatch of the power supply options under consideration. Currently, natural gas prices have the largest impact on wholesale energy prices. Between the two futures evaluated, SPP Future 1 (increased renewables) features higher peak values than SPP Future 3 (base future). This is associated with baseload generation in SPP Future 1 being replaced with peaking capacity and renewable generation. On an average basis, the two futures had similar wholesale energy price forecasts for IPL's load zone.

Figure 9-6: Base Market Energy Cost Forecast



9.2.4 Future Development

When evaluating long-term power supply resource plans, several "futures" are typically developed to account for different assumptions or market environments. Burns & McDonnell and IPL developed five futures for consideration within this Energy Master Plan, which are described in Table 9-2. These futures were used in the economic analyses discussed in Section 10.0 and 11.0. These futures represent variations in key input variables and were used to evaluate the robustness of potential power supply paths.

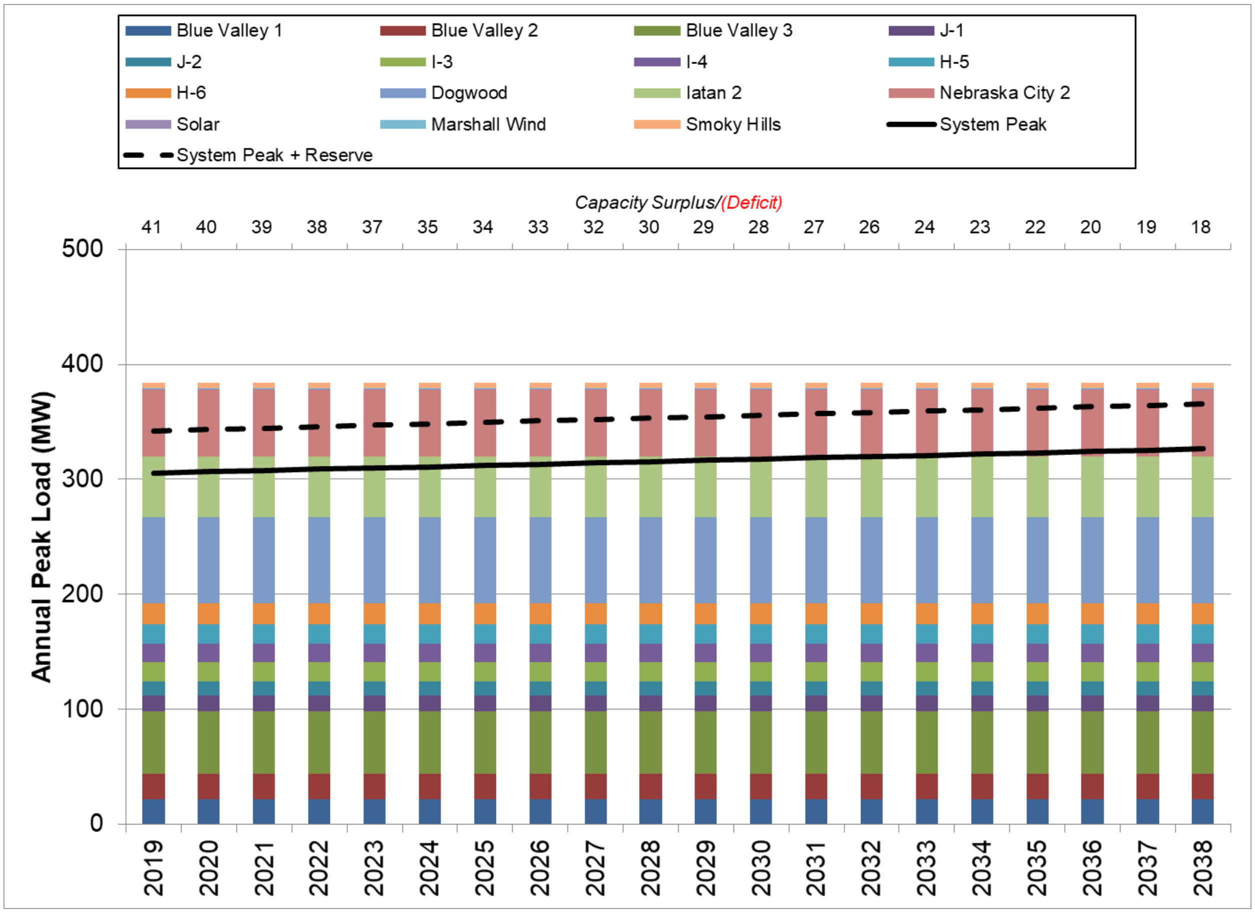
Table 9-2: Future Summary

Future	Market Forecast	Gas Forecast	IPL Load Forecast	Description
Base - Low Gas	SPP Future 3	Low	Base	Represents the base future with continued low natural gas prices
Base - High Gas	SPP Future 3	High	Base	Represents the base future with high natural gas prices
Increased Renewable - Low Gas	SPP Future 1	Low	Base	Represents a future with increased renewable adoption and low natural gas prices
Increased Renewable - High Gas	SPP Future 1	High	Base	Represents a future with increased renewable adoption and high natural gas prices
Base - Low Gas & No Load Growth	SPP Future 3	Low	Low (Flat)	Represents a future with increased renewable adoption, low natural gas prices, and no load growth for IPL

9.3 Balance of Loads and Resources

As described above in Section 4.0, IPL currently utilizes a diversified portfolio of numerous resources to meet its capacity reserve margin requirements defined by SPP. A BLR based on the load forecast and resources that IPL will have available to meet its obligations are presented in Figure 9-7. IPL must maintain a reserve margin of 12 percent, a number which is prescribed by SPP. Based on existing resources and current load projections, IPL would have sufficient capacity through the planning horizon assuming the power supply portfolio does not change. The surplus is approximately 40 MW in 2019 and diminishes to 18 MW by the end of the study period in 2038.

Figure 9-7: IPL Balance of Loads and Resources



9.4 Power Supply Alternatives Considered

The following sections detail the pre-screen performed to narrow power supply alternatives.

9.4.1 Existing On-System Generation

When a utility's existing resources are potentially nearing the end of their useful life, the ongoing costs to maintain the facilities must be evaluated against new resource alternatives. For this assessment, Burns & McDonnell evaluated the ongoing operation and maintenance costs of continuing to operate Blue Valley and the combustion turbines as well as their retirement.

9.4.2 New-Build Generation

As previously mentioned in the technology assessment in Section 8.0, multiple types of new generation are available for an on-system addition. The following types of new-build generation were considered for addition to IPL's system:

- SCGT technologies
  - 40-MW aeroderivative SCGT
  - 220-MW F-class frame SCGT
- RICE technology
  - 2 x 18-MW engine plant
  - 6 x 18-MW engine plant
- CCGT technologies
  - 634-MW 1x1 J-class with duct firing
  - 1,270-MW 2x1 J-class with duct firing
- Battery Storage (15-MW/60-MWh)
- Battery Storage (1-MW/ 1-MWh)

Table 8-1 presents detailed specifications regarding each unit considered as well as projected costs.

9.4.3 Purchase Additional Share of Dogwood Energy Facility

IPL has the option to purchase an additional share of the Dogwood Energy Facility. This option provides the opportunity for IPL to add efficient natural gas generation to its portfolio at a relatively low-cost.

The current offer from Dogwood Energy LLC is for the opportunity to purchase a fractional ownership of up to 16.3 percent of the Dogwood Energy Facility (100 MW). The ownership share is offered at $[redacted]/kW (100 MW at $[redacted]). An additional $[redacted] (estimated for 100 MW) would be required for IPL to cover its share of working capital, and $[redacted] (estimated for 100 MW) would be required to prepay the remaining Payment in Lieu of Property Taxes ("PILOT"). This comes to a total of $[redacted]/kW (100 MW at $[redacted]).

9.4.4 Reciprocating Engine Proposal

IPL was approached by Southern Power Company ("SPC"), the merchant power division of Southern Company, with a PPA proposal for a new reciprocating engine facility in Bryan County, Oklahoma. The proposed terms allow for a PPA for up to 441.7 MW of capacity. The proposal contained escalating and fixed capacity price options. The costs were $[redacted]/kW-year escalating at [redacted] percent or $[redacted]/kW-year fixed throughout the term of the PPA. The proposal also included a non-fuel variable O&M charge of $[redacted]/MWh. The total cost of this plant would be the fixed capacity cost plus the variable O&M costs, along with the fuel costs incurred by the plant. Energy from this plant would be sold into the SPP wholesale energy market and IPL would receive its share of revenues.

A major concern with this proposal is the distance from IPL's system. Bryan County, Oklahoma is over 300 miles from Independence, Missouri. Securing firm transmission from the plant's prospective location to IPL's system may be necessary for IPL to receive capacity credit from this facility and add additional costs that are not included within the PPA price and would require further detailed evaluation.

9.4.5 All Requirements Contract

At IPL's request, Burns & McDonnell explored the option of IPL becoming a "Full Requirements" customer of another regional utility. This request was due to the high cost of maintaining IPL's existing generating resources and the high cost of replacing these resources with more efficient resources. This option would likely require changing IPL's transmission owner status in SPP and changes in NERC responsibilities.

While this option would eliminate the high on-system costs, there are many barriers to pursuing this option. Additionally, few entities can provide all the services required under an all requirements contract. This limits the ability to lower costs through competing bids and holds IPL vulnerable to large, neighboring utilities. IPL would lose the ability to enter contracts to hedge against volatility in electric markets. The contractual tie under an all requirements contract also holds IPL accountable for any cost increases incurred by the contracting party and leaves IPL with little ability to control costs and limited bargaining power. Overall, the flexibility IPL loses under an all requirements contract exposes IPL's customers to an external party's interests. Lastly, a barrier to pursuing this option is IPL's existing long-term (life-of-unit) contracts at Dogwood, Iatan 2, and Nebraska City 2 along with its other long-term energy supply commitments. These contracts would effectively render an all requirements contract a partial requirements contract, without the flexibility of a partial requirements contract.

9.4.6 Partial Requirements Contract

Under a partial requirements contract, IPL would seek to cover any deficit between existing contracted generation and forecasted requirements. The loss of flexibility with a partial requirements contract mirrors the concerns of an all requirements contract. Compared to a bilateral contract, a partial requirements contract has increased flexibility from an energy and a capacity viewpoint, but the increased flexibility typically comes at an increased cost. Depending on IPL's requirements, the additional costs associated with pursuing a partial requirements contract may be prohibitive. Given IPL's desire to evaluate alternative generating portfolios in the Energy Master Plan, partial requirements contracts were evaluated in the portfolio analysis.

Based upon existing contracts held by similar utilities, one option had a capacity price of approximately $10 per kilowatt-month (“kW-month”). A Peaking PPA was also evaluated with a capacity price of $5/kW-month to $6/kW-month, and a call-option with a 10,500 Btu/kWh heat rate and $3/MWh variable O&M. This option is another form of a partial requirements contract and provides additional flexibility by being able to “call” on a resource as an energy hedge.

9.5 Evaluation of Power Supply Alternatives

Prior to conducting the dispatch simulation, Burns & McDonnell performed a screening of the alternatives to eliminate power supply options that were not as favorable as others. The remaining options would be utilized within the portfolio optimization model. This served to remove options from further consideration that were deemed infeasible on cost or qualitative metrics.

9.5.1 Qualitative Screening

Prior to conducting the economic screening, several alternatives were eliminated for various reasons including cost, lack of feasibility, and development status. The following power supply alternatives were removed from further consideration within the portfolio optimization:

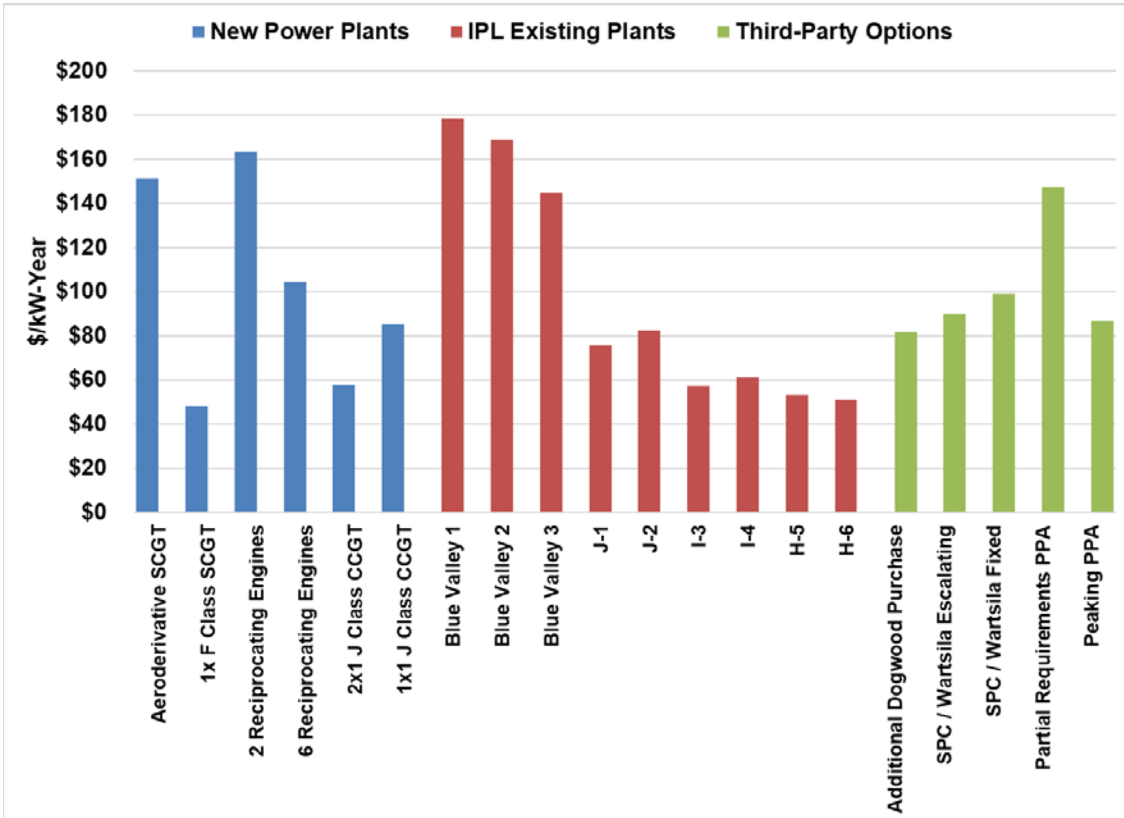
1. Compressed air energy storage: As previously mentioned in the Technology Assessment, CAES was deemed infeasible due to geologic incompatibility.
2. Pumped hydroelectric storage: As previously mentioned in the Technology Assessment, pumped-storage hydropower was deemed infeasible due to high costs and lack of suitable geology.
3. Battery storage: Battery storage was also removed from further consideration due to multiple constraints, including both financial and technological. SPP and energy markets in general are in the process of developing financial tariffs to compensate battery storage for the range of potential services that can be offered by the technology. Battery technology is evolving, and energy markets have not yet formed a financial mechanism to capture the benefits that battery storage technology is anticipated to have. Additionally, the technology is still under development. There is not a significant amount of large-scale battery storage with extensive operating history. Thus, the projections for items such as operation and maintenance costs, cycle degradation, and battery replacements will be vetted through increased experience as the industry implements more battery storage facilities. The majority of existing battery-storage installations are pilot projects or experimental facilities within investor-owned utilities’ portfolios. As the market for battery storage matures, an opportunity may arise for IPL to consider these facilities in the future, but in its current state, the unknown risks associated with battery storage are a barrier to their adoption within IPL’s portfolio.

4. Renewable resources: The power supply portfolio will include enough renewable energy for IPL to meet its renewable energy goals associated with complying with the State of Missouri's Prop C initiative. However, due to IPL's need for capacity resources, rather than energy resources, the focus of the remaining portfolio was evaluating the addition of firm capacity. Due to the intermittency of wind and solar generation, they receive only a portion of their total installed capacity as credit for meeting reserve margins, these resources were eliminated from further consideration. Renewable energy resources can provide economical energy; however, they are not a reliable source of firm capacity.

9.5.2 Economic Screening

A levelized cost of capacity ("LCOC") analysis was performed to gauge the relative costs of the remaining alternatives based on a high-level economic evaluation. The LCOC represents the present value of the total cost of operating a generating plant at an expected capacity factor over the 20-year study period divided by its accredited capacity. Each of IPL's existing units were included in the LCOC analysis along with the power supply alternatives previously mentioned. LCOC includes fixed, variable (including fuel), and debt service expenses as well as projected wholesale market energy revenues. The partial requirements contracts were assumed to have no energy expenses since IPL purchases its energy from SPP. These contracts would additionally be the last to dispatch and thus were assumed to only generate revenue to cover their variable dispatch costs. A chart including the LCOC for each evaluated option is included below in Figure 9-8.

Figure 9-8: 20-Year Levelized Cost of Capacity



Based on a review of the results presented in Figure 9-8, the following conclusions and observations are presented:

- Aeroderivative SCGT and reciprocating engines are two resources that IPL could build on-system
  - o Reciprocating engines have more operational flexibility and a lower projected LCOC (6 reciprocating engines) than aeroderivative SCGTs
- 1x F-Class SCGT provides low-cost capacity, but it is likely too large (220 MW) for IPL to consider building on-system
  - o These may be a potential option for third-party developments
- The CCGT options, either 1x1 (634 MW) or 2x1 (1,270 MW) J-Class, are far too large for IPL to consider implementing on its system, and would require IPL's participation within a third-party development
- The Blue Valley units are a high-cost source of capacity compared to the other alternatives evaluated
- IPL's existing on-system CTGs provide low-cost capacity compared to the other alternatives evaluated

- An additional share of Dogwood provides a lower-cost source of capacity
  - This option also has reduced capital investment compared to new-build generation
  - This offer has flexibility in the amount of capacity purchased unlike most new-build generation
- The SPC proposal is for a reciprocating engine plant located in Oklahoma, which is far from IPL's system and may experience transmission costs that have not been included within this high-level assessment
- The partial requirements contract is one of the highest cost options
- The peaking PPA provides an attractive solution for sourcing capacity compared to the Blue Valley units and other resource alternatives
  - These can be highly flexible arrangements and may be tailored to specifically meet IPL's needs

Some of these alternatives were eliminated from further consideration based on either economics or practicality of being implemented by IPL. The units that are too large for IPL's needs could be reconsidered if IPL issues an RFP and receives offers for partial ownership opportunities or power purchase agreements. Therefore, the large SCGT and CCGT options were eliminated from further consideration. The partial requirements option was eliminated due to its high costs compared to other alternatives.

Taking the aforementioned conclusions into consideration, the following power supply alternatives were carried forward as options the Power Supply Portfolio Optimization model, used in Section 10.0:

- IPL's existing on-system units
  - Blue Valley 1 - 3
  - Substation I-1 and I-2
  - Substation J-3 and J-4
  - Substation H-5 and H-6
- The following new-build generation options:
  - 40 MW LM6000 aeroderivative SCGT
  - 2 x 18-MW RICE plant
  - 6 x 18-MW RICE plant
- Additional share of Dogwood Energy Facility
- Short-term capacity contracts (proxy for peaking PPA contracts)

10.0 POWER SUPPLY PORTFOLIO OPTIMIZATION

10.1 Introduction

To gain a more focused view of potential retirements and capacity additions, Burns & McDonnell utilized a capacity expansion optimization software, called Strategist, to evaluate thousands of potential power supply portfolios. Strategist is comprised of several different analysis modules that allow for dynamic optimization of supply-side resource against load requirements. Strategist uses reserve margin logic to evaluate expansion plans, or potential retirements, over a defined period of time. Typically, the objective is to minimize utility cost. Strategist evaluates the overall power supply needs (capacity and energy) against the power supply resource alternative available to meet those needs. Strategist will evaluate the ongoing cost of operation for existing resources and investment in new resources against the overall benefits of capacity and energy while incorporating interactions with the SPP market. The model considered the ability to avoid ongoing costs by retiring the unit(s).

The results of the modeling provide unique power supply portfolios considering the retirement of existing units and addition of new resources ranked by the overall net present value for power supply costs over the 20-year study period. These power supply portfolios dictate target retirement dates of plants and installation dates for new units based on economics.

Burns & McDonnell and IPL developed several scenarios for evaluation that provide a comprehensive evaluation of IPL’s power supply portfolio. The following sections discuss power supply portfolio optimization performed as part of IPL’s Energy Master Plan.

10.2 Power Supply Portfolio Development Assumptions

Based on the evaluations conducted in the previous sections, Burns & McDonnell and IPL developed assumptions to specifically evaluate the impacts to the overall power supply portfolio. As stated previously, this was a comprehensive review considering retirements and capacity additions. In order to effectively develop power supply portfolios, a number of assumptions needed to be developed in addition to those already established in previous sections. The following provides a brief description of assumptions that were specifically developed for the power supply portfolio assessment:

1. SPP Future 3 with the low gas forecast derived market prices served as the basis for the optimization evaluation
    a. SPP Future 3 with the high gas forecast derived market prices were also utilized as a sensitivity

2. The assessment considered planning reserve margins based on IPL's summer peak demand and unit capacity ratings with a 12 percent reserve margin
3. The analysis assumed that all capacity deficits to meet planning reserve margins could be satisfied through IPL's existing generation fleet, new self-build options, off-system resources, or short-term capacity purchases
4. The following new resources were considered within the assessment:
   a. Brownfield reciprocating engine facility
   b. Brownfield aeroderivative SCGT
   c. Additional Dogwood ownership
   d. Short-term capacity purchases
5. The evaluation was conducted assuming IPL would not have the opportunity for capacity sales in excess of reserve margin planning requirements
6. The evaluation considered numerous combinations of potential retirements of some or all of IPL's existing on-system resources

10.3 Power Supply Paths

Burns & McDonnell used an iterative modeling approach to develop various power supply paths for meeting IPL's power supply requirements. The initial round of modeling focused on evaluating potential retirement scenarios for IPL's existing units. The Strategist model was given the flexibility to retire any of IPL's on-system units throughout the evaluation period and replace any retired generation with alternatives outlined in Section 9.5.2. The preliminary results from the power supply optimization indicated retirement of the units at Blue Valley as early as possible was economically attractive. Based on these results, another round of modeling was performed to develop alternative scenarios that included the retirement of existing Blue Valley generation. In this round of modeling, Strategist was configured to optimize IPL's portfolio with a predefined retirement of Blue Valley in 2019. The secondary set of Strategist results indicated two additional retirement scenarios for IPL's power supply. The first involved retiring Blue Valley in 2019 and retiring all of IPL's on-system combustion turbines in 2023. The second scenario involved retiring Blue Valley in 2019 and stagger retirement of IPL's on-system combustion turbines starting in 2023. Additionally, a Business-as-Usual scenario was selected to represent the cost of maintaining IPL's existing power supply and function as a baseline. A summary of the power supply retirement scenarios selected for further evaluation is included below in Table 10-1.

Table 10-1: Power Supply Retirement Scenario

Scenario	Description
Scenario 1: Business as Usual	Maintain and operate all on-system units through the study period.
Scenario 2: Retire Blue Valley	Retire Blue Valley units and maintain on-system CTGs.
Scenario 3: Retire BV & CTGs	Retire all on-system generation. Blue Valley is retired in 2019, and CTGs are retired concurrently in 2023.
Scenario 4: Retire BV & Staggered CTG Retirement	Retire all on-system generation. Blue Valley is retired in 2019, and staggered CTG retirement beginning in 2023.

Throughout the first sets of Strategist results, the lowest cost option to build on-system generation was installing RICE units. On-system additions were assumed to either be a 2 x 18-MW RICE facility or a 6 x 18-MW RICE facility in future iterations. The existing proposal from Dogwood Energy Facility is only valid through December 1, 2018, so the option of acquiring an additional share of Dogwood Energy Facility was only considered valid for one year (commission date approximately a year after proposal deadline, January 1, 2020). Burns & McDonnell and IPL developed two different levels of additional capacity purchased from Dogwood Energy Facility. The evaluated levels were for 25 MW or 50 MW. These capacities were determined based upon capacity deficits throughout the study period that were triggered by IPL on-system retirements.

Taking these details into consideration, Burns & McDonnell developed 13 unique power supply paths to represent a diverse collection of potential power supply portfolios. These 13 paths are included below in Table 10-2 and were developed from the retirement scenarios, labor paths, and generation alternatives previously discussed. (note: short-term capacity purchases are not illustrated within the table below).

Table 10-2: Power Supply Paths

	Labor Path	Retirement Scenario	BV Retirement	CTG Retirement	Dogwood Purchase	On-System Additions
Path 1	Business As Usual	Business as Usual				
Path 2	Benchmark Staff STG/CTG Operation	Business as Usual				
Path 3	CTG Only Operation	Retire BV	2019			
Path 4	CTG Only Operation	Retire BV	2019		25 MW	
Path 5	CTG Only Operation	Retire BV	2019		50 MW	
Path 6	CTG Only Operation	Retire BV	2019			110 MW RICE
Path 7	CTG Only Operation	Retire BV	2019	Sub I: 2023	50 MW	37 MW RICE
Path 8	CTG Only Operation	Retire BV & CTGs	2019	All CTGs: 2023	50 MW	
Path 9	CTG Only Operation	Retire BV & CTGs	2019	All CTGs: 2023		110 MW RICE
Path 10	CTG Only Operation	Retire BV & CTGs	2019	All CTGs: 2023	25 MW	110 MW RICE
Path 11	CTG Only Operation	Retire BV & CTGs	2019	All CTGs: 2023	50 MW	37 MW RICE
Path 12	CTG Only Operation	Retire BV & Staggered CTG Retirement	2019	1xCTG Plant: 2023 1xCTG Plant: 2028 1xCTG Plant: 2033		Staggered 3 x 37-MW RICE
Path 13	CTG Only Operation	Retire BV & Staggered CTG Retirement	2019	1xCTG Plant: 2023 1xCTG Plant: 2028 1xCTG Plant: 2033		

10.4 Power Supply Portfolio Analysis

The power supply portfolio analysis combined the individual evaluations described within previous sections. Burns & McDonnell utilized the Strategist model to allow for the optimization of overall power supply costs within the SPP-served IPL load area. The optimization software develops unique resource portfolios considering both retirements and capacity additions. The software optimizes around the overall net present value for power supply costs. The power supply costs include:

- Costs to serve IPL’s load with energy from the SPP wholesale market
- Generation costs such as fuel, variable O&M, and fixed O&M for all power supply resources included within IPL’s portfolio including existing plants, PPAs, and new resources
- Costs associated with environmental compliance and capital investment for new and existing resources

- Revenues from selling energy into the SPP wholesale market
- Costs associated with capacity purchases

Table 10-3 presents the net present value ("NPV") of power supply costs for each portfolio developed in the previous section. The table presents the NPV of power supply costs generated by Strategist using base case assumptions (low natural gas and wholesale energy prices). The NPV of power supply costs are highlighted within a heat map to better differentiate the low and high cost portfolios. The lower cost portfolios are highlighted in green and the higher cost portfolios are highlighted in red. Some of the paths evaluated required transmission network upgrades to maintain N-2 reliability, without shedding load, on IPL's system. Costs associated with these transmission network upgrades are also presented in the table. Table 10-4 presents a sensitivity of the NPV of power supply costs for each portfolio with high natural gas and wholesale energy prices.

Table 10-3: Power Supply Costs - Low Gas

Independence Power & Light - 2018 Energy Master Plan
Low Natural Gas and Market Prices

	Path 1	Path 2	Path 3	Path 4	Path 5	Path 6	Path 7	Path 8	Path 9	Path 10	Path 11	Path 12	Path 13
Path	**Business As Usual**	**Business As Usual**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV & Staggered CTG Retirement**	**Retire BV & Staggered CTG Retirement**
Labor	*Existing Staff*	*Benchmark Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*
2019			**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**
2020			60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	60 MW Capacity
2021			60 MW Capacity	35 MW Capacity	10 MW Capacity	60 MW Capacity	10 MW Capacity	10 MW Capacity	60 MW Capacity	35 MW Capacity	10 MW Capacity	60 MW Capacity	60 MW Capacity
2022			65 MW Capacity	40 MW Capacity	15 MW Capacity	65 MW Capacity	15 MW Capacity	15 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	65 MW Capacity	65 MW Capacity
2023			65 MW Capacity	40 MW Capacity	15 MW Capacity	65 MW Capacity	15 MW Capacity **Retire One CTG Plant**	15 MW Capacity **Retire 94 MW CTGs**	65 MW Capacity **Retire 94 MW CTGs**	40 MW Capacity **Retire 94 MW CTGs**	15 MW Capacity **Retire 94 MW CTGs**	65 MW Capacity **Retire One CTG Plant**	65 MW Capacity **Retire One CTG Plant**
2024			65 MW Capacity	40 MW Capacity	15 MW Capacity	**110 MW 6xRecips**	**37 MW 2xRecips** 10 MW Capacity	110 MW Capacity	**110 MW 6xRecips** 50 MW Capacity	**110 MW 6xRecips** 25 MW Capacity	**37 MW 2xRecips** 70 MW Capacity	**37 MW 2xRecips** 65 MW Capacity	100 MW Capacity
2025			65 MW Capacity	40 MW Capacity	15 MW Capacity		15 MW Capacity	110 MW Capacity	50 MW Capacity	25 MW Capacity	75 MW Capacity	65 MW Capacity	100 MW Capacity
2026			70 MW Capacity	45 MW Capacity	20 MW Capacity		15 MW Capacity	110 MW Capacity	50 MW Capacity	25 MW Capacity	75 MW Capacity	65 MW Capacity	105 MW Capacity
2027			70 MW Capacity	45 MW Capacity	20 MW Capacity		15 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	75 MW Capacity	65 MW Capacity	105 MW Capacity
2028			70 MW Capacity	45 MW Capacity	20 MW Capacity		15 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	75 MW Capacity	70 MW Capacity **Retire One CTG Plant**	105 MW Capacity **Retire One CTG Plant**
2029			70 MW Capacity	45 MW Capacity	20 MW Capacity		20 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	80 MW Capacity	**37 MW 2xRecips** 65 MW Capacity	140 MW Capacity
2030			75 MW Capacity	50 MW Capacity	25 MW Capacity		20 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	80 MW Capacity	65 MW Capacity	140 MW Capacity
2031			75 MW Capacity	50 MW Capacity	25 MW Capacity		20 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	80 MW Capacity	70 MW Capacity	140 MW Capacity
2032			75 MW Capacity	50 MW Capacity	25 MW Capacity		20 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	80 MW Capacity	70 MW Capacity	145 MW Capacity
2033			75 MW Capacity	50 MW Capacity	25 MW Capacity		25 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	85 MW Capacity	70 MW Capacity **Retire One CTG Plant**	145 MW Capacity **Retire One CTG Plant**
2034			80 MW Capacity	55 MW Capacity	30 MW Capacity		25 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	85 MW Capacity	**37 MW 2xRecips** 60 MW Capacity	170 MW Capacity
2035			80 MW Capacity	55 MW Capacity	30 MW Capacity		25 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	85 MW Capacity	65 MW Capacity	175 MW Capacity
2036			80 MW Capacity	55 MW Capacity	30 MW Capacity		25 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	85 MW Capacity	65 MW Capacity	175 MW Capacity
2037			80 MW Capacity	55 MW Capacity	30 MW Capacity		30 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	90 MW Capacity	65 MW Capacity	175 MW Capacity
2038			85 MW Capacity	60 MW Capacity	35 MW Capacity		30 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	90 MW Capacity	65 MW Capacity	175 MW Capacity
NPV	$769,113,800	$734,755,200	$691,153,300	$674,704,900	$658,254,000	$741,773,500	$696,000,500	$702,592,000	$747,846,100	$731,397,800	$720,516,900	$768,220,600	$720,326,800
Delta $	$110,859,800	$76,501,200	$32,899,300	$16,450,900	$0	$83,519,500	$37,746,500	$44,338,000	$89,592,100	$73,143,800	$62,262,900	$109,966,600	$62,072,800
Delta %	16.84%	11.62%	5.00%	2.50%	0.00%	12.69%	5.73%	6.74%	13.61%	11.11%	9.46%	16.71%	9.43%
Transmission ($)	$0	$0	$800,000	$800,000	$800,000	$800,000	$800,000	$36,500,000	$19,500,000	$19,500,000	$5,000,000	$800,000	$36,500,000
NPV w/ Transmission	$769,113,800	$734,755,200	$691,953,300	$675,504,900	$659,054,000	$742,573,500	$696,800,500	$739,092,000	$767,346,100	$750,897,800	$725,516,900	$769,020,600	$756,826,800
Delta $	$110,059,800	$75,701,200	$32,899,300	$16,450,900	$0	$83,519,500	$37,746,500	$80,038,000	$108,292,100	$91,843,800	$66,462,900	$109,966,600	$97,772,800
Delta %	16.70%	11.49%	4.99%	2.50%	0.00%	12.67%	5.73%	12.14%	16.43%	13.94%	10.08%	16.69%	14.84%

Note: An allowance of $5,000,000 was used in Path 11 for upgrades associated with transmission impacts.

Table 10-4: Power Supply Costs - High Gas

Independence Power & Light - 2018 Energy Master Plan
High Natural Gas and Market Prices

	Path 1	Path 2	Path 3	Path 4	Path 5	Path 6	Path 7	Path 8	Path 9	Path 10	Path 11	Path 12	Path 13
Path	**Business As Usual**	**Business As Usual**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV & Staggered CTG Retirement**	**Retire BV & Staggered CTG Retirement**
Labor	*Existing Staff*	*Benchmark Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*
2019			**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**
2020			60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	60 MW Capacity
2021			60 MW Capacity	35 MW Capacity	10 MW Capacity	60 MW Capacity	10 MW Capacity	10 MW Capacity	60 MW Capacity	35 MW Capacity	10 MW Capacity	60 MW Capacity	60 MW Capacity
2022			65 MW Capacity	40 MW Capacity	15 MW Capacity	65 MW Capacity	15 MW Capacity	15 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	65 MW Capacity	65 MW Capacity
2023			65 MW Capacity	40 MW Capacity	15 MW Capacity	65 MW Capacity	15 MW Capacity **Retire One CTG Plant**	15 MW Capacity **Retire 94 MW CTGs**	65 MW Capacity **Retire 94 MW CTGs**	40 MW Capacity **Retire 94 MW CTGs**	15 MW Capacity **Retire 94 MW CTGs**	65 MW Capacity **Retire One CTG Plant**	65 MW Capacity **Retire One CTG Plant**
2024			65 MW Capacity	40 MW Capacity	15 MW Capacity	**110 MW 6xRecips**	**37 MW 2xRecips** 10 MW Capacity	110 MW Capacity	**110 MW 6xRecips** 50 MW Capacity	**110 MW 6xRecips** 25 MW Capacity	**37 MW 2xRecips** 70 MW Capacity	**37 MW 2xRecips** 65 MW Capacity	100 MW Capacity
2025			65 MW Capacity	40 MW Capacity	15 MW Capacity		15 MW Capacity	110 MW Capacity	50 MW Capacity	25 MW Capacity	75 MW Capacity	65 MW Capacity	100 MW Capacity
2026			70 MW Capacity	45 MW Capacity	20 MW Capacity		15 MW Capacity	110 MW Capacity	50 MW Capacity	25 MW Capacity	75 MW Capacity	65 MW Capacity	105 MW Capacity
2027			70 MW Capacity	45 MW Capacity	20 MW Capacity		15 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	75 MW Capacity	65 MW Capacity	105 MW Capacity
2028			70 MW Capacity	45 MW Capacity	20 MW Capacity		15 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	75 MW Capacity	70 MW Capacity **Retire One CTG Plant**	105 MW Capacity **Retire One CTG Plant**
2029			70 MW Capacity	45 MW Capacity	20 MW Capacity		20 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	80 MW Capacity	**37 MW 2xRecips** 65 MW Capacity	140 MW Capacity
2030			75 MW Capacity	50 MW Capacity	25 MW Capacity		20 MW Capacity	115 MW Capacity	55 MW Capacity	30 MW Capacity	80 MW Capacity	65 MW Capacity	140 MW Capacity
2031			75 MW Capacity	50 MW Capacity	25 MW Capacity		20 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	80 MW Capacity	70 MW Capacity	140 MW Capacity
2032			75 MW Capacity	50 MW Capacity	25 MW Capacity		20 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	80 MW Capacity	70 MW Capacity	145 MW Capacity
2033			75 MW Capacity	50 MW Capacity	25 MW Capacity		25 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	85 MW Capacity	70 MW Capacity **Retire One CTG Plant**	145 MW Capacity **Retire One CTG Plant**
2034			80 MW Capacity	55 MW Capacity	30 MW Capacity		25 MW Capacity	120 MW Capacity	60 MW Capacity	35 MW Capacity	85 MW Capacity	**37 MW 2xRecips** 60 MW Capacity	170 MW Capacity
2035			80 MW Capacity	55 MW Capacity	30 MW Capacity		25 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	85 MW Capacity	65 MW Capacity	175 MW Capacity
2036			80 MW Capacity	55 MW Capacity	30 MW Capacity		25 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	85 MW Capacity	65 MW Capacity	175 MW Capacity
2037			80 MW Capacity	55 MW Capacity	30 MW Capacity		30 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	90 MW Capacity	65 MW Capacity	175 MW Capacity
2038			85 MW Capacity	60 MW Capacity	35 MW Capacity		30 MW Capacity	125 MW Capacity	65 MW Capacity	40 MW Capacity	90 MW Capacity	65 MW Capacity	175 MW Capacity
NPV	$831,162,800	$796,804,200	$754,148,200	$748,779,600	$743,407,100	$796,294,800	$780,805,900	$788,212,500	$811,126,800	$805,757,800	$806,081,400	$824,692,600	$783,789,200
Delta $	$87,755,700	$53,397,100	$10,741,100	$5,372,500	$0	$52,887,700	$37,398,800	$44,805,400	$67,719,700	$62,350,700	$62,674,300	$81,285,500	$40,382,100
Delta %	11.80%	7.18%	1.44%	0.72%	0.00%	7.11%	5.03%	6.03%	9.11%	8.39%	8.43%	10.93%	5.43%
Transmission ($)	$0	$0	$800,000	$800,000	$800,000	$800,000	$800,000	$36,500,000	$19,500,000	$19,500,000	$5,000,000	$800,000	$36,500,000
NPV w/ Transmission	$831,162,800	$796,804,200	$754,948,200	$749,579,600	$744,207,100	$797,094,800	$781,605,900	$824,712,500	$830,626,800	$825,257,800	$811,081,400	$825,492,600	$820,289,200
Delta $	$86,955,700	$52,597,100	$10,741,100	$5,372,500	$0	$52,887,700	$37,398,800	$80,505,400	$86,419,700	$81,050,700	$66,874,300	$81,285,500	$76,082,100
Delta %	11.68%	7.07%	1.44%	0.72%	0.00%	7.11%	5.03%	10.82%	11.61%	10.89%	8.99%	10.92%	10.22%

Note: An allowance of $5,000,000 was used in Path 11 for upgrades associated with transmission impacts.

Based on a review of the results presented in within Table 10-3 and Table 10-4, the following conclusions and observations are presented.

- The power supply portfolios vary significantly in costs, with the highest cost portfolios (Path 12) approximately 17 percent higher than the lowest cost portfolio (Path 5)
- The high cost of the BAU paths (path 1 and 2) indicate the retirement of the units at Blue Valley would reduce costs
- The lower cost paths maintain on-system generation through existing CTGs
- The paths with 110 MW RICE plant are generally higher cost than other paths.
- The paths with 50 MW of additional in Dogwood Energy Center ownership are generally lower cost than options with 25 MW of additional Dogwood ownership
    - o However, additional Dogwood Energy Center ownership benefits are lessened with higher gas prices, as seen in the sensitivity results
- Exclusively sourcing replacement capacity from the market is among the lower cost options only when IPL has some form of on-system generation, namely the existing CTGs.

Based on the results presented within Table 10-3 and the previous conclusions and observations, several portfolios were selected for further analysis. The six paths carried forward are included below in Table 10-5.

Table 10-5: Selected Power Supply Portfolios

	Labor Path	Retirement Scenario	BV Retirement	CTG Retirement	Dogwood Purchase	On-System Additions
Path 3	CTG Only Staff	Retire BV	2019			
Path 4	CTG Only Staff	Retire BV	2019		25 MW	
Path 5	CTG Only Staff	Retire BV	2019		50 MW	
Path 7	CTG Only Staff	Retire BV	2019	One CTG Plant: 2023	50 MW	37 MW RICE
Path 8	CTG Only Staff	Retire BV & CTGs	2019	All CTGs: 2023	50 MW	
Path 11	CTG Only Staff	Retire BV & CTGs	2019	All CTGs: 2023	50 MW	37 MW RICE

11.0 POWER SUPPLY PORTFOLIO EVALUATION

As outlined in the power supply portfolio optimization, six power supply paths were chosen for additional analysis. The following section provides the assumptions, methodology, and results of this additional economic analysis.

11.1 Balance of Loads and Resources for Selected Paths

The six power supply paths selected for additional analysis in Section 10.4 included a diverse set of power supply options available to meet IPL's capacity and energy requirements. Each path has a unique combination of unit retirements, capacity additions, and fleet composition. A BLR chart for each path was developed to illustrate the differences between the paths. Figure 11-1, Figure 11-2, Figure 11-3,and Figure 11-4 present the BLR for Path 3, Path 4, Path 5, and Path 7. These four paths retire Blue Valley and maintain operation of the on-system CTGs. Path 7 is unique by replacing the one substation's CTGs with RICE units. Figure 11-5 and Figure 11-6 present the BLR for Path 8 and Path 11. These paths retire Blue Valley and the on-system CTGs. Note that none of the paths selected here include generation resource capacity in excess of IPL's projected reserve margin requirements. This was done intentionally as current SPP market conditions, low wholesale market energy prices due to influx of wind generation and low natural gas costs, are not projected to support merchant generators.

Figure 11-1: Power Supply Path 3 BLR

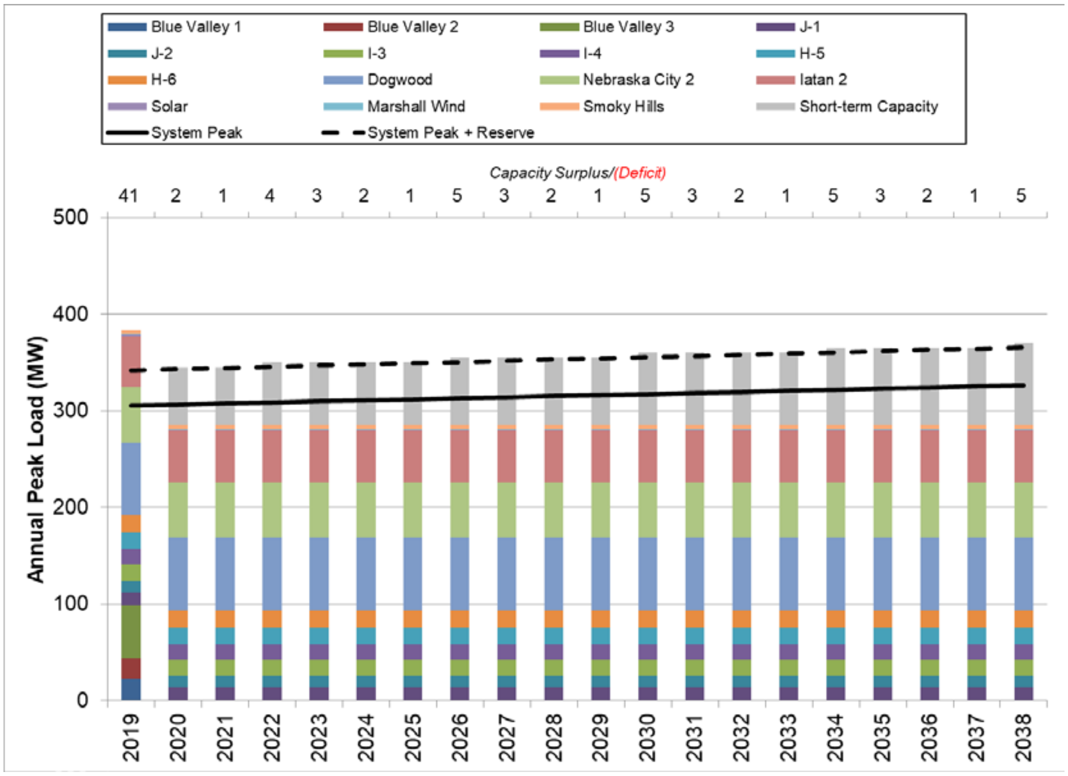


Figure 11-2: Power Supply Path 4 BLR

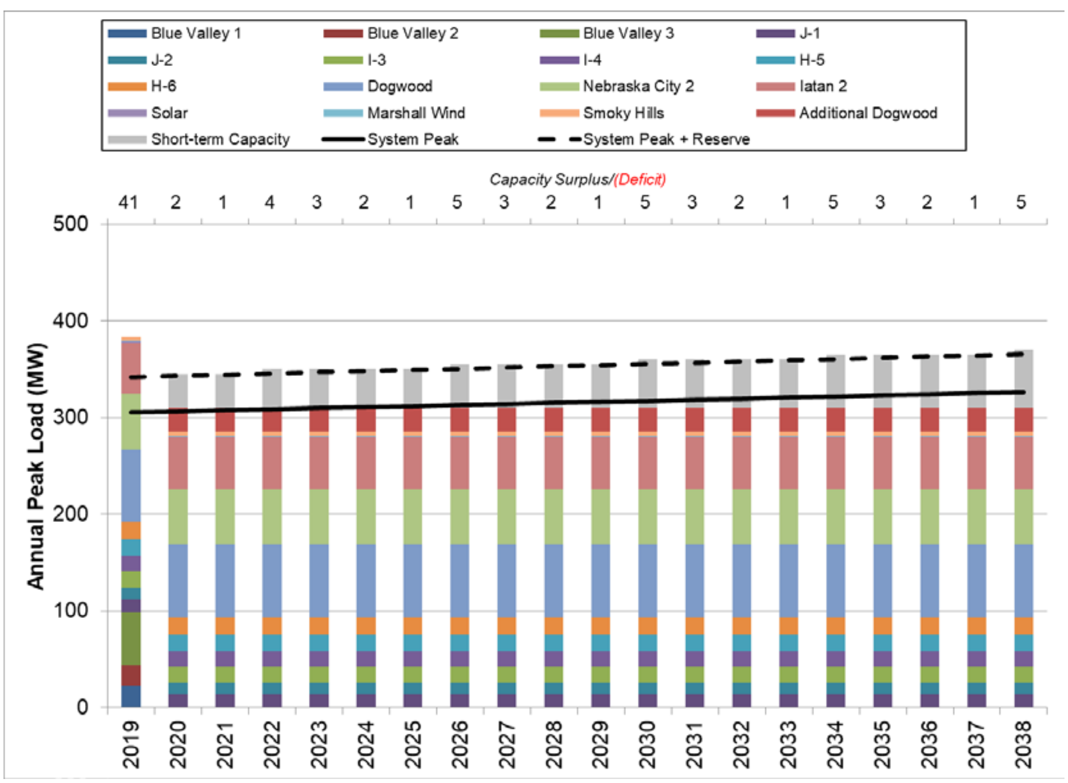


Figure 11-3: Power Supply Path 5 BLR

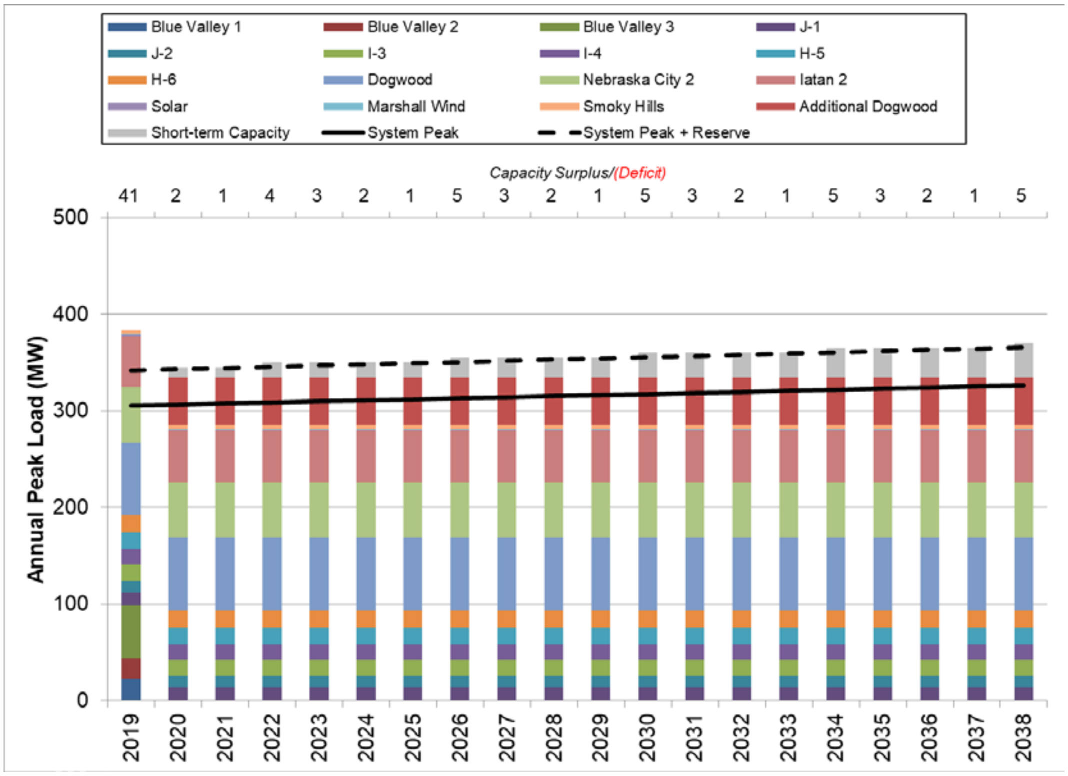


Figure 11-4: Power Supply Path 7 BLR

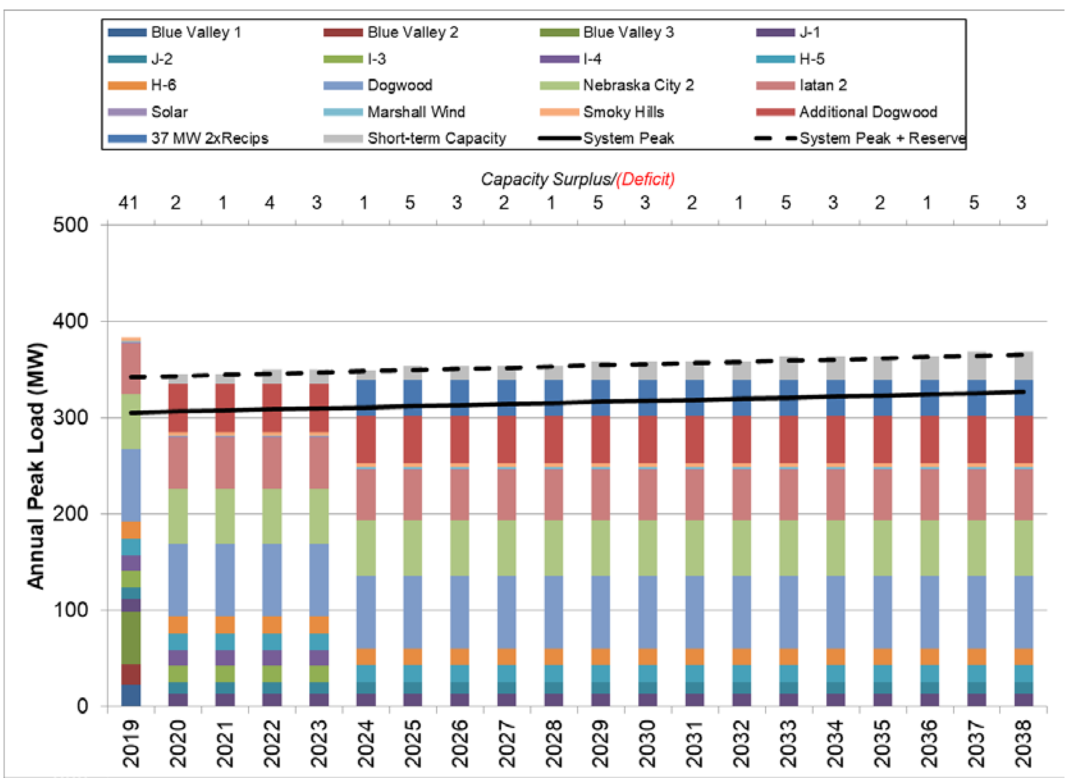


Figure 11-5: Power Supply Path 8 BLR

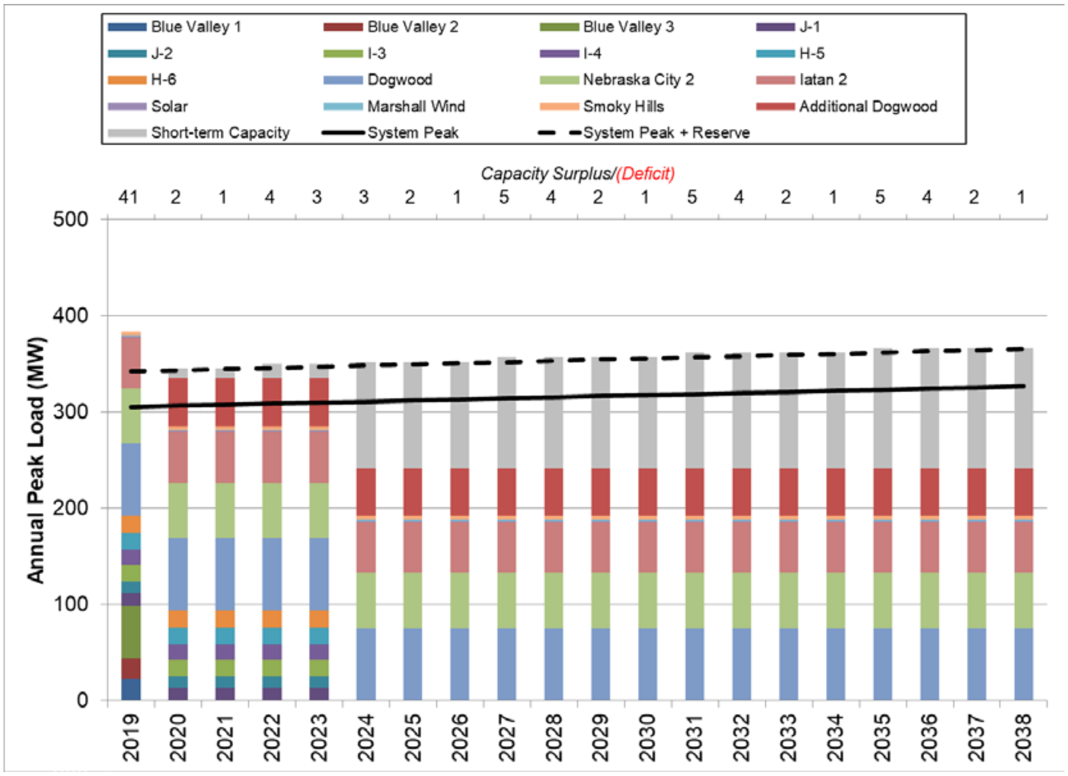
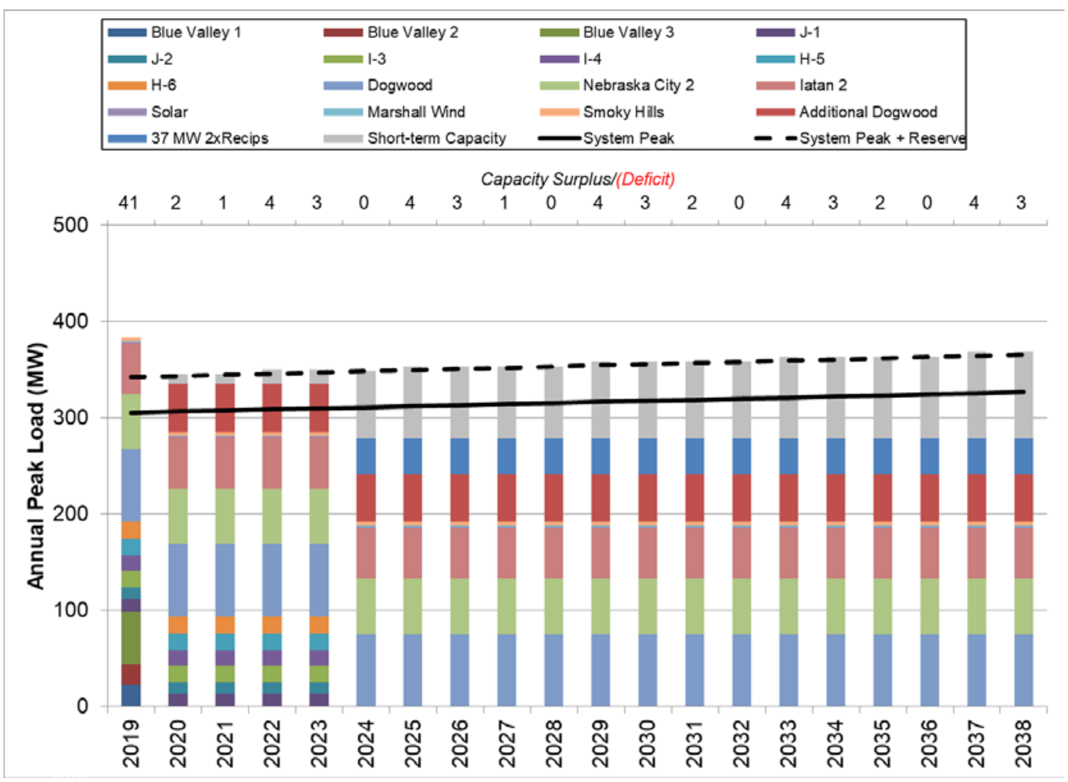


Figure 11-6: Power Supply Path 11 BLR



11.2 Hourly Dispatch Economic Evaluation

For each of the power supply paths, Burns & McDonnell simulated the power supply resources using PROMOD hourly dispatch software over the 20-year study period. PROMOD simulates the dispatch of power supply resources available to meet IPL's load requirements with more granularity than the Strategist software utilized for optimization. Strategist is used to optimize the overall economics for capacity and energy requirements over the study period. PROMOD is used to evaluate the specific power supply path generated by Strategist within a detailed hourly dispatch to provide more granularity within the economic evaluation. PROMOD dispatches resources every hour of the year (8,760 hours/year) instead of a typical week representative of each month that Strategist uses (24 hours*7 days*12 months=2,016 hours/year). PROMOD also incorporates additional run parameters that Strategist does not incorporate; such as start fuel, minimum runtime, minimum downtime, and ramp rates for each resource.

Resources in each select path were dispatched against forecasted SPP wholesale market energy prices at each generator's specific location. When dispatched, those units would generate energy revenues, offsetting their costs. This analysis evaluated total cost of generation including fuel, O&M costs, and capital recovery less any market revenues for each scenario under the selected futures. Existing debt and capital recovery were not included within the analysis as those costs are sunk. The total power supply costs over the 20-year period were brought back to a single net present value for comparison. All five futures outlined in Section 9.2.4 were utilized in this additional analysis to test the robustness of each elected power supply path under a variety of key assumptions. Figure 11-7 presents the total annual wholesale power supply costs for each scenario under the Base future. Table 11-1 presents the net present value of each power supply path for the various futures. Detailed PROMOD result summaries are included in Appendix G.

Figure 11-7: Annual Power Supply Costs

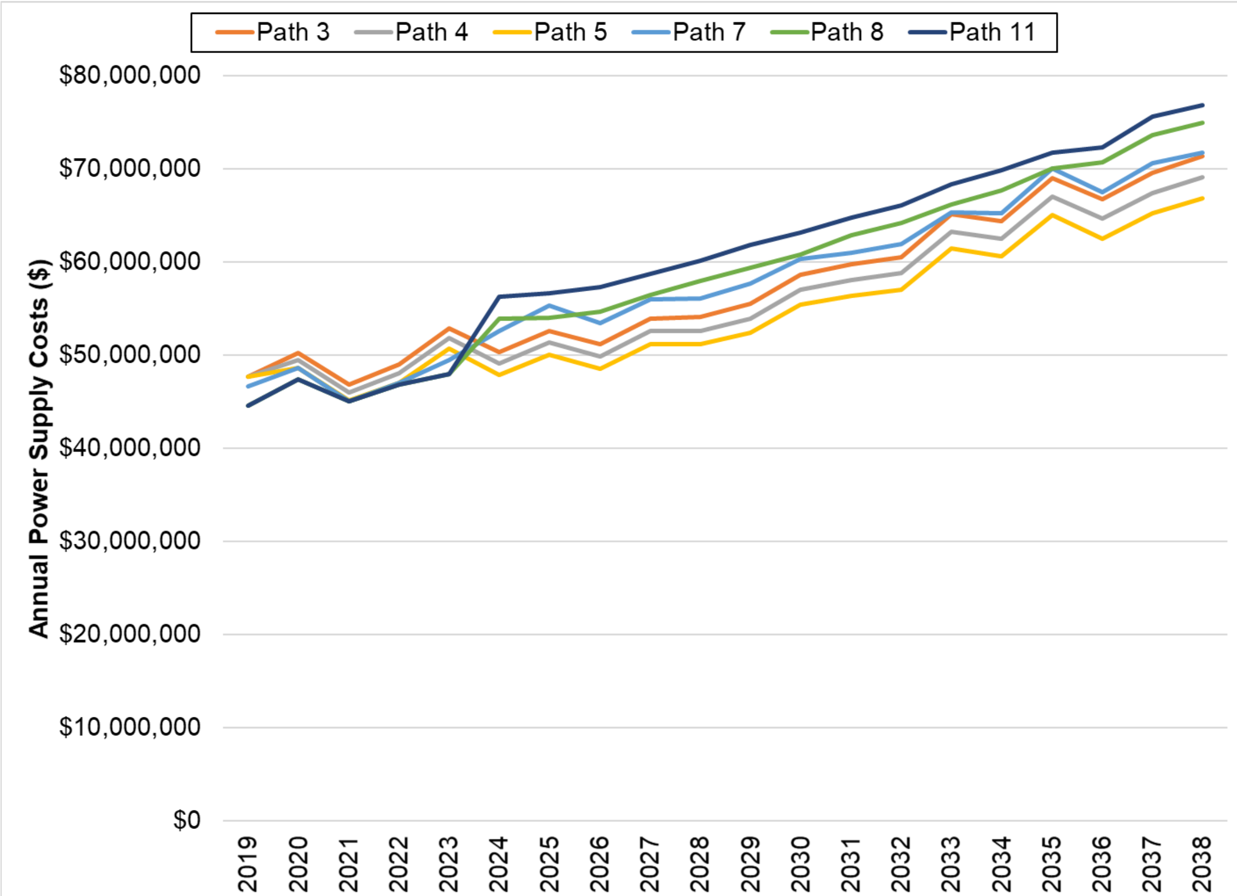


Table 11-1: Power Supply Costs

		Independence Power & Light - 2018 Energy Master Plan											
		SPP 2017 ITP10 Future 3						**SPP 2017 ITP10 Future 1**					
		Path 3	**Path 4**	**Path 5**	**Path 7**	**Path 8**	**Path 11**	**Path 3**	**Path 4**	**Path 5**	**Path 7**	**Path 8**	**Path 11**
	Path	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV & CTGs**	**Retire BV & CTGs**
	Labor	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*
	2019	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**
	2020	60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity
	2021	60 MW Capacity	35 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity	60 MW Capacity	35 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity
	2022	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity
	2023	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity **Retire One CTG Plant**	15 MW Capacity **Retire 94 MW CTGs**	15 MW Capacity **Retire 94 MW CTGs**	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity **Retire One CTG Plant**	15 MW Capacity **Retire 94 MW CTGs**	15 MW Capacity **Retire 94 MW CTGs**
	2024	65 MW Capacity	40 MW Capacity	15 MW Capacity	**37 MW 2xRecips** 10 MW Capacity	110 MW Capacity	**37 MW 2xRecips** 70 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	**37 MW 2xRecips** 10 MW Capacity	110 MW Capacity	**37 MW 2xRecips** 70 MW Capacity
	2025	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity
	2026	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity
	2027	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity
	2028	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity
	2029	70 MW Capacity	45 MW Capacity	20 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity
	2030	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity
	2031	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity
	2032	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity
	2033	75 MW Capacity	50 MW Capacity	25 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity
	2034	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity
	2035	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity
	2036	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity
	2037	80 MW Capacity	55 MW Capacity	30 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity
	2038	85 MW Capacity	60 MW Capacity	35 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity	85 MW Capacity	60 MW Capacity	35 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity
NPV	**Low Gas Low Load**	**$ 666,891,211**	**$ 650,909,222**	**$ 634,945,451**	**$ 684,715,679**	**$ 677,846,232**	**$ 709,218,075**						
	Delta $	**$ 31,945,760**	**$ 15,963,770**	**$ -**	**$ 49,770,228**	**$ 42,900,780**	**$ 74,272,624**						
	Delta %	*5.0%*	*2.5%*	*0.0%*	*7.8%*	*6.8%*	*11.7%*						
	Low Gas	**$ 683,564,138**	**$ 667,617,447**	**$ 651,688,888**	**$ 701,299,028**	**$ 694,316,767**	**$ 725,689,991**	**$ 709,941,795**	**$ 697,795,969**	**$ 685,658,936**	**$ 733,896,176**	**$ 729,698,568**	**$ 759,690,348**
	Delta $	**$ 31,875,250**	**$ 15,928,559**	**$ -**	**$ 49,610,139**	**$ 42,627,879**	**$ 74,001,102**	**$ 24,282,859**	**$ 12,137,033**	**$ -**	**$ 48,237,240**	**$ 44,039,632**	**$ 74,031,413**
	Delta %	*4.9%*	*2.4%*	*0.0%*	*7.6%*	*6.5%*	*11.4%*	*3.5%*	*1.8%*	*0.0%*	*7.0%*	*6.4%*	*10.8%*
	High Gas	**$ 748,050,802**	**$ 744,801,360**	**$ 741,538,852**	**$ 791,445,021**	**$ 784,533,324**	**$ 816,202,905**	**$ 767,089,299**	**$ 764,679,628**	**$ 762,254,827**	**$ 811,401,508**	**$ 806,899,194**	**$ 837,809,169**
	Delta $	**$ 6,511,950**	**$ 3,262,508**	**$ -**	**$ 49,906,169**	**$ 42,994,471**	**$ 74,664,053**	**$ 4,834,472**	**$ 2,424,801**	**$ -**	**$ 49,146,681**	**$ 44,644,367**	**$ 75,554,342**
	Delta %	*0.9%*	*0.4%*	*0.0%*	*6.7%*	*5.8%*	*10.1%*	*0.6%*	*0.3%*	*0.0%*	*6.4%*	*5.9%*	*9.9%*
NPV w/ Transmission	Transmission Cost ($)	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 36,500,000**	**$ 5,000,000**	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 36,500,000**	**$ 5,000,000**
	Low Gas Low Load	**$ 667,691,211**	**$ 651,709,222**	**$ 635,745,451**	**$ 685,515,679**	**$ 714,346,232**	**$ 714,218,075**						
	Delta $	**$ 31,945,760**	**$ 15,963,770**	**$ -**	**$ 49,770,228**	**$ 78,600,780**	**$ 78,472,624**						
	Delta %	*5.0%*	*2.5%*	*0.0%*	*7.8%*	*12.4%*	*12.4%*						
	Low Gas	**$ 684,364,138**	**$ 668,417,447**	**$ 652,488,888**	**$ 702,099,028**	**$ 730,816,767**	**$ 730,689,991**	**$ 710,741,795**	**$ 698,595,969**	**$ 686,458,936**	**$ 734,696,176**	**$ 766,198,568**	**$ 764,690,348**
	Delta $	**$ 31,875,250**	**$ 15,928,559**	**$ -**	**$ 49,610,139**	**$ 78,327,879**	**$ 78,201,102**	**$ 24,282,859**	**$ 12,137,033**	**$ -**	**$ 48,237,240**	**$ 79,739,632**	**$ 78,231,413**
	Delta %	*5.0%*	*2.5%*	*0.0%*	*7.8%*	*12.3%*	*12.3%*	*3.8%*	*1.9%*	*0.0%*	*7.6%*	*12.6%*	*12.3%*
	High Gas	**$ 748,850,802**	**$ 745,601,360**	**$ 742,338,852**	**$ 792,245,021**	**$ 821,033,324**	**$ 821,202,905**	**$ 767,889,299**	**$ 765,479,628**	**$ 763,054,827**	**$ 812,201,508**	**$ 843,399,194**	**$ 842,809,169**
	Delta $	**$ 6,511,950**	**$ 3,262,508**	**$ -**	**$ 49,906,169**	**$ 78,694,471**	**$ 78,864,053**	**$ 4,834,472**	**$ 2,424,801**	**$ -**	**$ 49,146,681**	**$ 80,344,367**	**$ 79,754,342**
	Delta %	*1.0%*	*0.5%*	*0.0%*	*7.9%*	*12.4%*	*12.4%*	*0.8%*	*0.4%*	*0.0%*	*7.7%*	*12.7%*	*12.6%*

Note: An allowance of $5,000,000 was used in Path 11 for upgrades associated with transmission impacts.

Based on a review of the results presented in within Table 11-1, the following conclusions and observations are presented:

- The overall themes from the Strategist analysis, Section 10.0 Power Supply Portfolio Optimization, remain consistent within the hourly dispatch economic evaluation
  - The lower cost paths all maintain some on-system generation, with the existing CTGs appearing most attractive
  - Reduction in transmission investment is another benefit to maintaining on-system generation
  - The paths with larger amounts of new-build generation are generally higher cost
  - The paths with increased shares in Dogwood Energy Center are generally lower cost
  - Exclusively sourcing replacement capacity from the market is among the lower cost options only when IPL has some form of on-system generation
- Under higher natural gas prices, and in turn higher energy market prices, existing coal-fired generation experiences additional energy market revenue. Under this same scenario, Dogwood generates less energy market revenue since it is dependent on natural gas prices.
- New on-system generation comes at a cost premium, but may be worth investing in for experience with new technology and reliability benefits
- There is no significant cost impact to the power supply paths under futures with increased renewable generation (SPP Future 1)

12.0 CONCLUSIONS & RECOMMENDATIONS

12.1 Conclusions

Based on the analysis conducted herein, Burns & McDonnell provides the following conclusions for the various aspects of the Study.

1. Condition assessment
    a. IPL's existing units have operated reliably in the past compared to the peer asset groups; however, the overall O&M costs, namely for Blue Valley, are higher than industry benchmarks.
    b. The higher O&M costs are primarily due to higher than average staffing levels historically. IPL has recently been able to reduce staffing levels for power production to closely resemble the benchmark levels as outlined within the Study.
    c. As the units age, increasing O&M and capital investment will be required to maintain reliability. The longer IPL operates units, more investment will be required to operate the units safely and reliably.
2. New resource technology assessment
    a. Several natural gas-fired alternatives were evaluated. However, many of these power plants, such as large simple cycle or combined cycle plants, cannot be developed and constructed without other power producers' participation.
    b. Several energy storage options were evaluated.
        i. Compressed air energy storage and hydroelectric pumped storage are mature technologies but are not feasible due to lack of appropriate geologic conditions in the surrounding area.
        ii. Few large-scale battery storage projects are in operation or have significant operational experience. There is significant research and development investment and technological advancement being made regarding battery storage technology, which are leading to lower projections for capital and operating costs. Based on future cost forecasts and more operational experience, battery storage may become a more competitive form of energy and capacity in the future.
    c. Renewable energy resources, specifically solar and wind, continue to be constructed. Renewable energy resources can provide a low-cost form of energy, but they do not supply a significant amount of accredited capacity for resource adequacy requirements.
3. System reliability

   a. IPL has historical operated its system at an N-2 reliability level without the need to shed load. The existing on-system generation provides support for maintaining N-2 reliability without having to shed load.
   b. In the event a significant amount of on-system generation is retired, specifically the combustion turbines, IPL may 1) be exposed to large transmission system investment to maintain N-2 reliability or 2) install replacement generation such as reciprocating engines on-system.
4. Economic evaluation
   a. The Blue Valley units are higher cost than other power supply alternatives. Similarly, throughout the electric utility industry, older, inefficient steam plants are commonly being retired as they have reached the end of their technical and economic useful life.
   b. The on-system combustion turbines provide low cost capacity, even when considering future maintenance investments.
      i. While the CTGs are older, the have relatively low operating hours and have remaining useful lifespans.
      ii. By participating in the SPP energy market, IPL will not be dependent on energy from these units. But with continued operation, these units will provide capacity to comply with NERC/SPP resource adequacy requirements and avoid additional transmission investment or other on-system generation to maintain reliability.
   c. New on-system replacement alternatives are generally higher cost than new off-system alternatives. The off-system alternatives provide greater opportunities for economies of scale since they are larger plants. However, off-system generation does not necessarily support local system reliability.
   d. If Blue Valley units are retired, IPL will need capacity, but not necessarily energy. IPL has sufficient energy under control through its contracts with energy from the coal units, Dogwood (existing ownership), and renewables projected to be above IPL's annual energy requirements.
   e. IPL is meeting renewable goals through wind contracts and the solar project. If renewable resource contracts are extended or replaced at their expiration, IPL will comply with Missouri Proposition C goals throughout the study period.
   f. Additional Dogwood ownership and other third-party capacity opportunities appear to be the lowest cost power supply options. Dogwood is available at an attractive price and is located relatively close to IPL service territory.
   g. Other capacity resources should be solicited in an RFP for comparison.

h. Replacing a combustion turbine with a new reciprocating engine plant is more costly than continued operation of the combustion turbine, but it will provide more reliability and operating experience with a new technology. This may also avoid additional transmission infrastructure investment to maintain N-2 reliability without shedding load.

i. The economic evaluation indicates larger portions of Dogwood are more attractive due to market energy revenues.

12.2 Recommendations

As stated previously, the primary objective of an energy master plan is to provide an economic evaluation of a utility's power supply portfolio over both short-term and long-term planning horizons, with a specific focus on short-term decisions that will position a utility for long-term success. Each utility will have unique issues that will drive its decision-making process. Based on the analysis conducted herein, Burns & McDonnell provides the following recommendations.

1. Blue Valley: There appear to be lower cost power supply options for providing capacity than Blue Valley. IPL should consider the retirement of the Blue Valley units as soon as practical. If Blue Valley is designated for retirement, IPL needs to conduct the following:
    a. Select a retirement date for Blue Valley. This will be dependent on the availability of replacement options and the time required to complete a power supply RFP process.
    b. Provide a minimum of 180-day notice to SPP of the retirement date.
    c. Develop closure plan for the facility including decommissioning/demolition activities. Even after retirement of the units, the facility is expected to have permanent staffing and security on-site. The closure plan will first need to address any safety related issues associated with the retirement of the facility. Some equipment demolition may be required, but many utilities have allowed retired plants to remain in place for extended periods of time until demolition is required (for example, deterioration has led to structural safety concerns) or economics are more favorable (such as high scrap values).
    d. Evaluate power production staffing with steam generation retired. Less staff should be required if only existing CTG remain on-system.
    e. Study results, along with market conditions, suggest if IPL elects to retire Blue Valley, retirement should happen at the earliest feasible opportunity.
2. Combustion turbines: The combustion turbines appear to provide lower cost capacity as well as local system reliability resources.
    a. Continue to maintain combustion turbines as they provide low cost capacity.

   b. Consider more regular test runs for the combustion turbines to troubleshoot reliability concerns.
   c. Consider PSD permitting adjustments to alleviate operating risks with uncertainty around the definition of routine maintenance. This will allow IPL to be able to perform maintenance and repairs without the potential of triggering New Source Review.
   d. Re-evaluate combustion turbines in next master plan. Continue monitoring the condition of the CTGs and the cost of maintenance against the cost to replace their capacity and the cost to perform transmission network upgrades triggered by their retirement.
3. Energy Storage: Continue to monitor trends within battery storage technology including capital costs, operating costs, performance, and their adoption within the industry, specifically the SPP market.
4. Load Forecast Adjustments: IPL should consider short-term adjustments to its load forecast to account for recent historical peak demand. This will reduce the overall capacity requirements for IPL and potentially reduce power supply costs. However, if the load forecast is reduced too much and actual peak demand exceeds the forecast submitted to SPP, IPL may face penalties from SPP.
5. Power Supply RFP: Begin process for conducting a power supply request for proposals.
   a. The RFP should focus on low cost capacity resources, not necessarily energy resources.
      i. IPL needs capacity to meet SPP resource adequacy requirements if Blue Valley is retired.
      ii. IPL is projected to have enough energy under contract to hedge against its projected annual energy requirements.
      iii. Most renewable resources currently have attractive pricing for energy, however they only receive capacity accreditation for a small fraction of their nameplate capacity.
   b. A combination of resources should be considered:
      i. Contracts vs. ownership
      ii. Short-term (1-2 years), mid-term (3-6 years), and long-term (7+ years)
      iii. Shorter term contracts can provide IPL with valuable flexibility in the future but may command a cost premium over longer term contracts.
   c. The overall process could take as long as 12 months.
      i. Completion of this process must be completed, and replacement capacity procured, to set a firm retirement date for Blue Valley.
   d. IPL may need to acquire firm transmission to count off-system resources towards resource adequacy requirements.

    e. Use results of power supply RFP to compare against additional Dogwood investment.

6. New On-System Generation: While new on-system generation is not the lowest cost option presently, IPL should continue to evaluate the existing combustion turbine sites for re-purposing with reciprocating engines.
    a. Continued operation of generation resources within IPL's footprint provides IPL:
        i. Protection against price separation between generation resource revenues and cost of serving load
        ii. Continued experience operating and maintaining generation resources
        iii. Enhanced reliability during transmission outages.
    b. This will allow for continued evaluation in future master plans and prepare IPL for future on-system generation if, and when, it becomes needed for reliability or economics.
    c. Continued evaluations should consider:
        i. Site and constructability assessments
        ii. Detailed capital cost estimates
        iii. Permitting assessments
7. Other Considerations Moving Forward
    a. Evaluate the results of the Energy Master Plan within the Electric Rate Study.
    b. IPL has a variety of DSM and EE programs in place. IPL should continue to routinely evaluate the benefit versus cost of existing and additional programs.
    c. IPL will need to consider short-term decisions to allow flexibility for future options, especially as technologies such as reciprocating engines and battery storage continue to improve.
    d. Capital expenditures deployed today may limit future opportunities. IPL will need to consider potential future capital investment limitations when deciding on how much to invest today.
    e. IPL will need to consider its risk tolerance with a significant amount of capacity in a single resource, namely Dogwood. Should IPL decide to purchase a larger share of Dogwood, it will have approximately 100 MW or more in a single power plant. At the end of Dogwood's useful life, IPL will be faced with replacing nearly one-third of its peak demand.
    f. Consider a mix of resources to account for variability in load forecast. Many other municipal utilities have been fulfilling their planning reserve margins with short-term and mid-term capacity contracts, rather than actual assets. This has provided them the flexibility to adjust capacity purchases based on short-term demand fluctuations.

g. While the evaluation indicates a larger share of Dogwood is lower cost (i.e. 50 MW provides a lower NPV than 25 MW), this may present additional risk to IPL. The lower costs are realized due to increased energy sales within the SPP market sold for a profit. While this may provide an opportunity for IPL to offset costs, it also presents a risk that IPL will have invested more capital than required to meet its capacity obligations. Market energy economics can fluctuate, especially if natural gas prices increase and make Dogwood less cost competitive compared to coal units within SPP. The specific level of Dogwood investment, if any, will need to be evaluated against other proposals from the power supply RFP.

h. Position IPL to be able to maintain on-system power generation for both economics and reliability. If in the future IPL retires all of its on-system generation, it will either need to invest in new on-system generation or additional transmission system upgrades to maintain its existing reliability.

APPENDIX A – TRANSMISSION IMPACTS STUDY

Independence Power & Light Master Plan Transmission Impacts Study

Independence Power & Light

2018 Master Plan Transmission Impacts
Project No. 107928

08/22/2018

Independence Power & Light Master Plan Transmission Impacts Study

prepared for

Independence Power & Light
2018 Master Plan Transmission Impacts
Independence, Missouri

Project No. 107928

08/22/2018

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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EXECUTIVE SUMMARY

Burns & McDonnell was retained by Independence Power & Light (IPL) to determine the transmission impacts from the potential change in generation resources as being studied concurrently in the IPL Master Plan Study. Three generation resource scenarios were studied as follows:

1. Retire all IPL generation
2. Retire the Blue Valley Plant
3. Retire all CTs at Sub H, Sub I, and Sub J

Power flow analysis was conducted on a 2029 Summer Peak condition for each of the scenarios. Outage conditions studied included all IPL planning events and extreme events as defined in the NERC TPL-001-4 reliability standard. Previous system planning studies have shown all thermal and voltage violations produced from the NERC defined planning events and extreme events have been mitigated by circuit switching and dispatch of the existing generation resources. As a result, system improvements were developed in each scenario for the same set of planning events and extreme events. System adjustments, such as circuit switching and generation redispatch as available, were utilized when appropriate to initially mitigate any reported violations. Any violation that was not fully resolved with available system adjustments required upgraded. The emergency rating (Rate B) was applied for the analysis.

Table ES-1 provides the total estimated system upgrade costs for each scenario.

Table ES-1: Total Estimated System Upgrades Cost

Upgrade	Cost ($MM)		
	Scenario 1	Scenario 2	Scenario 3
IPL Facilities			
Rebuild	$26.24	$0.00	$14.38
Uprate	$0.42	$0.00	$0.02
New transformer	$3.90	$0.00	$0.00
Capacitor Banks	$2.00	$0.80	$1.20
Affected System Facilities			
New transformer	$3.90	$0.00	$3.90
Total	**$36.46**	**$0.80**	**$19.50**

Table ES-2 provides the worst thermal violations reported for each of the analyzed scenarios with application of the most effective system adjustment available.

Table ES-2: Facility Loadings

Category	Areas Name	Monitored Facility	Cont Rate (MVA)	Max of Mitigation Min Cont Loading (%MVA)		
				Scenario 1	Scenario 2	Scenario 3
P6	INDN	Sub I -Shrank Road 69 kV	100	100.6	-	100.6
P6	INDN	Sub K-Sub A 69 kV	72	102.6	-	102.6
P6	INDN	Sub B-Sub A 69 kV	58	123.0	-	122.8
P6	INDN	Sub J-Sub A 69 kV	70	100.6	-	100.5
P6	INDN	Sub M 161/69 kV	112	100.6	-	-
P6	INDN	Sub N 161/69 kV	112	107.8	-	-
P6	INDN	Sub N-Sterling Rd Jct 69 kV	106	118.3	-	-
P6	INDN	Sub C-Sterling Rd Jct 69 kV	105	118.3	-	-
P6	KCPL/INDN	Hawthorn-Sub F 69 kV	60	144.1	-	101.7
P6	KCPL/INDN	Sugar Creek-Sub H 69 kV	58	128.2	-	-
P6	KCPL/INDN	Sugar Creek-Sub F 69 kV	53	147.9	-	101.5
P6	INDN	Sub J-Sub M 69 kV	72	102.4	-	-
P6	INDN	Sub C-Sub I 69 kV	105	100.4	-	-

Scenario 2, retirement of the Blue Valley plant, did not report any thermal violations that could not be resolved with the utilization of closing in the Sub N to Blue Ridge Mall 69 kV and/or dispatch of the remaining generation at Sub H, Sub I, and/or Sub J.

For each reported impact, the required rating was determined and compared to the equipment that comprised the facility to understand the scope of the upgrade. The review found that the majority of facilities reported were conductor limited. Upgrade costs for the facilities were derived from published SPP equipment cost estimates in coordination with IPL. If the limitation of the line was the conductor, full rebuild costs were applied. Table ES-3 provides the upgrade description for each facility and the associated cost estimate.

Table ES-3: Upgrade Costs

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)		
				Scenario 1	Scenario 2	Scenario 3
Sub I -Shrank Road 69 kV	100	Upgrade terminal equipment	1.1	$0.02	-	$0.02
Sub K-Sub A 69 kV	72	Rebuild to 556 ACSR (100ºC)	4.1	$2.99	-	$2.99
Sub B-Sub A 69 kV	58	Rebuild to 556 ACSR (100ºC)	6.2	$4.53	-	$4.53
Sub J-Sub A 69 kV	70	Rebuild to 556 ACSR (100ºC)	5.5	$4.02	-	$4.02
Sub M 161/69 kV	112	None	1	-	-	-
Sub N 161/69 kV	112	Add 2nd transformer	1	$3.90	-	-

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)		
				Scenario 1	Scenario 2	Scenario 3
Sub N-Sterling Rd Jct 69 kV	106	Rebuild to 1192 ACSR (100ºC)	4.2	$3.07	-	-
Sub C-Sterling Rd Jct 69 kV	105	Rebuild to 1192 ACSR (100ºC)	4.2	$3.07	-	-
Hawthorn-Sub F 69 kV	60	Rebuild to 556 ACSR (100ºC)	2.1	$1.53	-	$1.53
Sugar Creek-Sub H 69 kV	58	Rebuild to 556 ACSR (100ºC)	3.65	$2.66	-	-
Sugar Creek-Sub F 69 kV	53	Rebuild to 556 ACSR (100ºC)	1.8	$1.31	-	$1.31
Sub J-Sub M 69 kV	72	Uprate to 100ºC*	1.8	$0.40	-	-
Sub C-Sub I 69 kV	105	Rebuild to 1192 ACSR (100ºC)	4.2	$3.07	-	-
Total				**$30.56**	**$0.00**	**$14.40**

*Engineering analysis will need to be performed to determine scope for increasing the sag clearance

The Sub M 161/69 kV transformer constraint was removed with the upgrades on the Hawthorn to Sub F to Sugar Creek to Sub H 69 kV line segments.

For Scenario 1, a sensitivity analysis (1A) was performed to determine if a new 161 kV connection from Sub N to Sub R with 161/69 kV transformation at Sub R would be more cost effective than upgrading portions of the underlining 69 kV system. Table ES-4 provides the worst thermal violations reported for Scenario 1 and Scenario 1A with application of the most effective system adjustment available.

Table ES-4: Scenario 1 Sensitivity Thermal Results

Category	Areas Name	Monitored Facility	Cont Rate (MVA)	Max of Mitigation Min Cont Loading (%MVA)	
				Scenario 1	Scenario 1A
P6	INDN	Sub I -Shrank Road 69 kV	100	100.6	100.6
P6	INDN	Sub K-Sub A 69 kV	72	102.6	-
P6	INDN	Sub B-Sub A 69 kV	58	123.0	123.0
P6	INDN	Sub J-Sub A 69 kV	70	100.6	100.6
P6	INDN	Sub M 161/69 kV	112	100.6	-
P6	INDN	Sub N 161/69 kV	112	107.8	-
P6	INDN	Sub N-Sterling Rd Jct 69 kV	106	118.3	-
P6	INDN	Sub C-Sterling Rd Jct 69 kV	105	118.3	-
P6	KCPL/INDN	Hawthorn-Sub F 69 kV	60	144.1	106.0
P6	KCPL/INDN	Sugar Creek-Sub H 69 kV	58	128.2	-
P6	KCPL/INDN	Sugar Creek-Sub F 69 kV	53	147.9	-
P6	INDN	Sub J-Sub M 69 kV	72	102.4	-
P6	INDN	Sub C-Sub I 69 kV	105	110.4	-

Table ES-5 provides the upgrade description for each facility and the associated cost estimate.

Table ES-5: Scenario 1 Sensitivity Upgrade Costs

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)	
				Scenario 1	Scenario 1A
Sub I -Shrank Road 69 kV	100	Upgrade terminal equipment	1.1	$0.02	$0.02
Sub K-Sub A 69 kV	72	Rebuild to 556 ACSR (100°C)	4.1	$2.99	-
Sub B-Sub A 69 kV	58	Rebuild to 556 ACSR (100°C)	6.2	$4.53	$4.53
Sub J-Sub A 69 kV	70	Rebuild to 556 ACSR (100°C)	5.5	$4.02	$4.02
Sub M 161/69 kV	112	None	1	-	-
Sub N 161/69 kV	112	Add 2nd transformer	1	$3.90	-
Sub N-Sterling Rd Jct 69 kV	106	Rebuild to 1192 ACSR (100°C)	4.2	$3.07	-
Sub C-Sterling Rd Jct 69 kV	105	Rebuild to 1192 ACSR (100°C)	4.2	$3.07	-
Hawthorn-Sub F 69 kV	60	Rebuild to 556 ACSR (100°C)	2.1	$1.53	$1.53
Sugar Creek-Sub H 69 kV	58	Rebuild to 556 ACSR (100°C)	3.65	$2.66	-
Sugar Creek-Sub F 69 kV	53	Rebuild to 556 ACSR (100°C)	1.8	$1.31	-
Sub J-Sub M 69 kV	72	Uprate to 100°C*	1.8	$0.40	-
Sub C-Sub I 69 kV	105	Rebuild to 1192 ACSR (100°C)	4.2	$3.07	-
-	-	Build new Sub N-Sub R 161 kV	-	-	$9.00
Total				**$30.56**	**$19.09**

The addition of the Sub N to Sub R 161 kV line with 161/69 kV transformation at Sub R, eliminate the need for many of the underlining 69 kV upgrades, an estimated savings of $10MM.

The need for additional reactive resources was determined for each of the scenarios by tabulating the reactive reserves under loss of the largest reactive resource available. The resulting reserve was then compared to the reactive load demand for the system, including losses. The reactive resource deficiency and associated static compensation device cost estimate for the deficiency is shown in Table ES-6.

Table ES-6: Reactive Resource Results and Costs

Item	Base	Scenario 1	Scenario 2	Scenario 3
MVAR Demand	74.1	74.1	74.1	74.1
System MVAR Losses	39.6	34.3	39.6	37.9
Total MVAR Demand	113.7	108.4	113.7	112.0
Static Capacitors (MVAR)	80.0	80.0	80.0	80.0
Generation Reserves (MVAR)	72.4	0.0	42.0	30.4
Loss of Largest MVAR Source	20.0	20.0	20.0	20.0
Net MVAR (+Surplus/-Deficiency)	**18.7**	**-48.4**	**-11.7**	**-21.6**
Required Blocks	**-**	**50.0**	**20.0**	**30.0**
Costs ($MM)	**-**	**$2.00**	**$0.80**	**$1.20**

With all the IPL upgrades modeled in the respective scenario, review of the neighboring systems for impacts was performed. The affected system facilities shown in Table ES-7 were reported as overloads with the IPL mitigations in place.

Table ES-7: Affected Systems Thermal Results

Category	Areas Name	Monitored Facility	Cont Rate (MVA)	Max of Mitigation Min Cont Loading (%MVA)		
				Scenario 1	Scenario 2	Scenario 3
P1	KCPL	Hawthorn 161/69 kV #11	33	100.3	-	-
P6	KCPL	Hawthorn 161/69 kV #11	33	127.0	-	105.5
P6	KCPL	Hawthorn 161/69 kV #12	33	126.3	-	104.8

Table ES-8 provides the upgrade description for each affected system facility and the associated cost estimate.

Table ES-8: Affected Systems Upgrade Costs

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)		
				Scenario 1	Scenario 2	Scenario 3
Hawthorn 161/69 kV #11	33	Add 3rd transformer	1	$3.90	-	$3.90
Hawthorn 161/69 kV #12	33	-	-	-	-	-

The full details of the power flow analysis are found in Appendix A.

1.0 INTRODUCTION

Burns & McDonnell was retained by Independence Power & Light (IPL) to determine the transmission impacts from the potential change in generation resources as being studied concurrently in the IPL Master Plan Study. Three generation resource scenarios were studied as follows:

1. Retire all IPL generation
2. Retire the Blue Valley Plant
3. Retire all CTs at Sub H, Sub I, and Sub J

1.1 Service Area

Independence Power & Light is a municipal electric utility that was established in 1901 to provide the residents and businesses of Independence, Missouri with safe, reliable and affordable electric service. IPL's system includes over 650 miles of power lines, 9 generating units, and 14 major substations.

1.2 Generation

IPL's generating facilities consist of combustion turbines at Sub I, Sub J, and Sub H, and steam turbines at Blue Valley. Table 1-1 below lists IPL's electric resource portfolio. IPL has shifted the Blue Valley units to natural gas fired facilities.

Table 1-1: Electric Resource Portfolio

Resource	Unit	Total Rated Capacity (MW)	Primary Fuel
Sub I	3	19	Oil
	4	19	Oil
Blue Valley	1	21	Gas
	2	21	Gas
	3	51	Gas
Sub J	1	15	Oil
	2	15	Oil
Sub H	5	19	Gas/Oil
	6	20	Gas/Oil
Total		**200**	

1.3 Limitations

In the preparation of this report, the information provided to Burns & McDonnell by others was used by Burns & McDonnell to make certain assumptions with respect to conditions which may exist in the future.

While Burns & McDonnell believes the assumptions made are reasonable for the purposes of this report, Burns & McDonnell makes no representation that the conditions assumed will, in fact, occur. In addition, while Burns & McDonnell has no reason to believe that the information provided by others, and on which this report is based, is inaccurate in any material respect, Burns & McDonnell has not independently verified such information and cannot guarantee its accuracy or completeness. To the extent that actual future conditions differ from those assumed herein or from the information provided to Burns & McDonnell, the actual results will vary from those presented.

2.0 INPUTS AND ASSUMPTIONS

2.1 IPL Transmission Planning Criteria

IPL is a member of the Southwest Power Pool, one of eight Electric Reliability Organizations under the North American Electric Reliability Corporation (NERC). As a member of the Southwest Power Pool (SPP), IPL develops its planning criteria consistent with NERC Reliability Planning Standards and the SPP Planning Criteria. The following NERC Reliability Standards were applied in the Study:

- TPL-001-4 – Transmission System Planning Performance Requirements

The NERC Planning Standard Table I requires that, for normal and contingency conditions, line and equipment loading shall be within applicable thermal limits, voltage levels shall be maintained within applicable limits, all customer demands shall be supplied (except as noted), and stability of the network shall be maintained. Under contingency conditions, some planned or controlled interruption of supply to local customers connected to or supplied from the faulted element may occur provided it does not jeopardize the bulk electric system.

2.1.1 Planning Event P0

The definition of P0 is applicable to Category A of the SPP Planning Criteria. Applicable steady-state limits for Category A conditions are defined as follows:

- Thermal Limits Within Applicable Rating – Applicable Rating shall be defined as the Normal Rating per SPP Planning Criteria 7, Section 7.2. The thermal limit shall be 100% of Rating A.
- Voltage Limits Within Applicable Rating – Applicable Rating shall have the meaning of Nominal Voltage per SPP Planning Criteria 5. Voltage limits shall be set at plus or minus five percent (+/-5%), 0.95 p.u. - 1.05 p.u.).

2.1.2 Planning Event P1

The definition of P1 is applicable to Category B of the SPP planning criteria. Applicable steady-state limits for Category B contingency conditions are defined as follows:

Thermal Limits within Applicable Rating - Applicable Rating shall be defined as the Emergency Rating per SPP Planning Criteria 7, Section 7.2. The thermal limit shall be 100% of Rating B.

Voltage Limits Within Applicable Rating – Applicable Rating shall have the meaning of Nominal Voltage per Criteria 3. Voltage limits shall be set at plus five percent to minus ten percent (+5%/-10%), 0.90 p.u. – 1.05 p.u. for systems operating at 60 kV or above on load serving buses.

2.1.3 Planning Events P2, P3, P4, P5, P6 and P7

The definitions of P2, P3, P4, P5, P6 and P7 are applicable to Category C of the SPP planning criteria. Applicable steady-state limits for Category C contingency conditions are defined as follows:

Thermal Limits within Applicable Rating – Applicable Rating shall be defined as the Emergency Rating per SPP Planning Criteria 7, Section 7.2. The thermal limit shall be 100% of Rating B.

Voltage Limits Within Applicable Rating – Applicable Rating shall have the meaning of Nominal Voltage per Criteria 3. Voltage limits shall be set at plus five percent to minus ten percent (+5%/-10%), 0.90 p.u. – 1.05 p.u. for systems operating at 60 kV or above on load serving buses.

2.1.4 Extreme Events EE

The definitions of EE are applicable to Category D of the SPP planning criteria. Category D events shall be evaluated for risks and consequences. Such conditions may involve substantial loss of customer demand and generation in a widespread area or areas. Measures and procedures to mitigate or eliminate the extent and effects of the events are recommended where the extreme event could lead to uncontrolled cascading or system instability.

2.2 Model Assumptions

The 2018 Series 2029 Summer Peak Model Development Working Group (MDWG) model as developed by SPP was provided by IPL as a basis for the power flow analysis. Each of the SPP member transmission planners is responsible for submitting system modeling data to SPP for development of power flow, short circuit and dynamic models. The models are developed through the Model On Demand (MOD) process and Data Submittal Workbook facilitated by SPP. Each of the developed models accounts for the following data as provided by the SPP member transmission planners[1]:

- Existing facilities
- Known outages of generation or transmission facilities with a duration of a least six months
- New planned facilities and changes to existing facilities
- Real and reactive load forecasts
- Known commitments for Firm Transmission Service and Interchange
- Resources required for load

[1] Section 3, SPP Power Flow Model Development Procedure Manual

2.3 Load Assumptions

Table 2-1 summarizes the area load modeled on IPL's transmission system and neighboring areas of Kansas City Power and Light (KCPL), and Associated Electric Power Cooperative (AECI). The load forecast was extracted from the MDWG base cases which represents the one-hour system load for the respective season.

Table 2-1: Load Forecast

	Area Load		
Case	IPL	AECI	KCPL
2029S	316.5	5,521.8	5,015.8
(MW/MVAR)	74.1	1,384.3	1,198.5

2.4 Generation Assumptions

Table 2-2 summarizes the IPL generation dispatch as modeled for the Study case. All generation at KCPL's Sibley plant was switched offline in the base case.

Table 2-2: IPL Generation Dispatch

	Dispatch (MW)		
Generation	Scenario 1	Scenario 2	Scenario 3
SUB I-13B1 13.800 G3	N/A	0	N/A
SUB I-13B2 13.800 G4	N/A	0	N/A
SUB H-13B1 13.800 G5	N/A	0	N/A
SUB H-13B2 13.800 G6	N/A	0	N/A
SUB J-13B1 13.800 G1	N/A	0	N/A
SUB J-13B2 13.800 G2	N/A	0	N/A
BLUVLY 14.400 1	N/A	N/A	0
BLUVLY 14.400 2	N/A	N/A	0
BLUVLY 13.800 3	N/A	N/A	0

2.5 Capacitor Bank Assumptions

As a result of modeling a zero-dispatch condition for each of the IPL units, the capacitor banks on the IPL system were switched online to their maximum capability and locked for all contingency conditions simulated. Table 2-3 summarizes the modeling assumptions as described.

Table 2-3: Capacitor Bank Modeling

Bus Name	Control Mode	Binit (Mvar)
SUB K 69.000	Locked (0)	20
SUB H 69.000	Locked (0)	10
SUB M 69.000	Locked (0)	20
SUB N 69.000	Locked (0)	20
SUB C 69.000	Locked (0)	10

2.6 Transmission Assumptions

The MDWG base model for the Study as listed in the Model Assumptions section was assumed to have the necessary transmission projects modeled. Transmission line ratings on the IPL system represent the summer peak seasonal ratings. Rating A was used for the normal operating condition while Rating B was used for the contingency conditions. The IPL system is comprised of facilities above and below 100 kV. Planning Events and Extreme Events simulated for the analysis considered all IPL facilities.

2.7 Interchange Assumptions

IPL purchases power from three separate generation facilities outside of the IPL system. These purchases are modeled as firm transactions and defined as the scheduled interchange. The scheduled interchange is provided in Table 2-4. A negative interchange value represents an import in flow.

Table 2-4: Scheduled Interchange

Generation Facility	Scheduled Interchange (MW)
Dogwood	-75.0
Iatan	-50.0
Nebraska City 2	-57.0
Total	**-182.0**

As a result of modeling a 0 MW dispatch condition for all IPL units, the remainder of the IPL load not addressed by the scheduled transactions is assumed to be served by the market. The tie line flow between IPL and other interconnected transmission systems as reflected in the Study case is summarized in Table 2-5. The reported tie line flow includes the scheduled interchange defined in Table 2-4. A negative interchange value represents an import in flow. Approximately 3 MW was observed in losses for the IPL system.

Table 2-5: Study Cases Area Interchange

Ties	2029S Area Interchange	
	MW	MVAR
To AECI	-63.1	18.2
To KCPL	-256.5	-42.3
Total	**-319.6**	**-24.1**

2.8 Network Upgrade Cost Assumptions

Upgrade costs for the facilities were derived from published SPP equipment cost estimates as coordinated with IPL. If the limitation of the line was the conductor, full rebuild costs were applied. The cost assumptions applied are provided in Table 2-6.

Table 2-6: Upgrade Cost Assumptions

Equipment	Cost ($MM)
Breaker	$0.50
Wave Trap	$0.06
Switch	$0.10
Relay	$0.20
CT	$0.08
Jumper	$0.01
Transformer	$3.90
Rebuild (per mile)	$0.73
Capacitor (per Mvar)	$0.04

3.0 STUDY METHODOLOGY

3.1 Power Flow Analysis Methodology

A power flow analysis was performed to ensure that the system met the necessary requirements as defined in the NERC TPL-001-4 criteria. IPL's transmission system must be capable of operating within the applicable normal ratings, emergency ratings, and voltage limits as described in the IPL Transmission Planning Criteria section. For all contingency conditions studied, IPL's transmission facilities and neighboring systems 60 kV and above were monitored against the thermal and voltage limits detailed in the IPL Transmission Planning Criteria for the applicable event. System adjustments, such as circuit switching and generation redispatch as available, were utilized when appropriate to initially mitigate any reported violations. Any violation that was not fully resolved with available system adjustments required upgraded. The emergency rating (Rate B) was applied for the analysis.

The following conditions were studied.

3.1.1 Planning Event P0

IPL's transmission facilities 60 kV and above were assessed with all elements in-service. Interruption of firm transmission service and non-consequential load loss was not allowed.

3.1.2 Planning Event P1

Analysis was performed for single loss of transmission lines, transformers, generating units, and switched shunts 60 kV and above within the IPL system as well as portions of neighboring systems. The IPL system does not contain any HVDC facilities. Interruption of firm transmission service and non-consequential load loss was not allowed.

3.1.3 Planning Event P2

Analysis was performed for single line sections, bus section faults, and internal breaker failures 60 kV and above within the IPL system. Interruption of firm transmission service or non-consequential load loss was not allowed for single line section outages. If necessary, all other P2 events allowed interruption of firm transmission service or non-consequential load loss. System adjustments were developed based on the response from the event analysis.

3.1.4 Planning Event P3

Analysis was performed for loss of a single generator followed by another single generator, transmission circuit, shunt device, or transformer. All generator units within the IPL system as well as portions of neighboring systems were analyzed. Transmission circuits, transformers, and shunts devices 60 kV and above within the IPL system as well as portions of neighboring systems were analyzed. Interruption of firm transmission service and non-consequential load loss was not allowed. System adjustments were developed based on the response from the event analysis.

3.1.5 Planning Event P4

Planning Event P4 is defined as loss of multiple elements caused by a stuck breaker. In terms of steady-state analysis, a stuck breaker event is the same event as conducting an internal breaker failure as defined in Planning Event P2. Therefore, P4 events for steady-state analysis are addressed under the Planning Event P2 analysis.

3.1.6 Planning Event P5

The IPL system does not contain any non-redundant relay schemes on IPL's portion of the BES. Therefore, no P5 events were analyzed.

3.1.7 Planning Event P6

Analysis was performed for loss of a single transmission circuit, shunt device, or transformer followed by another single transmission circuit, shunt device, or transformer. Transmission circuits, transformers, and shunts devices 60 kV and above within the IPL system as well as portions of neighboring systems were analyzed. Interruption of firm transmission service and non-consequential load loss was allowed. System adjustments were developed based on the response from the event analysis.

3.1.8 Planning Event P7

Analysis was performed for loss of any two adjacent circuits on a common structure for more than one mile in length. The following common structure events within the IPL system were analyzed:

- Sub R – Shrank Road 69 kV (line segment) and Sub K – Sub R 69 kV lines
- Sub R – Shrank Road 69 kV (circuit) and Sub K – Sub R 69 kV lines
- Sub A – Sub P 69 kV and Sub A – Sub K 69 kV lines
- Sub A – Sub J 69 kV and Sub A – Sub M 161 kV lines
- Sub M – Shank Road 69 kV (line segment) and Sub I – Sub P 69 kV lines
- Sub M – Shrank Road 69 kV (circuit) and Sub I – Sub P 69 kV lines

Interruption of firm transmission service and non-consequential load loss was allowed. System adjustments were developed based on the response from the event analysis.

3.1.9 Extreme Events

Analysis was performed for loss of a switching station or substation which involves loss of one voltage level plus transformers. Only switching stations or substation within the IPL system were analyzed. System adjustments were developed based on the response from the event analysis.

3.2 Affected Systems Analysis

Neighboring system facilities were reviewed for adverse impacts for each of the modeled scenarios and associated network upgrades. Facilities that remained overloaded in the final mitigation case in each scenario following system adjustments and there was a change in loading with the system adjustments was flagged as an affected system facility. Those neighboring facilities that were overloaded, but did not change with implementing IPL system adjustments was not considered an impact from the changes on IPL system.

Mitigations for affected system facilities were treated on a case by case basis. Cost assumptions defined in Section 2.8 were applied.

3.3 Reactive Reserve Analysis

The need for additional reactive resources was determined for each of the scenarios by tabulating the reactive reserves under loss of the largest reactive resource available. The resulting reserve was then compared to the reactive load demand for the system, including losses

4.0 POWER FLOW ANALYSIS RESULTS

All voltage violations reported were mitigated by system adjustment. All IPL thermal violations reported for every planning event and extreme event, except for P6 (N-1) events were resolved with system adjustments. The following sections highlight the unresolved P6 thermal impacts and mitigations results. Loadings were reported before and after available system adjustments that were effective in reducing the thermal loadings.

4.1 Scenario 1 Results

The initial P6 thermal violations reported with retirement of all IPL generation is shown in Table 4-1.

Table 4-1: Scenario 1 Initial Thermal Results

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
548800 SUB I 69.000 548809 SHRNKRD 69.000 1	100	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548827 [SUB P 69.000] CKT 1	OPEN LINE FROM BUS 548825 [SUB C 69.000] TO BUS 548826 [STRLNGRD 69.000] CKT 1	100.6	100.6
548801 SUB K 69.000 548806 BLUVLY 69.000 1	72	OPEN LINE FROM BUS 548821 [SUB N 69.000] TO BUS 548826 [STRLNGRD 69.000] CKT 1	OPEN LINE FROM BUS 548809 [SHRNKRD 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	102.6	102.6
548806 BLUVLY 69.000 548810 SUB B 69.000 1	58	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548811 [SUB J 69.000] CKT 1	OPEN LINE FROM BUS 548811 [SUB J 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	122.9	123.0
548806 BLUVLY 69.000 548811 SUB J 69.000 1	70	OPEN LINE FROM BUS 548811 [SUB J 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548810 [SUB B 69.000] CKT 1	100.6	100.6
548814 SUB M-161 161.00 548815 SUB M 69.000 1	112	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	OPEN LINE FROM BUS 548807 [BLUVLY-161 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	106.8	100.6
548820 SUB N-161 161.00 548821 SUB N 69.000 1	112	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	128.4	107.8
548821 SUB N 69.000 548826 STRLNGRD 69.000 1	106	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	118.1	118.3
548825 SUB C 69.000 548826 STRLNGRD 69.000 1	105	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	118.2	118.3
543080 HAWTH 2 69.000 548803 SUB F 69.000 1	60	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	161.1	144.1
543089 SUGRCRK2 69.000 548802 SUB H 69.000 1	58	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	128.0	128.2

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
543089 SUGRCRK2 69.000 548803 SUB F 69.000 1	53	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	147.7	147.9

For each reported impact, the required rating was determined and compared to the equipment that comprised the facility to understand the scope of the upgrade. The review found that the majority of facilities reported were conductor limited. Those facilities that were conductor limited were upgrade to 556 ACSR conductor, assuming full rebuild costs. For those facilities that were already 556 ACSR conductor, the limiting equipment was upgraded to conductor rating if not already the limitation. Transformer overloads were not addressed initially. The upgrades developed, modeled and tested to mitigate the initial thermal violations for Scenario 1 is shown in Table 4-2.

Table 4-2: Scenario 1 Initial Thermal Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Sub I -Shrank Road 69 kV	100	Upgrade terminal equipment	1.1	$0.02
Sub K-Sub A 69 kV	72	Rebuild to 556 ACSR (100ºC)	4.1	$2.99
Sub B-Sub A 69 kV	58	Rebuild to 556 ACSR (100ºC)	6.2	$4.53
Sub J-Sub A 69 kV	70	Rebuild to 556 ACSR (100ºC)	5.5	$4.02
Sub M 161/69 kV	112	None	1	-
Sub N 161/69 kV	112	None	1	-
Sub N-Sterling Rd Jct 69 kV	106	None	4.2	-
Sub C-Sterling Rd Jct 69 kV	105	Upgrade terminal equipment	4.2	$0.16
Hawthorn-Sub F 69 kV	60	Rebuild to 556 ACSR (100ºC)	2.1	$1.53
Sugar Creek-Sub H 69 kV	58	Rebuild to 556 ACSR (100ºC)	3.65	$2.66
Sugar Creek-Sub F 69 kV	53	Rebuild to 556 ACSR (100ºC)	1.8	$1.31
Total				**$17.23**

With the initial mitigations modeled, the IPL thermal overloads shown in Table 4-3 were reported.

Table 4-3: Scenario 1 Thermal Impacts with Initial Mitigations

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
548811 SUB J 69.000 548815 SUB M 69.000 1	72	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	OPEN LINE FROM BUS 548807 [BLUVLY-161 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	100.7	102.4
548820 SUB N-161 161.00 548821 SUB N 69.000 1	112	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	128.0	104.5
548821 SUB N 69.000 548826 STRLNGRD 69.000 1	106	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	118.1	107.4
548825 SUB C 69.000 548826 STRLNGRD 69.000 1	105	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	118.2	106.7
548825 SUB C 69.000 548800 SUB I 69.000 1	105	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	110.4	110.4

Results from implementing the initial round of mitigations showed the Sub N to Sterling Road to Sub C to Sub I 69 kV need upgraded. The required ampacity for these segments of line exceed the capability of the 556 ACSR conductor. Therefore, 1192 ACSR conductor was applied for modeling purposes. The Sub N 161/69 kV transformer remained an overload, however, the Sub M 161/69 kV transformer was no longer a constraint due to the upgrades of the Hawthorn to Sub F to Sugar Creek to Sub H 69 kV segments. Lastly, the Sub J to Sub M 69 kV was a new overload caused by the addition of the initial mitigations. Table 4-4 shows the upgrades developed, modeled and tested to mitigate the remaining thermal violations for Scenario 1.

Table 4-4: Scenario 1 Final Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Sub J-Sub M 69 kV	72	Uprate to 100ºC*	1.8	$0.40
Sub N 161/69 kV	112	Add 2nd transformer	1	$3.90
Sub N-Sterling Rd Jct 69 kV	106	Rebuild to 1192 ACSR (100ºC)	4.2	$3.07
Sub C-Sterling Rd Jct 69 kV	105	Rebuild to 1192 ACSR (100ºC)	4.2	$3.07
Sub C-Sub I 69 kV	105	Rebuild to 1192 ACSR (100ºC)	4.2	$3.07
Total				**$13.50**

With all the IPL upgrades modeled as specified for Scenario 1, review of the neighboring systems for impacts was performed. Table 4-5 shows the affected system facilities reported for Scenario 1.

Table 4-5: Scenario 1 Affected Systems Thermal Results

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
542973 HAWTHS5 161.00 543663 HAWT11_2 69.000 11	33	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 543664 [HAWT12_2 69.000] CKT 12	(blank)	103.9	100.3
542973 HAWTHS5 161.00 543663 HAWT11_2 69.000 11	33	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	148.7	127.0
542973 HAWTHS5 161.00 543664 HAWT12_2 69.000 12	33	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	147.9	126.3

The projected upgrades and costs to mitigate the affected system facilities for Scenario 1 is shown in Table 4-14.

Table 4-6: Scenario 1 Affected Systems Thermal Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Hawthorn 161/69 kV #11	33	Add 3rd transformer	1	$3.90
Hawthorn 161/69 kV #12	33	-	-	-
Total				**$3.90**

4.2 Scenario 2 Results

Scenario 2, retirement of the Blue Valley plant, did not report any thermal violations that could not be resolved with the utilization of closing in the Sub N to Blue Ridge Mall 69 kV and/or dispatch of the remaining generation at Sub H, Sub I, and/or Sub J.

4.3 Scenario 3 Results

The initial P6 thermal violations reported with retirement of generation at Sub H, Sub I, and Sub J is shown in Table 4-7.

Table 4-7: Scenario 3 Initial Thermal Results

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
548800 SUB I 69.000 548809 SHRNKRD 69.000 1	100	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548827 [SUB P 69.000] CKT 1	OPEN LINE FROM BUS 548825 [SUB C 69.000] TO BUS 548826 [STRLNGRD 69.000] CKT 1	100.6	100.6
548801 SUB K 69.000 548806 BLUVLY 69.000 1	72	OPEN LINE FROM BUS 548809 [SHRNKRD 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	OPEN LINE FROM BUS 548821 [SUB N 69.000] TO BUS 548826 [STRLNGRD 69.000] CKT 1	102.7	102.6
548806 BLUVLY 69.000 548810 SUB B 69.000 1	58	OPEN LINE FROM BUS 548811 [SUB J 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548811 [SUB J 69.000] CKT 1	123.0	122.8
548806 BLUVLY 69.000 548811 SUB J 69.000 1	70	OPEN LINE FROM BUS 548811 [SUB J 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548810 [SUB B 69.000] CKT 1	100.6	100.5
543080 HAWTH 2 69.000 548803 SUB F 69.000 1	60	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	161.1	101.7

For each reported impact, the required rating was determined and compared to the equipment that comprised the facility to understand the scope of the upgrade. The review found that the majority of facilities reported were conductor limited. Those facilities that were conductor limited were upgrade to 556 ACSR conductor, assuming full rebuild costs. For those facilities that were already 556 ACSR conductor, the limiting equipment was upgraded to conductor rating if not already the limitation. The upgrades developed, modeled and tested to mitigate the initial thermal violations for Scenario 3 is shown in Table 4-8.

Table 4-8: Scenario 3 Initial Thermal Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Sub I -Shrank Road 69 kV	100	Upgrade terminal equipment	1.1	$0.02
Sub K-Sub A 69 kV	72	Rebuild to 556 ACSR (100ºC)	4.1	$2.99
Sub B-Sub A 69 kV	58	Rebuild to 556 ACSR (100ºC)	6.2	$4.53
Sub J-Sub A 69 kV	70	Rebuild to 556 ACSR (100ºC)	5.5	$4.02
Hawthorn-Sub F 69 kV	60	Rebuild to 556 ACSR (100ºC)	2.1	$1.53
Total				**$13.09**

With the initial mitigations modeled, the IPL thermal overloads shown in Table 4-9 were reported.

Table 4-9: Scenario 3 Thermal Impacts with Initial Mitigations

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
543089 SUGRCRK2 69.000 548803 SUB F 69.000 1	53	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	147.7	101.5

Results from implementing the initial round of mitigations showed the Sub F to Sugar Creek 69 kV line needed upgraded. Table 4-10 shows the upgrade developed, modeled, and tested to mitigate the remaining thermal violation for Scenario 3.

Table 4-10: Scenario 3 Final Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Sugar Creek-Sub F 69 kV	53	Rebuild to 556 ACSR (100ºC)	1.8	$1.31
Total				**$1.31**

With all the IPL upgrades modeled as specified for Scenario 3, review of the neighboring systems for impacts was performed. Table 4-11 shows the affected system facilities reported for Scenario 1.

Table 4-11: Scenario 3 Affected Systems Thermal Results

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
542973 HAWTHS5 161.00 543663 HAWT11_2 69.000 11	33	OPEN LINE FROM BUS 541248 [LBRTYST5 161.00] TO BUS 543095 [LIBRTYS2 69.000] CKT 1	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 543664 [HAWT12_2 69.000] CKT 12	115.6	105.5
542973 HAWTHS5 161.00 543664 HAWT12_2 69.000 12	33	OPEN LINE FROM BUS 541248 [LBRTYST5 161.00] TO BUS 543095 [LIBRTYS2 69.000] CKT 1	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 543663 [HAWT11_2 69.000] CKT 11	114.9	104.8

The projected upgrades and costs to mitigate the affected system facilities for Scenario 3 is shown in Table 4-12.

Table 4-12: Scenario 3 Affected Systems Thermal Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Hawthorn 161/69 kV #11	33	Add 3rd transformer	1	$3.90
Hawthorn 161/69 kV #12	33	-	-	-
Total				**$3.90**

4.4 Sensitivity Analysis

A sensitivity analysis was performed to determine if a Sub N to Sub R 161 kV line with 161/69 kV transformation at Sub R would replace upgrades on portions of the underlining 69 kV system in Scenario 1, retirement of all IPL generation.

The initial P6 thermal violations reported with the inclusion of the Sub N to Sub R reinforcement in Scenario 1 is shown in Table 4-13.

Table 4-13: Scenario 1 Sensitivity Initial Thermal Results

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
548800 SUB I 69.000 548809 SHRNKRD 69.000 1	100	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548827 [SUB P 69.000] CKT 1	OPEN LINE FROM BUS 548825 [SUB C 69.000] TO BUS 548826 [STRLNGRD 69.000] CKT 1	100.6	100.6
548806 BLUVLY 69.000 548810 SUB B 69.000 1	58	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548811 [SUB J 69.000] CKT 1	OPEN LINE FROM BUS 548811 [SUB J 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	122.9	123.0
548806 BLUVLY 69.000 548811 SUB J 69.000 1	70	OPEN LINE FROM BUS 548811 [SUB J 69.000] TO BUS 548815 [SUB M 69.000] CKT 1	OPEN LINE FROM BUS 548806 [BLUVLY 69.000] TO BUS 548810 [SUB B 69.000] CKT 1	100.6	100.6
543080 HAWTH 2 69.000 548803 SUB F 69.000 1	60	OPEN LINE FROM BUS 543004 [BLUMILS5 161.00] TO BUS 548808 [ECKLES-161 161.00] CKT 1	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 548814 [SUB M-161 161.00] CKT 1	116.3	106.0

For each reported impact, the required rating was determined and compared to the equipment that comprised the facility to understand the scope of the upgrade. The review found that the majority of facilities reported were conductor limited. Those facilities that were conductor limited were upgrade to 556 ACSR conductor, assuming full rebuild costs. For those facilities that were already 556 ACSR conductor, the limiting equipment was upgraded to conductor rating if not already the limitation. The upgrades developed, modeled and tested to mitigate the initial thermal violations for Scenario 1 is shown in Table 4-14.

Table 4-14: Scenario 1 Sensitivity Initial Thermal Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Sub I -Shrank Road 69 kV	100	Upgrade terminal equipment	1.1	$0.02
Sub B-Sub A 69 kV	58	Rebuild to 556 ACSR (100ºC)	6.2	$4.53
Sub J-Sub A 69 kV	70	Rebuild to 556 ACSR (100ºC)	5.5	$4.02
Hawthorn-Sub F 69 kV	60	Rebuild to 556 ACSR (100ºC)	2.1	$1.53
-	-	Build new Sub N-Sub R 161 kV	-	$9.00
Total				**$19.09**

No new constraints were reported with the initial mitigations modeled.

With all the IPL upgrades modeled as specified for Scenario 1 sensitivity, review of the neighboring systems for impacts was performed. Table 4-15 shows the affected system facilities reported for Scenario 1 sensitivity.

Table 4-15: Scenario 1 Sensitivity Affected Systems Thermal Results

Monitored Facility	Cont Rate (MVA)	Primary Outage	Secondary Outage	Max of Cont %Loading	Max of Mitigation Min Cont %Loading
542973 HAWTHS5 161.00 543663 HAWT11_2 69.000 11	33	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 543664 [HAWT12_2 69.000] CKT 12	OPEN LINE FROM BUS 543000 [BLUEVLY5 161.00] TO BUS 548820 [SUB N-161 161.00] CKT 1	124.2	118.0
542973 HAWTHS5 161.00 543664 HAWT12_2 69.000 12	33	OPEN LINE FROM BUS 542973 [HAWTHS5 161.00] TO BUS 543663 [HAWT11_2 69.000] CKT 11	OPEN LINE FROM BUS 543000 [BLUEVLY5 161.00] TO BUS 548820 [SUB N-161 161.00] CKT 1	123.6	117.3

The projected upgrades and costs to mitigate the affected system facilities for Scenario 1 is shown in Table 4-12.

Table 4-16: Scenario 1 Sensitivity Affected Systems Thermal Mitigations

Monitored Facility	Cont Rate (MVA)	Upgrade Description	Units	Cost ($MM)
Hawthorn 161/69 kV #11	33	Add 3rd transformer	1	$3.90
Hawthorn 161/69 kV #12	33	-	-	-
Total				**$3.90**

4.5 Reactive Reserve Results

The reactive resource deficiency and associated static compensation device cost estimate for each scenario is shown in Table 4-17.

Table 4-17: Reactive Resource Results and Costs

Item	Base	Scenario 1	Scenario 2	Scenario 3
MVAR Demand	74.1	74.1	74.1	74.1
System MVAR Losses	39.6	34.3	39.6	37.9
Total MVAR Demand	113.7	108.4	113.7	112.0
Static Capacitors (MVAR)	80.0	80.0	80.0	80.0
Generation Reserves (MVAR)	72.4	0.0	42.0	30.4
Loss of Largest MVAR Source	20.0	20.0	20.0	20.0
Net MVAR (+Surplus/-Deficiency)	**18.7**	**-48.4**	**-11.7**	**-21.6**
Required Blocks	**-**	**50.0**	**20.0**	**30.0**
Costs ($MM)	**-**	**$2.00**	**$0.80**	**$1.20**

5.0 CONCLUSION

Burns & McDonnell was retained by Independence Power & Light (IPL) to determine the transmission impacts from the potential change in generation resources as being studied concurrently in the IPL Master Plan Study. The conclusion for each of the generation resource scenarios are as follows:

1. Retire all IPL generation

   With the retirement of all IPL generation, significant transmission upgrades are required to the IPL system, the most upgrades out of all scenarios analyzed. Under this scenario, IPL will be importing all the power needed to serve their load. A total of 36 miles of transmission line will need rebuilt. The estimated cost for the system upgrades is $36.5MM, the most expensive out of all scenarios analyzed.

2. Retire the Blue Valley Plant

   With the retirement of only Blue Valley, no transmission upgrades are required to the IPL system to reliably serve their load. The remaining combustion turbines (CTs) at Sub H, Sub I, and Sub J can reliably serve the IPL load without reinforcements on IPLs system. A small amount of reactive support will be required. The estimated cost for the system upgrade is less than $1MM, the least expensive out of all scenarios analyzed.

3. Retire all CTs at Sub H, Sub I, and Sub J

   With the retirement of all the combustion turbines (Sub H, Sub I, and Sub J), some amount of transmission upgrades are required to the IPL system. With only generation at Blue Valley, several system issues remain in serving IPL load that need addressed. A total of 20 miles of transmission line will need rebuilt. The estimated cost for the system upgrades is $19.5MM, the next least expensive out of all scenarios analyzed.

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APPENDIX B – BLUE VALLEY CONDITION ASSESSMENT

Condition Assessment for Blue Valley Unit 1, Unit 2 & Unit 3

Independence Power & Light

Energy Master Plan
Project No. 103983

2/19/2018

Condition Assessment for Blue Valley Unit 1, Unit 2 & Unit 3

prepared for

Independence Power & Light
Energy Master Plan
Independence, Missouri

Project No. 103983

2/19/2018

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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LIST OF ABBREVIATIONS

Abbreviation	Term/Phrase/Name
ASME	American Society of Mechanical Engineers
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
BMS	Burner Management System
BV1	Blue Valley Unit 1
BV2	Blue Valley Unit 2
BV3	Blue Valley Unit 3
CPS	Covered Piping System
CV	Control Valve
DC	Direct current
DCS	Distributed control system
EAF	Equivalent availability factor
EFOR	Equivalent forced outage rate
FAC	Flow Accelerated Corrosion
Facility	Blue Valley Generating Station
FD	Forced draft
FERC	Federal Energy Regulatory Commission
FM	Factory Mutual
FWH	Feedwater heaters
GADS	Generator Availability Database System
GE	General Electric
GSU	Generator step-up
HMI	Human Machine Interface
hp	Horse power
HP	High pressure
ID	Induced Draft
IPL	Independence Power & Light
kVA	Kilovolt amperes
kV	Kilovolt
kW	Kilowatt
kW-year	Kilowatt-Year
lb/hr	Pounds per hour

Abbreviation	**Term/Phrase/Name**
LP	Low pressure
MCR	Maximum continuous rating
MVA	Megavolt amperes
MW	Megawatt
NDE	Nondestructive examination
NERC	North American Electric Reliability Corporation
O&M	Operation and maintenance
OEM	Original equipment manufacturer
Plant	Blue Valley Generating Station
Project Costs	Costs for projects identified by Burns & McDonnell
psig	Pounds per square inch gauge
SPP	Southwest Power Pool
STG	Steam turbine generator
Study	Condition Assessment
TIL	Technical Information Letter
UAT	Unit Auxiliary Transformer
Units	Blue Valley Generating Station Units 1, 2, and 3
V	Volt
VDC	Volts DC

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1.0 EXECUTIVE SUMMARY

1.1 Objective & Background

Independence Power & Light ("IPL") retained the services of Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") to perform a study to assess the condition of Blue Valley Generating Station ("Plant," "BV," or "Facility") Unit 1, Unit 2, and Unit 3 ("BV1", "BV2," and "BV3" respectively or Units collectively) to determine the overall costs associated with operating the Units reliably within the Southwest Power Pool ("SPP") energy market ("Study").

The intent of this Study is to assist IPL in determining the maintenance and capital expenditures associated with operating the Facility at a level which meets or exceeds the average reliability of similar units within the United States ("U.S.") fleet to support resource planning efforts. The analysis conducted herein is based on historical operations data, maintenance and operating practices of units like Blue Valley, and Burns & McDonnell's professional opinion. For this Study, Burns & McDonnell reviewed data provided by IPL, interviewed plant personnel, and conducted a walk-down of the Facility. Additionally, historical performance data was obtained through S&P Global Market Intelligence database, which compiles Federal Energy Regulatory Commission ("FERC") Form 1 data. Burns & McDonnell then used the gathered information to determine the necessary maintenance activities that would provide reliable operation of the Units over varying operational horizons.

1.2 Results

1.2.1 Performance & Benchmarking

Burns & McDonnell evaluated the overall reliability and performance of Blue Valley Unit 1, Unit 2, and Unit 3 against a fleet average of similar generating stations. The Units were benchmarked against fleet data as provided from the North American Electric Reliability Corporation ("NERC") Generator Availability Database System ("GADS") for similar natural gas-fired steam turbine generator ("STG") units with capacities between 10 megawatts ("MW") and 100 MW across the U.S.

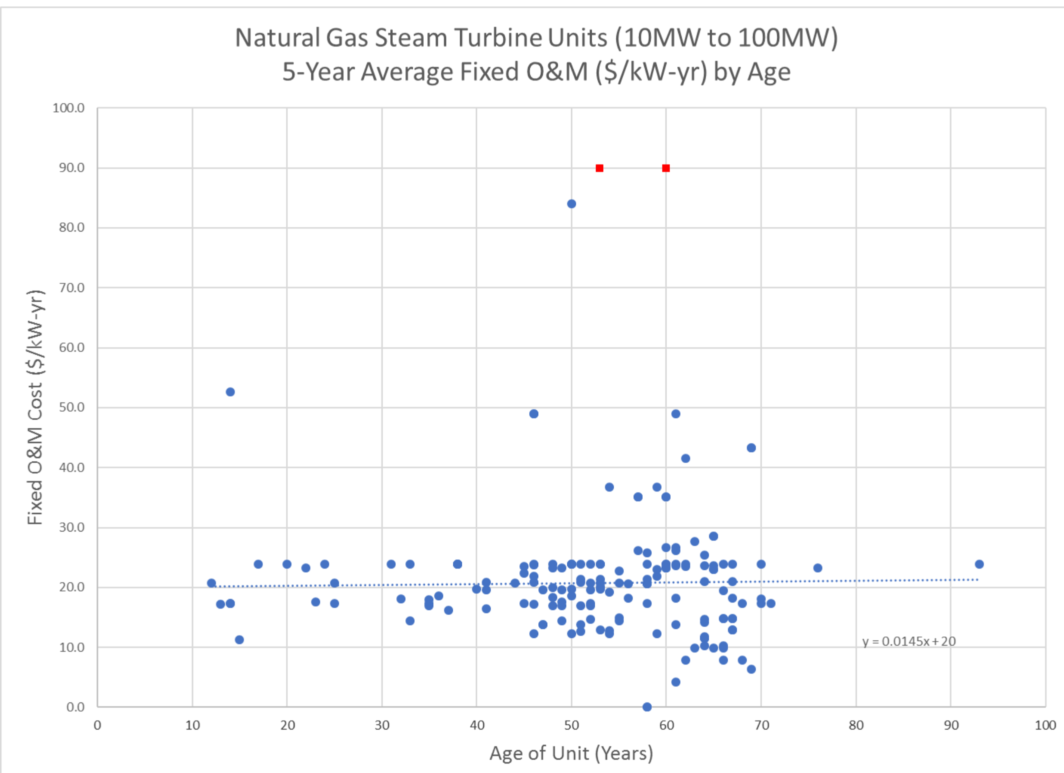
Overall, the equivalent availability factor ("EAF") of BV1 exceeded (was better than) the fleet EAF benchmark in every year. The EAF of BV2 and BV3 have also been very high with both only being less (worse) than the industry benchmark in 2015.

Conversely, the equivalent forced outage rater ("EFOR") of BV1, BV2, and BV3 has become significantly higher (i.e. worse) and more volatile. Blue Valley Unit 2 has operated below the industry benchmark in every comparison year. Blue Valley Unit 1 has exceeded the benchmark in only 2016 and

BV3 has exceeded it in only 2015 and 2016. The increased EFOR in these later years can be attributed to the decrease in operating hours of the Units when they were converted from coal to natural gas operation. With such low capacity factors operating on natural gas, one forced outage event can significantly increase the EFOR of a unit.

Overall, as reported by S&P Global Market Intelligence, the baseline fixed operation and maintenance ("O&M") costs associated with operating the Units is significantly higher than the fleet benchmark as illustrated on a per kilowatt-year ("kW-yr") basis. Figure 1-1 presents the baseline fixed O&M costs for the Units compared against the fleet benchmark by the age of the facilities. The IPL Units are presented in red and the fleet benchmark units are presented in blue. As illustrated within Figure 1-1, the overall baseline fixed costs required to operate and maintain power generation units appear to increase with age. Overall, there appears to be a 1.5 percent increase in overall costs per year as a facility ages. Furthermore, the Blue Valley Units appear to be significantly higher in O&M costs for similar unit across the U.S.

Figure 1-1: O&M Cost Benchmarking



1.2.2 Cost Projections

Burns & McDonnell evaluated the overall costs for maintaining the Facility. Baseline fixed maintenance costs were considered as well as specific project costs. The total annual costs were developed utilizing a combination of information supplied by IPL, Burns & McDonnell's analysis of required projects for each Unit, and an analysis of the overall costs of the Plant compared to the fleet benchmark. Historical baseline fixed maintenance costs were supplied by IPL. Furthermore, Burns & McDonnell assumed that the baseline fixed maintenance costs contained expenditures such as chemical costs, lubrication costs, motor filters, etc. that are normally associated with maintaining and operating a facility. For 2018 and beyond, the baseline fixed maintenance costs were derived utilizing the average of the historic maintenance costs with an age-based escalation of 1.5 percent applied throughout the various operational scenarios.

Figure 1-2, Figure 1-3, and Figure 1-4 present the total annual baseline fixed maintenance expenses and project expenditures required to operate each Unit under varying time horizons for the next 5, 10, and 20 years for BV1, BV2, and BV3, respectively. The costs include projects identified by IPL, costs for the projects identified by Burns & McDonnell (collectively "Project Costs"), and baseline fixed maintenance costs. The detailed costs are presented within Figure 1-2. The costs are presented in 2018$ and do not include inflation. As illustrated within the figures, the Project Costs are reduced for the shorter operating horizons.

Figure 1-2: Blue Valley Unit 1 Total Annual Maintenance Cost Summary (2018$)

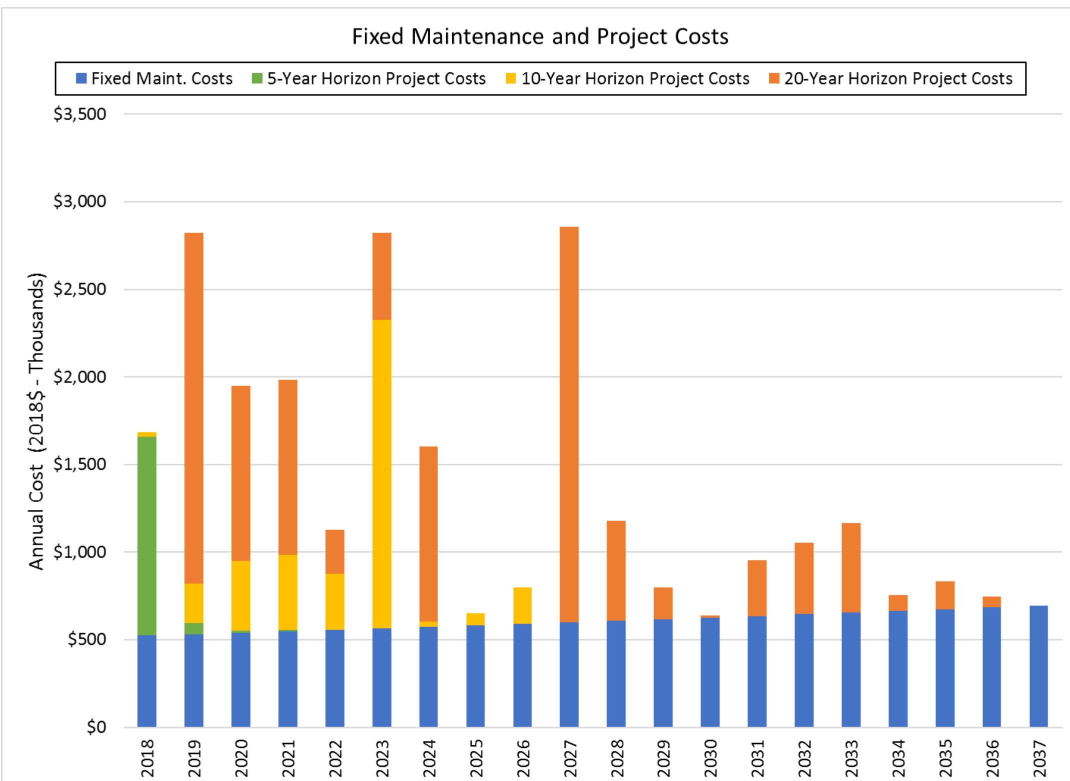


Figure 1-3: Blue Valley Unit 2 Total Annual Maintenance Cost Summary (2018$)

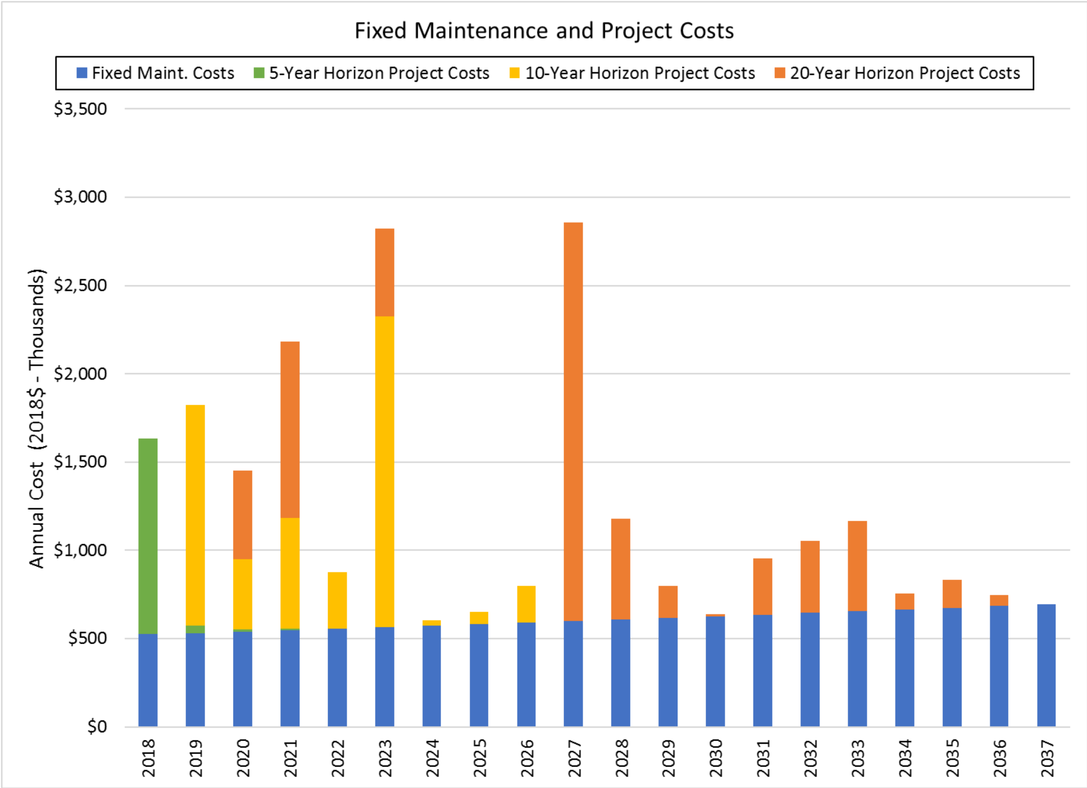
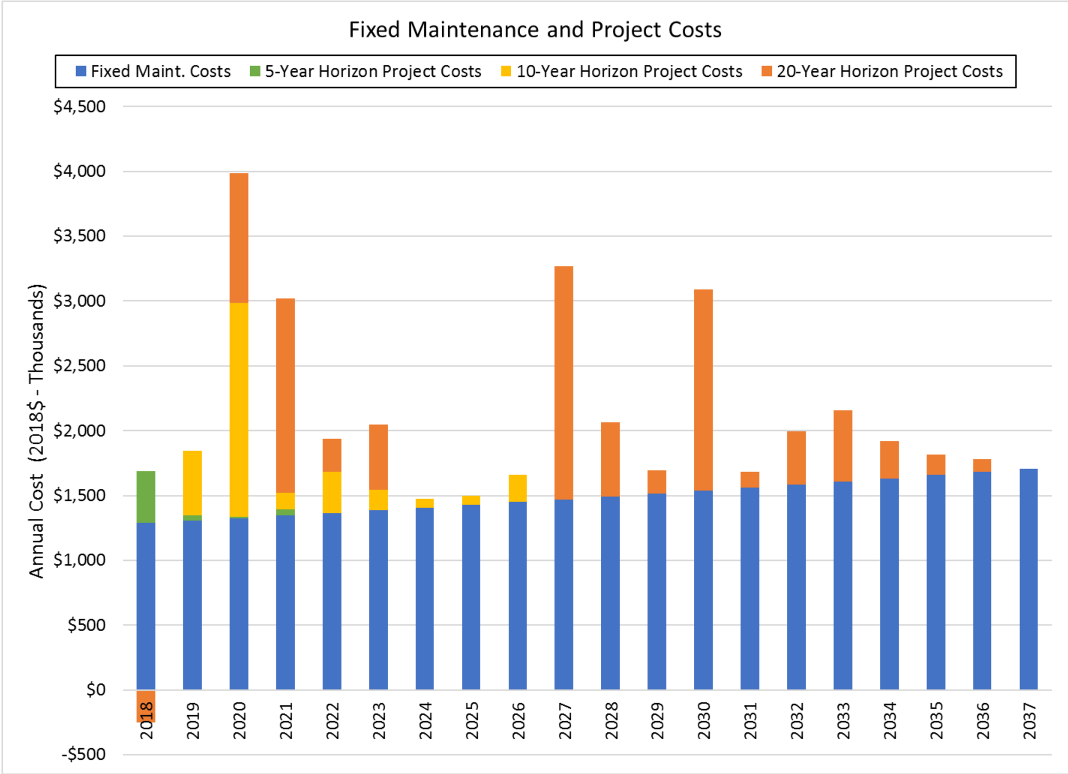


Figure 1-4: Blue Valley Unit 3 Total Annual Maintenance Cost Summary (2018$)



1.3 Conclusions & Recommendations

1.3.1 Conclusions

The following conclusions are based on the observations and analysis from this Study.

1. Blue Valley Unit 1 and Unit 2 were placed into commercial service in 1958 while Unit 3 was commissioned in 1965 meaning the newest unit is 53 years old. The typical power plant design assumes a service life of approximately 30 to 40 years, therefore the Units have exceeded the typical service life of a power generation facility. Many power plant operators have extended the service life of units past the design life by replacing or refurbishing many components.
2. The Units appear to have been maintained well, at or exceeding typical industry standards, over the last 50 years to be in as good of condition as the Units are presently.
3. Many of the major components and equipment for the Units will need to be repaired or replaced to provide reliable operation of the Units over the next 20 years. If the Units are to only operate for the next 10 years, then significantly less Project Costs will be needed. Finally, if the Units are to operate for only 5 more years, then very limited Project Costs are required.
4. The Units have experienced a significant increase in forced outage rates over the past few years, likely due to changes in operational mode and reduced service hours which impacts the overall calculation of the forced outage rate.
5. As indicated within the fleet benchmarking analysis, the Facility has significantly higher baseline fixed O&M costs when compared to similar natural gas-fired STG units.
6. Based on the analysis of the O&M costs of STG natural gas units in the United States that were used as a comparison in this benchmarking study, overall maintenance costs increase as the units age by roughly 1.5 percent per year, which is to be expected. Burns & McDonnell expects the Facility to follow a similar trend.

1.3.2 Recommendations

Based on the information provided to Burns & McDonnell for review, interviews with site personnel, and the site visit, Burns & McDonnell recommends the following:

1. Common to all Units at the Facility
   a. IPL should perform a boiler and high energy piping condition assessment every five years. Non-destructive examination (“NDE”) inspections should also be performed on the superheater.

b. Regular steam drum inspections including a detailed visual inspection with internals removed, magnetic particle examination of all girth, socket, and nozzle welds, as well as ultrasonic inspection of the welds and thickness readings at the normal water level.
c. NDE inspections be performed on the headers on a three-year basis as they have not been performed recently
d. Inspecting the expansion joints and seals throughout the system to identify potential leak locations.
e. Continued inspection of the stacks on a set interval to confirm that liner degradation is not impacting stack integrity
f. Inspecting the blowdown tanks for erosion and flow accelerated corrosion (“FAC”).
g. Inspecting the STGs per the original equipment manufacture’s recommendations and that all new and outstanding issues be resolved.
h. Perform a piping stress study to identify location of high stress to inspect with nondestructive examination techniques to potentially identify creep failure location. Furthermore, the pipe support systems should continue to be visually inspected annually.
i. Load test the spring hangers to determine their actual current loading and that a stress analysis be completed to verify that all loads and stresses are within the allowable limits.
j. Continue the current maintenance and testing plan for the site transformers including dissolved gas analysis
k. Continue breaker maintenance and testing programs
l. Continue testing large motors and replace/refurbish on an as needed basis.
m. Monitor condensate chemistry levels to identify when potential tube leaks arise.

2. Unit 1
    a. Investigate all pre-boiler circuitry to identify the potential hydrogen source that would be causing hydrogen damage in the water wall tubes.
    b. Investigate the reason for BV1 having more superheater leaks than BV2, especially if long-term continued operation is anticipated.
    c. Replacing the roof tubes if the unit is to operate for the next 20 years.
    d. Monitoring the FD motor for further degradation and repairing if megohm readings become unacceptable.
    e. Replace the bus bar in kind to enhance unit reliability.
3. Unit 2
    a. Investigate all pre-boiler circuitry to identify the potential hydrogen source that would be causing hydrogen damage in the water wall tubes.

b. Replace the bus bar in kind to enhance unit reliability.
c. Retube the condenser if the unit becomes back pressure limited and can no longer achieve full load

4. Unit 3
    a. Inspect the boiler ducting and repair the affected area.
    b. Inspect the attemperator periodically for thermal fatigue cracking as downstream piping is very susceptible to quench cracking.
    c. Continued inspection of the stacks to confirm the exterior sheath of the stack is not degrading and impacting its structural integrity as well as monitoring the interior gunite liner for further degradation.
    d. Perform the recommended steam turbine work in the 2008 GE inspection report.

2.0 INTRODUCTION

2.1 General Plant Description

Independence Power & Light, established in 1901, is a municipal electric utility providing the residents and businesses of Independence, Missouri, with electric service. Located in Independence, the Blue Valley Generating Station began commercial operation in 1958. Specifically, Unit 1 and Unit 2 were commissioned in 1958 while Unit 3 was commissioned in 1965. The Facility is dispatched into the SPP integrated marketplace.

IPL prioritizes maintenance activities using a five-year O&M and capital forecast which details replacements to be made. The current five-year plan was reviewed as part of this Study and was utilized to determine the overall maintenance and capital expenditures associated with operating the Units for varying periods of time.

Blue Valley Unit 1 and Unit 2 each generate steam using a natural circulation boiler designed by Combustion Engineering that are rated for 220,000 pounds per hour ("lb/hr") of steam flow at 1,025 pounds per square inch gauge ("psig") outlet pressure and 900°F superheater outlet temperature. Both boilers operate with a negative pressure furnace with combustion air being supplied by a single 100 percent forced draft ("FD") fan and induced by a single 100 percent induced draft ("ID") fan. Each boiler was initially designed to burn coal, natural gas, and fuel oil but since 2015 have only operated using natural gas. The ability to fire fuel oil and coal was not considered within this Study. Each Unit produces power utilizing an Allis-Chalmers Power Systems, Inc. steam turbine generator, high pressure condensing unit rated for 22 MW. Cooling water for the Units is circulated through a single shell, two pass condenser that receives water from a shared cooling tower.

Blue Valley Units 3 generates steam using a natural circulation boiler designed by Combustion Engineering that is rated for 450,000 lb/hr of steam flow at 1,310 psig outlet pressure and 955°F superheater outlet temperature. The boiler operates with a negative pressure furnace with combustion air being supplied by a single 100 percent forced draft fan and induced by a single 100 hundred percent induced draft fan. The boiler was initially designed to burn coal, natural gas, and fuel oil but since 2015 has only operated using natural gas. The ability to fire fuel oil and coal was considered within this Study. The Unit produces power utilizing a General Electric steam turbine generator, high pressure condensing unit rated for 54 MW. Cooling water for the Unit is circulated through a single shell, two pass condenser that receives water from the dedicated cooling tower.

2.2 Study Objectives & Overview

IPL retained the services of Burns & McDonnell to perform a Study to evaluate the condition of the Blue Valley Units to determine the expected and anticipated costs to maintain reliable operations into the future over several operating horizons including 5, 10, and 20 years. This Study also considered current and future operational profiles, maintenance activities, and environmental factors to determine how these items would impact the Plant's forecasted budgets. The condition assessment of the Units was completed using historical operational data, inspection/condition assessment reports provided by IPL, maintenance and operating practices of units similar to Blue Valley as well as Burns & McDonnell's professional opinion. To further aid in this assessment, Burns & McDonnell engineers reviewed plant documentation, interviewed IPL Plant personnel, and conducted a walkdown of the Facility to determine the condition of the equipment. Burns & McDonnell did not perform any detailed equipment testing such as non-destructive or destructive testing, turbine/generator inspections, performance testing, etc. for this Study.

2.3 Study Contents

The following report details the current condition of the Units and presents the baseline fixed and project maintenance expenditures that would be associated with continuing to operate Blue Valley reliably within the SPP market. Since virtually any single component within a power plant can be replaced, the remaining useful life of a plant is typically driven by the economics of replacing the various components as necessary to keep the plant operating at industry standards, versus shutting it down and either purchasing power or building a replacement facility. Specifically, the critical physical components that will likely determine the Facility's remaining useful life include the following:

1. Steam generator drum, headers, tubing and down comers
2. High energy piping systems
3. Steam turbine rotor shaft, blades (rotating/stationary), valves, and steam chest
4. Main generator rotor shaft, stator and rotor windings, stator and rotor insulation, and retaining rings

The following items, although not as critical as the above, are also influential components that affect the remaining life of the plant:

5. Steam generator ductwork, air preheater, forced draft FD fan, and induced draft ID fans
6. Steam turbine diaphragms, nozzle blocks, casing and shells
7. Generator stator-winding bracing, direct current ("DC") exciter, and voltage regulator

8. Balance of plant, including condenser, feedwater heaters, feedwater pumps and motors, controls, and auxiliary switchgear
9. Circulating water system, structural steel, stack, concrete structures, and station main generator step-up ("GSU") and auxiliary transformers

3.0 SITE VISIT

Representatives from Burns & McDonnell, along with IPL staff, visited the Facility on December 20, 2017. The purpose of the site visit was to gather information to conduct the condition assessment, interview plant management and operations staff, and conduct an on-site review of the Facility.

The following representatives from IPL provided information during the site visit:

1. Andrew Boatright, Acting Director
2. Randy Hughes, Manager Planning
3. Martin Barker, Power Production Manager
4. Elain Kalfes, Operation Superintendent
5. Doug Poole, Maintenance Superintendent
6. Ryan Clark, Instrumentation, Controls & Electrical Supervisor
7. Jessica Fett, Production Engineer
8. Henry Lara, Maintenance Supervisor
9. Paul Biesemeyer, Substation Superintendent
10. Lora Lee Locker, Utility Data Specialist

The following Burns & McDonnell representatives comprised the condition assessment team:

11. Mike Borgstadt, Project Manager
12. Sandro Tombesi, Mechanical Engineer
13. Kyle Haas, Mechanical Engineer
14. Kyle Combes, Project Analyst
15. Drew Burczyk, Project Analyst

During the site visit, Unit 1, Unit 2, and Unit 3 were all offline. All equipment appeared to be in good working condition. The Facility was free from clutter and well illuminated. The moving equipment that was visually assessed appeared to be in proper order, free from leakage, and free from any abnormal noise production. Piping appeared to be insulated, sealed, and free from apparent significant leaks. The visual assessment did reveal some signs of external deterioration as discussed herein.

4.0 UNIT 1 & UNIT 2

4.1 Boilers

Blue Valley Unit 1 and Unit 2 generate steam using Combustion Engineering natural circulation, negative draft furnace units. The boilers were originally designed to burn coal, natural gas, and fuel oil. Plant personnel reported that natural gas has been the primary fuel source since 2015 when the coal system was decommissioned. BV1 and BV2 also have not burned fuel oil in many years and significant investment would be needed to commission the system. Operating the Units using coal and fuel oil were not considered as part of this Study.

BV1 and BV2 are designed for a maximum continuous rating ("MCR") of 220,000 lb/hr of main steam at 1,025 psig with a superheater outlet condition of 900 °F. The superheater outlet temperatures are controlled by burner tilt position. The boiler design also includes upper/lower drums, high temperature and low temperature superheaters, a hot air recirculation duct, and an air heater.

During the site visit, BV1 was offline. Plant personnel reported no significant operational or mechanical issues with this boiler. Unit 1 was last chemical cleaned in 2008. Documentation provided by plant personnel showed a significant decrease in BV1 boiler tube repairs starting in 2010 with only 5 tube leaks occurring since then. Most repairs and replacements in BV1's boiler have occurred in the burner area (52 incidents) and the water wall (40 incidents) as well as in the roof tubes. Furthermore, the 2017 internal inspection report from TesTex, Inc. showed 22 locations on the water wall tubes that had a wall thickness of less than 0.100" and 6 locations on the superheat tubes that also had a wall thickness of less than 0.100". The report also found a 1" long by 0.150" deep crack on the steam drum longitudinal (L1) weld. Based on TesTex's 2017 inspection summary, Burns & McDonnell recommends investigating all pre-boiler circuitry to identify the potential hydrogen source that would be causing hydrogen damage in the water wall tubes. As this is the second highest source of tube leaks and has been the most predominant failure mode recently, there could be a systemic issue that may eventually compromise the overall integrity of the boiler. Burns & McDonnell also recommends replacing the roof tubes if the unit is to operate for the next 20 years. Other than these potential issues, the boiler appears to be in serviceable condition and will continue to require routine maintenance, but not other specific expenditures were identified.

BV2 was also offline during the site visit. Plant personnel reported no significant operational or mechanical issues with this boiler. BV2 was last chemical cleaned in 2005. Documentation provided by plant personnel showed significantly less tube repairs than BV1 with only 7 repairs since 2003. With that said, plant personnel did report several roof tube leaks. The 2017 internal inspection report from TesTex, Inc. also showed roughly 22 locations on the water wall tubes that had a wall thickness of less than 0.100". Based on TesTex's inspection summary, Burns & McDonnell recommends investigating all pre-boiler circuitry to identify the potential hydrogen source that would be causing hydrogen damage in the water wall tubes.

4.1.1 Water Walls

The inner walls of the boiler are made up of water wall tubes through which feedwater is raised to saturated steam conditions. Based on repair history, Unit 1 water wall tubes appear to be very susceptible to tube failures and they should be continually monitored for failures. The entire lower slope was replaced in 2008. Furthermore, as mentioned above and in TesTex's 2017 inspection summary, there appears to be hydrogen damage to the tubes. The source of this hydrogen should be identified to avoid more failures. Unit 2 water wall tubes have not experienced the same number of past failures as BV1 but did show tube thinning due to hydrogen damage. It is also recommended that this hydrogen source be identified. A regular tube wall thickness NDE inspection program is recommended to monitor boiler water wall condition and prevent tube rupture related outages. Boiler cavity drone inspections are also recommended.

4.1.2 Steam Generators

The steam generator tubes connect the upper steam drum to the lower steam drum and is used to raise incoming feedwater to saturated steam conditions. No major issues were reported with the steam generator tubes. A regular tube wall thickness NDE inspection program is recommended to monitor steam generator tube conditions and prevent tube rupture related outages. Boiler cavity drone and visual inspections are also recommended.

4.1.3 Superheaters

The superheater of BV1 and BV2 is divided into low temperature and high temperature sections. These superheater sections are used to raise the temperature of steam above the steam saturation temperature while utilizing burner tilts to maintain design main steam temperature conditions.

Documentation provided by plant personnel indicated that there were 6 tube leaks in BV1's superheaters from 2005 to 2009. There were no documented tube leaks in BV2's superheaters. As mentioned above for Unit 1, the internal inspection report from TesTex, Inc. showed 6 locations on the superheat tubes that had a wall thickness of less than 0.100". These were repaired but Burns & McDonnell recommends further investigation of why BV1 has more superheater leaks than BV2, especially if long-term continued operation is anticipated.

Burns & McDonnell recommends NDE inspections be performed on the superheater. Future inspections should also include testing to identify signs of creep and fatigue as these are the most common damage mechanisms in superheater tubes.

4.1.4 Drums and Headers

Unit 1 has one upper steam drum and one lower steam drum which was reported to be in satisfactory condition during the last inspection in 2017 despite a small crack in the longitudinal weld. Unit 2 also has one upper steam drum and one lower steam drum which were reported to be in satisfactory condition during the last inspection in 2017.

Since the boiler drum is most susceptible to fatigue and corrosion damage, Burns & McDonnell recommends regular steam drum inspections including a detailed visual inspection with internals removed, magnetic particle examination of all girth, socket, and nozzle welds, as well as ultrasonic inspection of the welds and thickness readings at the normal water level.

The high temperature headers are the high temperature superheater outlet headers. These headers operate under severe conditions and are particularly susceptible to localized overheating, which leads to creep damage and other stress related cracks caused by temperature imbalances applied side-to-side and by flue gas hot spots. Burns & McDonnell recommends NDE inspections be performed on the headers on a three-year basis as they have not been performed recently.

4.1.5 Safety Valves

Safety valves are required by ASME code to prevent over pressure events that could lead to catastrophic failures and potential employee injuries. Unit 1 and Unit 2 each have four safety valves with two on the upper drum and two on the superheater. Based on feedback from site personnel, BV1 and BV2 safety valves are inspected on a rolling three-year basis, regardless of hours of operation. The Facility also has a full set of spares to utilize while valves are sent to the original equipment manufacturer (“OEM”) for testing and inspection.

4.1.6 Burner Control Systems

Unit 1 and Unit 2 each have one level of dual fuel, tangential tilting burners for a total of four burners. The burners on BV1 and BV2 have been replaced but not with low NOx burners. The drives on BV2 were also replaced. Each burner on each unit is supplied with natural gas by one regulating valve. Plant staff reported that they are in the process of replacing these valves with Factory Mutual ("FM") approved valves. Plant staff reported no issues with burner operation or integrity, nor with flame impingement around the burners.

4.2 Boiler Auxiliary Systems

4.2.1 Fans

Unit 1 and Unit 2 each have a single 100 percent capacity, centrifugal FD fan that provides combustion air to the furnace. The fans are fixed speed and flow is controlled using inlet dampers. Each FD fan is driven by a three-phase induction motor powered by the 2,400 V bus. Plant personnel reported that the Units have not experienced FD fan maintenance issues, but there have been low megohm readings on the BV1 fan which could be related to moisture build up as the motors do not have heaters.

Burns & McDonnell recommends monitoring the BV1 FD motor for further degradation and repairing if megohm readings become unacceptable.

Unit 1 and Unit 2 also each have a single 100 percent, centrifugal induced draft ("ID") fan that induces a negative draft on the boiler and downstream equipment. The ID fans are driven by a three-phase induction motors powered by the 2,400 V bus. Each ID fan is controlled using outlet dampers for pressure and a fluid coupling for flow (load). Plant personnel reported no issues with the ID fans.

4.2.2 Air Heaters

Prior to entering the furnace, the air from the FD fans is directed to the air heater where the temperature is increased by heat transfer from the exiting flue gas. Unit 1 and Unit 2 each have one Ljungstrom type air heater. Plant personnel reported that the baskets for each air heater were replaced in 2011. Plant personnel did not report any issues with air heater operation or integrity.

4.2.3 Flues & Ducts

The ductwork transports combustion air to the boiler and transports hot flue gas from the boiler through the air heater to the stack. Site personnel reported that expansion joints throughout the system have been replaced on both units. However, plant personnel did state that during full load, high ambient operation, there is a significant amount of system leakage and there is not enough ID fan to maintain full load. Burns & McDonnell recommends inspecting the expansion joints and seals throughout the system to identify potential leak locations.

4.2.4 Stacks

Flue gas from the ID fan exhaust is directed to the stack. Unit 1 and Unit 2 stacks were both inspected in 2017 by Gerard Chimney Company. This inspection found that the stacks are plumb but noted significant deterioration of the internal gunite liners. Based on these findings, the inspection company recommended that IPL remove the liners, sandblast the interior steel surfaces, weld the anchors, apply acid-proof membranes, and install new gunite liners. IPL intends to continue to monitor the stack for further degradation. Burns & McDonnell recommends continued inspection of the stacks on a set interval to understand whether liner degradation is impacting stack integrity.

4.2.5 Blowdown System

The blowdown system is used to control boiler cycle chemistry. Plant personnel reported no issues with the blowdown system. Burns & McDonnell recommends inspecting the blowdown tanks for erosion and flow accelerated corrosion (“FAC”).

4.3 Steam Turbines

4.3.1 Turbines

Unit 1 and Unit 2 steam turbines were manufactured by Allis-Chalmers Power Systems and are a single casing, high pressure condensing turbine designed for initial steam conditions of 850 psig at 900°F and an exhaust pressure of 1.5 inches Hg (absolute).

The STG units are of the standard Allis-Chalmers four main journal bearing and separate thrust bearing type with the steam turbine and generator being connected using a solid coupling. Bearings 1 through 4 are self-aligning journal bearings and the thrust bearing is a pivoted-pad bearing. Bearings receive oil from a shaft driven centrifugal pump that is attached using a flexible coupling and mounted in the No. 1 pedestal. During transient conditions, oil is supplied by either an AC or DC auxiliary lube oil pump. The units also have AC lube oil pumps that are used while the turbines are on turning gear.

In 2011, the BV1 steam turbine was inspected by Siemens. During this outage, significant damage was found in the No. 1 and No. 2 bearings which were subsequently sent out for refurbishment. The stationary and rotating blades were also inspected, and they showed some foreign object damage but not enough to necessitate repairs. Finally, the gland seals were inspected and were found to be damaged due to turbine rubs. Based on these inspections, it was recommended that during the next major outage of sufficient duration the No. 1 and No. 2 bearings be inspected, the thrust bearings clearance be set to design, the seal strips be sharpened, the gland seal segments be sharpened, and the main oil pump alignment be checked.

There has been one balance move since the unit was inspected and reassembled right after the December 2011 outage. Since then, plant personnel have not reported any issues.

In 2011, the BV2 steam turbine was also inspected and repaired by Siemens. During this outage, Siemens completed several repairs including but not limited to refurbishing both generator brass wiper seals, refurbishing the No. 2 turbine bearing and both generator bearings, refurbishing both hydrogen seals, refurbishing the inactive side thrust bearing pads, correcting rotating and stationary blade defects, and refurbishing all oil pumps. Based on these inspections, Siemens also recommended that during the next major outage the out-of-specification blade and dummy ring seal clearances be rectified, out-of-specification rotor seals should be replaced, and blades be inspected to understand whether the imperfections that were blended out have not returned. Unlike BV1, BV2 has exhibited many vibration issues that have required vibration analysis and balance shots. Unit 2, however, was reported by Siemens to be in line with ISO 7919-2 standards when it was last analyzed in 2016.

Burns & McDonnell recommends that BV1 and BV2 steam turbines continually be inspected per the original equipment manufacture's recommendations and that all new and outstanding issues be resolved.

4.3.2 Turbine Valves

Each turbine has one stop valve and five control valves ("CV") that control the amount of steam entering the steam turbine. The BV1 turbine valves were inspected in 2015 by Siemens. During this inspection it was found that the control valve operating linkages were in unsatisfactory condition and coated with dried grease. The cam to roller clearances were found out of tolerance and several of the rollers had flat spots. The cam lobes were scored and had high spots. The valves were also difficult to open before they were removed. Finally, the No. 5 Valve Stem was found with excessive runout. Based on this inspection it was recommended that the No. 5 Control Valve Stem should be replaced during the next outage. By the next outage, it is possible that the No. 3 and No. 4 Stems may require replacement as well, as they had a high, but acceptable runout during this outage. The No. 2 Valve Packing Follower should be replaced based on the recorded clearances. All the bearings on the operating linkage should be replaced. New rollers and bushings should also be installed during the next outage. Plant personnel were also instructed to follow the greasing procedure provided to them during the outage and grease the operating linkage monthly. The surfaces of the cam lobes should be restored to the original design finish and contour.

The BV2 turbine valves were also inspected in 2015 by Siemens. During this inspection it was found that the CV linkages were found in unacceptable condition and covered in hardened grease. Most of the cam rollers were found with flat spots, some of which were up to 1/4" into the roller. The cam lobes were found unacceptably scored. The valves were also difficult to open, and several CV stems were found with excessive runout. Based on this inspection it was recommended that the CV No. 2, No. 4 and No. 5 stems should be replaced during the next outage. The CV No. 1 and No. 3 stems were found with high (but acceptable) runout during this outage and could be out of tolerance by the next outage. All the linkage assembly bushings should be replaced. Plant personnel were also instructed to follow the greasing procedure provided to them during the outage and grease the operating linkage monthly. The remaining rollers and bushings should be replaced.

4.4 High Energy Piping Systems

4.4.1 Main Steam Piping

The main steam piping transfers steam from the boiler superheater outlet header to the high pressure ("HP") steam turbine. Since the operating temperature of the main steam piping is greater than 800°F, the metal is susceptible to creep, which is a high temperature, time dependent phenomenon that can progressively occur at the highest stress locations within the piping system. In 2007, a provision was added to American Society of Mechanical Engineers ("ASME") B31.1 requiring the issuance of written operation and maintenance procedures for Covered Piping System ("CPS"). The CPS category includes nominal pipe size 4 and larger piping systems that operate above 750°F or above 1,025psig.

Burns & McDonnell recommends that IPL perform a piping stress study to identify location of high stress to inspect with nondestructive examination techniques to potentially identify creep failure location. Furthermore, the pipe support systems should continue to be visually inspected annually. The hangers should be inspected to verify they are operating within their indicated travel range and are not bottomed out, that their position has not significantly changed since previous inspections, that the pipe is growing (contracting) in the correct directions between cold and hot positions, that the actual load being carried is close to its design point and has not changed, and that the pipe support hardware is intact and operating as designed. Finally, Burns & McDonnell recommends that the spring hangers be load tested to determine their actual current loading and that a stress analysis be completed to verify that all loads and stresses are within the allowable limits.

4.4.2 Extraction Piping

The extraction piping transfers steam from the various steam turbine extraction locations to the feedwater heaters. These piping systems are not typically a major concern for most utilities and are not examined to the same extent as the main and reheat steam systems.

Burns & McDonnell still recommends that the pipe support system continue to be visually inspected annually. The hangers should be inspected to verify that they are operating within their indicated travel range and are not bottomed out, that their position has not significantly changed since previous inspections, that the pipe is growing (contracting) in the correct directions between cold and hot positions, and that the actual load being carried is close to its design point and has not changed.

4.4.3 Feedwater Piping

The feedwater piping system transfers water through the boiler feedwater pumps, the high-pressure feedwater heaters, and eventually to the boiler inlet header. Although this system operates at a relatively low temperature, the discharge of the boiler feedwater pumps is the highest-pressure location in the plant and thus, should be monitored and regularly inspected.

Flow accelerated corrosion ("FAC") is an industry wide problem and special attention should be given to the first elbows and fittings downstream of the boiler feedwater pumps. IPL performed a FAC evaluation in 2016 which yielded no areas of concern. Future testing should be considered and focus on thinning on the extrados of the sweeping elbows, where turbulence can occur, causing excessive erosion/corrosion.

4.5 Balance of Plant

4.5.1 Condensate System

The condensate system transfers condensed steam from the condenser hotwell through the low-pressure heaters to the boiler feed pump.

4.5.1.1 Condensers

Unit 1 and Unit 2 are equipped with single shell, two pass, condensers that condense steam from the high-pressure condensing steam turbines using circulating water that is cooled by a shared cooling tower. Plant personnel reported that the condition of condenser tubes is acceptable. Documentation provided by plant personnel shows that BV1's condenser has 184 tubes, or approximately 5 percent of the total number of tubes plugged. Condenser tube maps for BV2 shows that 595 tubes are plugged, or roughly 16 percent of the total number of tubes. If BV2 can maintain full load, Burns & McDonnell recommends continuing to run with this high number of tubes plugged. If, however, backpressure begins to limit output, then a condenser retube is recommended as best industry practice is to replace the tubes once 10 percent have been plugged.

4.5.1.2 Condenser Ejector System

The condenser ejector/hogging system is responsible for inducing a vacuum in the condenser during startup and removing all non-condensable gases during normal operation. Unit 1 and Unit 2 each accomplish this using two, 100 percent steam jet air ejector trains. During normal operations, one steam jet air ejector train operates to remove non-condensable gases from the condenser so that air binding does not occur. Plant personnel reported no issues with any steam jet air ejector train or back pressure issues.

4.5.1.3 Low Pressure Feedwater Heaters

Unit 1 and Unit 2 each have two low pressure feedwater heaters ("FWH"), numbers 1-1, 1-2, 2-1, and 2-2, that heat the condensate from hotwell conditions to deaerator inlet temperature conditions using turbine extraction steam. All low pressure ("LP") feedwater heaters are vertical utilizing U-tube designs. Plant personnel reported no issues with any low pressure FWHs.

4.5.1.4 Deaerators

The deaerator uses extraction steam to de-oxygenate and release non-condensable gasses from the feedwater to the atmosphere. Documents provided for review showed no major issues with either BV1's or BV2's deaerators.

4.5.2 Feedwater System

The feedwater system takes low pressure condensate and increases it to high pressure feedwater while also increasing the energy of the fluid utilizing feedwater heaters. No flow accelerated corrosion or issue with the high-pressure feedwater heaters were noted by plant personnel during the site visit or in the documentation provided by IPL.

4.5.2.1 High Pressure Feedwater Heaters

Unit 1 and Unit 2 each have one high pressure feedwater heaters (1-4 and 2-4) that heat the condensate from deaerator outlet conditions to boiler inlet conditions utilizing extraction steam. The HP feedwater heaters are vertical and utilize U-tubes. Plant personnel reported that the tube bundles have been replaced in the 1-4 and 2-4 FWHs and reported no other issues with the HP FWHs.

4.5.3 Condensate and Boiler Feed Pumps

Unit 1 and Unit 2 each have two, 100 percent vertical, centrifugal condensate pumps driven by 480 V motors. Plant personnel reported that the 1-2 motor is exhibiting high vibration and that it will be retested in 6 months.

Unit 1 and Unit 2 also share three, 100 percent multistage, centrifugal boiler feed pumps driven by 2,400 V motors. The 1-1 boiler feed pump is exhibiting higher vibration and will be tested again in the future.

4.5.4 Circulating Water & Equipment Cooling Systems

Unit 1 and Unit 2 share three, 100 percent capacity circulating water pumps that circulate water from the cooling tower to the condensers and back. The cooling tower is of counter flow design with two speed, reversing fans and four cells. The tower was replaced in 2011 and appeared to be in good condition with no issues noted by plant personnel. One circulating pump is required to run both units and plant personnel reported no mechanical or performance issues. Circulating water is also used to cool the auxiliary cooling water heat exchangers, hydrogen coolers, and gland steam condensers.

Unit 1 and Unit 2 share a closed loop auxiliary cooling system to provide cooling water to BFP oiler coolers, ID fan oil coolers, instrument air compressors and the air heaters. The system utilizes two auxiliary cooling water pumps and heat exchangers.

4.5.5 Plant Structures

Plant structures generally appear to be in good condition with no major structural issues noted during the site tour nor mentioned by plant personnel.

4.6 Electrical & Control Systems

4.6.1 Generators

The generators were manufactured by Allis-Chalmers Power Systems and rated at 22 MVA at 14.4 kilovolt (“kV”). The stator outputs are 944 amps at 0.85 power factor. The generators are hydrogen inner cooled and according to plant personnel are operating without any issues. The generators are excited using EX2000 static exciters.

The BV1 generator was last inspected in 2011 by Siemens. During this inspection the generator bearings were shimmed, and the generator brushes were replaced. The rotor, seals, and casing appeared to all be in good working condition with only future inspections recommended.

The BV2 generator was last serviced in 2016 by Siemens who was called to the site to investigate an oil leak. During the inspection and repair, Siemens inspected the hydrogen seals, upper half end bells, brushes, end diffusers, and hydrogen seal system. Based on these inspection results, the inboard and outboard oil wipers and seal assemblies were refurbished.

4.6.2 Transformers

4.6.2.1 Main Transformers (Generator Step-up Transformers)

The main GSU transformers are Allis Chalmers three-phase units and step up the generator output voltages from 14.4 kV to 69 kV. The main unit transformers are rated 28 MVA. The GSUs are original, however, the Plant has one spare GSU on-site if one should fail. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including dissolved gas analysis

4.6.2.2 Auxiliary Transformer

Unit 1 and Unit 2 auxiliary transformers are Allis Chalmers three-phase transformers that step down the generator output voltages from 14.4 kV to 2.4 kV to the 2.4 kV switchgear bus. Unit auxiliary transformer ("UAT") 1A feeds the switchgear bus A which has an emergency breaker tie to switchgear bus C which also has an emergency breaker tie to switchgear bus B. Switchgear bus B also is fed by UAT 2A. The UATs are original, however, the Plant has one spare UAT on site if one should fail. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including dissolved gas analysis

4.6.2.3 Startup/Standby Transformer

The Facility also has a 69-kV startup/standby transformer (T4) to provide startup or alternate station service electrical power if there is a problem with either the main transformer or auxiliary transformers. The standby transformer is an Allis Chalmers three-phase transformer rated at 2.5 MVA. The startup/standby transformer steps down system voltage from 69 kV to 2.4 kV. The standby transformer is rarely heavily loaded and should have a long life. It is recommended that the Plant continue its current maintenance and testing plan including a dissolved gas analysis.

4.6.3 Cable Bus

Based on feedback from plant personnel, there have been electrical faults for BV1 and BV2 caused by the bus bar that connects each generator to its respective GSU. For BV1 the issue is occurring where the bus bar penetrates the steam turbine building wall and for BV2 the issues is occurring at the GSU connection point. These faults have occurred because the bus bar insulation has broken down and coal residue has created a fault path. Plant personnel have mitigated these issues by installing mining cable in lieu of the bus bar. Even though the mining cable is designed for the current service it is not as robust as the bus bar. As such, Burns & McDonnel recommends replacing the bus bar in kind to enhance unit reliability.

4.6.4 Switchgear

Unit 1 and Unit 2 each have a single bus, 2,400 V switchgear. Each switchgear (A & B) is connected to the specific unit auxiliary transformers (T1A and T2A respectively) as well as switchgear C which is connected to the Unit 1 and Unit 2 startup transformer (T4). Each switchgear is connected to seven breakers. The switchgears were replaced in 2010 because of an arc flash study. Burns & McDonnell recommends that the site continue its breaker maintenance and testing program.

4.6.5 Motors

Motors that are rated 150 hp to 600 hp operate on the 2,400-V system and motors rated 150 hp and below operate on the 480-V system. The 2400-V motors are tested annually. As mentioned above the U1 FD fan motor has shown some low megohm readings which could be moisture related. Furthermore, condensate pump 1-2, boiler feed pump 1-1 are exhibiting some higher vibrations. No other motor related issues were noted by plant personnel. Burns & McDonnell recommends that the large motors continue to be tested and replaced/refurbished on an as needed basis.

4.6.6 Station Emergency Power Systems

Unit 1 and Unit 2 each have a set of emergency batteries to supply power to critical equipment in the event the site loses all power. These batteries were replaced in 2015. The station batteries are designed for a 10-year life and should continue to be replaced when they reach the end of their design life. The Facility also has one emergency diesel generator that is tested once per week.

4.6.7 Control Systems

The steam turbines are controlled using Woodward 505 digital control systems that were installed in 2017. The burner management system (“BMS”) is controlled utilizing an ABB PLC System with obsolete components. The site also utilizes a Foxboro I/A distributed control system (“DCS”) with FBM 100 cards that are no longer being manufactured. The Facility is currently in a modular exchange program with Foxboro meaning failed cards can be replaced. The site added remote IO in 1995 and performed human machine interface (“HMI”) upgrades in 2015 but there were no hardware changes. The upgraded software continues to be supported.

Due to the legacy of the control system, it may be difficult to reliably operate the Plant for the next 20 years with the existing control system. The existing systems are being replaced in a piecemeal manner rather than taking a holistic approach that will result in an integrated controls system. Efficiencies and reduction in instrumentation would be achieved by integrating all the controls into a newer larger platform that communicates with the Woodward Turbine controls but uses the DCS Operator Interface for all controls. As such, Burns & McDonnell recommends that the control system be replaced if the Units continue to operate for another 20 years.

4.6.8 Miscellaneous Electrical Systems

Lighting is not a part of the power production process but should be maintained regularly for safety concerns and plant maintenance. With regular lamp and fixture replacement the lighting systems should function reliably.

5.0 UNIT 3

5.1 Boiler

Blue Valley Unit 3 generates steam using a Combustion Engineering natural circulation, negative draft furnace unit. The boiler was originally designed to burn coal, natural gas, and fuel oil. Plant personnel reported that natural gas has been the primary fuel source since 2015 when the coal system was decommissioned. Unit 3 also has not burned fuel oil in many years and significant investment would be needed to commission the system. Operating utilizing coal and fuel oil were not considered as part of this study.

Unit 3 is designed for a maximum continuous rating MCR of 450,000 lb/hr of main steam at 1,310 psig with a superheater outlet condition of 955°F. The superheater outlet temperatures are controlled by an attemperator that takes spray water from the outlet of the boiler feed pumps. The boiler design also includes an economizer, upper/lower drums, primary and secondary superheaters, a hot air recirculation duct, and an air heater.

During the site visit, BV3 was offline. Plant personnel reported no significant operational or mechanical issues with this boiler. Unit 3 was last chemical cleaned in 2009. Documentation provided by plant personnel showed very little issues with tube leaks. During the site visit, plant personnel did mention that roof tube leaks did occur often, but since it was retubed, this is no longer an issue. Specifically, there were only two documented leaks since 2010. Furthermore, the 2017 internal inspection report from TesTex, Inc. showed only two locations on the water wall tubes that had a wall thickness of less than 0.100” and no significant thinning on the superheat tubes. Based on TesTex’s inspection summary, the boiler appears to be in serviceable condition.

5.1.1 Water Walls

The inner walls of the boiler are made up of water wall tubes through which feedwater is raised to saturated steam conditions. Based on repair history and the most recent inspection report, BV3 water wall tubes appear to be in excellent condition. A regular tube wall thickness NDE inspection program is recommended to monitor boiler water wall condition and prevent tube rupture related outages. Boiler cavity drone inspections are also recommended.

5.1.2 Superheater

The superheater of BV3 is divided into primary and secondary sections that raise the temperature of steam above the steam saturation temperature while utilizing an attemperator to maintain design main steam temperature conditions.

Documentation provided by plant personnel indicated that there have no tube leaks associated with the superheater and the 2017 TesTex report showed no major areas or thinning. Plant personnel did report, however, many tube leaks in the desuperheater line. Burns & McDonnell recommends inspecting this periodically for thermal fatigue cracking as downstream attemperator piping is very susceptible to quench cracking.

Burns & McDonnell recommends NDE inspections be performed on the superheater. Future inspections should also include testing to identify signs of creep and fatigue as these are the most common damage mechanisms in superheater tubes.

5.1.3 Economizer

The economizer section of the boiler is used to improve the efficiency of the thermal cycle by using convective heat to raise the temperature of the feedwater entering the furnace. There was no mention of economizer tube leaks in documentation provided by IPL.

5.1.4 Drums and Headers

Unit 3 has one upper steam drum and one lower steam drum which was reported to be in satisfactory condition during the last inspection.

Since the boiler drum is most susceptible to fatigue and corrosion damage, Burns & McDonnell recommends regular steam drum inspections including a detailed visual inspection with internals removed, magnetic particle examination of all girth, socket, and nozzle welds, as well as ultrasonic inspection of the welds and thickness readings at the normal water level.

The high temperature headers are the secondary superheater outlet headers. These headers operate under severe conditions and are particularly susceptible to localized overheating, which leads to creep damage and other stress related cracks caused by temperature imbalances applied side-to-side and by flue gas hot spots. Burns & McDonnell recommends NDE inspections be performed on the headers on a three-year basis as they have not been performed recently

5.1.5 Safety Valves

Safety valves are required by ASME code to prevent over pressure events that could lead to catastrophic failures and employee injuries. Unit 3 has three safety valves with two on the upper drum and one on the superheater. Based on feedback from site personnel, BV3 safety valves are inspected on a rolling three-year basis.

5.1.6 Burner Control System

Unit 3 has two levels of dual fuel, tangential tilting burners for a total of eight burners. These burners are controlled by two 8-inch valves. The site reported no issues with burner operation or integrity nor with flame impingement around the burners.

5.2 Boiler Auxiliary Systems

5.2.1 Fans

Unit 3 has a single 100 percent capacity, centrifugal FD fan that provides combustion air to the furnace. The fan is fixed speed and flow is controlled using inlet dampers. Each FD fan is driven by a three-phase induction motor powered by the 4,160-V bus. Plant personnel reported that the units have not experienced FD fan maintenance issues but there have been some issues associated with the motor and the lube oil temperature must remain above 70°F to avoid vibration issues.

Burns & McDonnell recommends vibration and motor testing continue to confirm there are no overarching mechanical issues.

Unit 3 also has a single 100 percent, centrifugal ID fan that induces a negative draft on the boiler and downstream equipment. The ID fan is controlled using outlet dampers and is driving by a three-phase induction motor powered by the 4,160-V bus. Plant personnel reported that there have been issues in the past with the outlet damper and that the fan motor may be dirty as the megohm readings are lower than expected.

Burns & McDonnell recommends that the site continue to test the motor and repair when necessary.

5.2.2 Air Heater

Prior to entering the furnace, the air from the FD fans is directed to the air heater where the temperature is increased by heat transfer from the exiting flue gas. Unit 3 has one Ljungstrom type air heater. Plant personnel reported that the baskets have not been replaced. Plant personnel also reported that there are some seal issues and leakage but nothing which is limiting the unit.

5.2.3 Flues & Ducts

The ductwork transports combustion air to the boiler and transports hot flue gas from the boiler through the air heater to the stack. Plant personnel reported that there is a hole in the ID fan duct, but it is not limiting operation. Burns & McDonnell recommends inspecting the ducting and repairing the affected area.

5.2.4 Stack

Flue gas from the ID fan exhaust is directed to the stack. Unit 3's stack was inspected in 2015 by Gerard Chimney Company. This inspection found issues with the top 30 feet of liner that was eventually replaced. The inspection also found 60 lineal feet of open cracks in the exterior concrete sheath that were filled with caulk. Burns & McDonnell recommends continued inspection of the stacks to confirm the exterior sheath of the stack is not degrading and impacting its structural integrity as well as monitoring the interior gunite liner for further degradation.

5.2.5 Blowdown System

The blowdown system is used to control boiler cycle chemistry. Plant personnel reported no issues with the blowdown system. Burns & McDonnell recommends inspecting the blowdown tanks for erosion and FAC.

5.3 Steam Turbine

5.3.1 Turbine

Unit 3's steam turbine was manufactured by General Electric ("GE") and is a single casing, high pressure condensing turbine designed for initial steam conditions of 1,250 psig at 950°F and an exhaust pressure of 2.0 inches Hg (absolute).

The unit is of the standard GE four main journal bearing and separate thrust bearing type with the steam turbine and generator being connected using a solid coupling. Bearings 1 through 4 are self-aligning journal bearings and the thrust bearing is a pivoted-pad bearing. Bearings receive oil from a shaft driven centrifugal pump that is attached in the No. 1 pedestal. During transient conditions, oil is supplied by either an AC or DC auxiliary pumps.

In 2007, the turbine rotor was inspected by GE. During this inspection, GE conducted several non-destructive testes including a bore visual examination, bore magnetic particle testing, radial beam boresonic testing, angle beam boresonic testing, and axial ultrasonic testing. Based on the results of this testing, GE recommended that the rotor be re-inspected after no more than 1,000 additional start-stop cycles or six (6) years of additional service. Furthermore, the radial/periphery ultrasonic testing revealed 90 individual indications that were all under 0.09-inch in size. Plant personnel reported no mechanical or operational issues with the unit.

Burns & McDonnell recommends that BV3 continually be inspected per GE’s recommendations and that all new and outstanding technical information letters (“TILs”) be resolved.

5.3.2 Turbine Valves

Unit 3’s turbine has one stop valve and six control valves that control the amount of steam entering the steam turbine. The BV3 turbine valves were inspected in 2008 by General Electric. During this inspection it was found that there was debris on the stop valve sealing surface and that there was inadequate contact between the disk and the seat. This lack of lapping was accepted by IPL with the intention of lapping the valves at the next opportunity. The inspection also showed that the control valves showed the full range of actuation, with correct crack points. Based on this inspection, it was recommended that the lapping block be replaced, and that IPL continue to monitor the operation of the control valves as well as replace all the bushings at the next opportunity. Furthermore, GE recommended that the steam of CV2, CV3, and CV6 be replaced at the next opportunity.

Burns & McDonnell recommends that IPL perform the recommended work in the 2008 inspection report.

5.4 High Energy Piping Systems

5.4.1 Main Steam Piping

The main steam piping transfers steam from the boiler superheater outlet header to the HP steam turbine. Since the operating temperature of the main steam piping is greater than 800°F, the metal is susceptible to creep, which is a high temperature, time dependent phenomenon that can progressively occur at the highest stress locations within the piping system. In 2007, a provision was added to ASME B31.1 requiring the issuance of written operation and maintenance procedures for CPS. The CPS category includes NPS 4 and larger piping systems that operate above 750°F or above 1,025 psig.

Burns & McDonnell recommends that IPL perform a piping stress study to identify location of high stress to inspect with nondestructive examination techniques to potentially identify creep failure location. Furthermore, the pipe support systems should be visually inspected annually. The hangers should be inspected to verify they are operating within their indicated travel range and are not bottomed out, that their position has not significantly changed since previous inspections, that the pipe is growing (contracting) in the correct directions between cold and hot positions, that the actual load being carried is close to its design point and has not changed, and that the pipe support hardware is intact and operating as designed. Finally, Burns & McDonnell recommends that the spring hangers be load tested to determine their actual current loading and that a stress analysis be completed to verify that all loads and stresses are within the allowable limits.

5.4.2 Extraction Piping

The extraction piping transfers steam from the various steam turbine extraction locations to the feedwater heaters. These piping systems are not typically a major concern for most utilities and are not examined to the same extent as the main and reheat steam systems.

Burns & McDonnell still recommends that the pipe support system continue to be visually inspected annually. The hangers should be inspected to verify that they are operating within their indicated travel range and are not bottomed out, that their position has not significantly changed since previous inspections, that the pipe is growing (contracting) in the correct directions between cold and hot positions, and that the actual load being carried is close to its design point and has not changed.

5.4.3 Feedwater Piping

The feedwater piping system transfers water through the boiler feedwater pumps, the high-pressure feedwater heaters, and eventually to the boiler inlet header. Although this system operates at a relatively low temperature, the discharge of the boiler feedwater pumps is the highest-pressure location in the plant and thus, should be monitored and regularly inspected.

FAC is an industry wide problem and special attention should be given to the first elbows and fittings downstream of the boiler feedwater pumps. IPL performed a FAC evaluation in 2016 which yielded no areas of concern. Future testing should be considered and focus on thinning on the extrados of the sweeping elbows, where turbulence can occur, causing excessive erosion/corrosion.

5.5 Balance of Plant

5.5.1 Condensate System

The condensate system transfers condensed steam from the condenser hotwell through the low-pressure heaters to the boiler feed pump.

5.5.1.1 Condenser

Unit 3 is equipped with single shell, two pass, condenser that condense steam from the high-pressure condensing steam turbines using circulating water that is cooled by a unit specific cooling tower. Plant personnel reported that the condition of condenser tubes is acceptable. Documentation provided by plant personnel shows that BV3's condenser has 208 tubes, or approximately 3 percent of the total number of tubes plugged. Burns & McDonnell recommends IPL monitor condensate chemistry levels to identify when potential tube leaks arise.

5.5.1.2 Low Pressure Feedwater Heaters

Unit 3 has two low pressure FWHs, numbers 3-1 and 3-2, that heat the condensate from hotwell conditions to deaerator inlet temperature conditions using turbine extraction steam. All LP feedwater heaters are vertical utilizing U-tube designs. Plant personnel reported no issues with any low pressure FWHs.

5.5.1.3 Deaerators

The deaerator uses extraction steam to de-oxygenate and release non-condensable gasses from the feedwater to the atmosphere. Documents provided for review showed no major issues with BV3's deaerator.

5.5.2 Feedwater System

The feedwater system takes low pressure condensate and increases it to high pressure feedwater while also increasing the energy of the fluid utilizing feedwater heaters.

5.5.2.1 High Pressure Feedwater Heaters

Unit 3 has two high pressure feedwater heaters (3-4 and 3-5) that heat the condensate from deaerator outlet conditions to boiler inlet conditions utilizing extraction steam. The HP feedwater heaters are vertical and utilize U-tubes. Plant personnel reported that the tube bundle has been replaced in 3-4. No other issues with the HP FWHs were reported by plant personnel.

5.5.3 Condensate and Boiler Feed Pumps

Unit 3 has two, 100 percent vertical, centrifugal condensate pumps driven by 480-V motors. Plant personnel reported that one pump was rebuilt, and another was replaced recently. Plant personnel also reported that the suction screens have plugged in the past due to weld residue from the turbine water induction work.

Unit 3 also has two, 60 percent multistage, centrifugal boiler feed pumps driven by 2,400-V motors. Both boiler feed pumps are exhibiting higher vibration and will be tested again in the future.

5.5.4 Circulating Water & Equipment Cooling Systems

Unit 3 has two, 60 percent capacity circulating water pumps that circulate water from the cooling tower to the condensers and back. The pumps are driven by 2,400-V three phase motors. The cooling tower is of counter flow design with two speed, reversing fans and four cells. The tower was replaced in 2011 and appeared to be in good condition with no issues noted by plant personnel. Circulating water is also used to cool the auxiliary cooling water heat exchangers.

Unit 3 has a closed loop auxiliary cooling system to provide cooling water to the hydrogen coolers, BFP oiler coolers, and instrument air compressors. The system utilizes two auxiliary cooling water pumps and heat exchangers.

5.5.5 Plant Structures

Plant structures generally appear to be in good condition with no major structural issues noted during the site tour nor mentioned by plant personnel.

5.6 Electrical & Control Systems

5.6.1 Generator

The generator was manufactured by GE and rated at 72.22 MVA at 14.4 kV and a hydrogen pressure of 30 psig. The stator output is 2,896 amps at 0.9 power factor. The generator is hydrogen inner cooled. Plant personnel indicated that the rotor and stator were rewound in 2007. Plant personnel also stated that the static exciter was upgraded to a GE EX2100e exciter. Plant personnel reported no operational and mechanical issues of concern.

5.6.2 Transformers

5.6.2.1 Main Transformer (Generator Step-up Transformer)

The main GSU transformer is a Pennsylvania three-phase unit and step up the generator output voltages from 14.4 kV to 69 kV. The main unit transformer is rated at 62 MVA. The GSU was replaced shortly after the plant was commissioned in 1964. Plant personnel reported no operational issues with the GSU. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including dissolved gas analysis.

5.6.2.2 Auxiliary Transformer

Unit 3's auxiliary transformer is a Pennsylvania three-phase transformer that steps down the generator output voltages from 14.4 kV to 2.4 kV to the 2.4 kV switchgear bus. UAT 3A feeds switchgear bus 3 which is also connected to the station auxiliary transformer T10. Plant personnel reported that this transformer is "wet" and that they plan to continue test and monitor performance. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including dissolved gas analysis.

Unit 3's FD/ID fans are also fed from the 4,160-V switchgear which is fed from transformer T8 which steps down system voltage from 69 kV to 4,160-V. This transformer is rated for 5 MVA. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including dissolved gas analysis.

5.6.2.3 Station Transformer

Unit 3 also has a 69-kV startup/standby transformer to provide startup or alternate station service electrical power if there is a problem with either the main transformer or auxiliary transformer. The standby transformer (T10) is a three-phase transformer rated at 2.5 MVA. The startup/standby transformer steps down system voltage from 69 kV to 2.4 kV. The standby transformer is rarely heavily loaded and should have a long life. It is recommended that the Plant continue its current maintenance and testing plan including a dissolved gas analysis.

5.6.3 Cable Bus

Based on feedback from plant personnel, Unit 3's isophase bus duct was just inspected and resealed. Plant personnel reported no grounding issues like those experienced on BV1 or BV2. Burns & McDonnell recommends that this system be continually inspected and resealed to avoid potential grounding issues.

5.6.4 Switchgear

Unit 3 has a single bus, 2,400-V switchgear that is connected to the unit auxiliary transformer T3A as well as the station transformer T10. According to plant personnel, this switchgear was replaced ten years ago and is in good working condition. Unit 3 also has a 4,160-V switchgear that supplies power to the FD and ID fans. This switchgear is original but is in good working condition. Burns & McDonnell recommends that the site continue its breaker maintenance and testing program.

5.6.5 Motors

The boiler feed pumps and circulating water pumps are powered by the 2,400-V system while the FD and ID fans are powered by the 4,160-V system. The 4,160-V and 2,400-V motors are tested annually. The boiler feed pump motors are exhibiting higher vibrations. Furthermore, as mentioned above, the ID fan motor is suspected of being dirty and exhibiting low megohm readings due to moisture build up. Burns &

McDonnell recommends that the large motors continue to be tested and replaced/refurbished on an as needed basis.

5.6.6 Station Emergency Power Systems

Unit 3 has a set of emergency batteries to supply power to critical equipment in the event the site loses all power. These batteries were replaced in 2015. The station batteries are designed for a 10-year life and should continue to be replaced at the end of their service life. The Facility also has one emergency diesel generator that is tested once per week.

5.6.7 Control Systems

The steam turbine is controlled using a Mark VIe digital control systems. The burner management system (“BMS”) is controlled utilizing an ABB PLC System with obsolete components. The site also utilizes a Foxboro I/A DCS with FBM 100 cards that are no longer being manufactured. The Facility is currently in a modular exchange program with Foxboro meaning failed cards can be replaced. The site added remote IO in 1995 and performed HMI upgrades in 2015 but there were no hardware changes. The upgraded software continues to be supported.

Due to the legacy of the control system, it may be difficult to reliably operate the Plant for the next 20 years with the existing control system. The existing systems are being replaced in a piecemeal manner rather than taking a holistic approach that will result in an integrated controls system. Efficiencies and reduction in instrumentation would be achieved by integrating all the controls into a newer larger platform that communicates with the Mark Vie Turbine controls but uses the DCS Operator Interface for all controls.

5.6.8 Miscellaneous Electrical Systems

Lighting is not a part of the power production process but should be maintained regularly for safety concerns and plant maintenance. With regular lamp and fixture replacement the lighting systems should function reliably.

6.0 COMMON SYSTEMS

There are several systems which are common to the Facility and all three Units. A discussion of those systems is provided in the following section.

6.1 Water Supply

Water (both cycle and circulating) is supplied by five wells each with a dedicated pump that range in capacity from 175 gallons per minute ("gpm") to 400 gpm. Based on feedback from plant personnel during the site visit, the piping that transports the water from the wells to the site has been very susceptible to leaks and needs replacement/repair.

6.2 Water Treatment

At the start of the pretreatment system, the well water first enters the aerator where iron in the well water is oxidized prior to entering the reactivator clarifier. From the aerator the well water flows into the draft tube of the reactivator where the water is mixed with the treatment chemicals and recirculated sludge from the bottom of the reactivator. Alum and polymer (treatment chemicals) are fed into the draft tube of the reactivator to clarify the well water in direct proportion to the reactivator inlet water flow. Lime is fed into the draft tube of the reactivator based on the pH in the reaction zone. Lime is used to soften the well water. The contact between the well water, treatment chemicals, and recirculated sludge forms precipitates (floc) which absorbs the impurities in the water. The chemicals and recirculated sludge cause the smaller floc particles to get closer to each other and grow. The mixture of well water, treatment chemicals, and recirculated sludge then rises through the draft tube into the detention zone. A gentler water flow in the detention zone allows for the chemical reactions to take place with the impurities in the water and permits floe particles to coagulate into a dense, settleable floc. From the detention zone, the water flows into the clarification zone where the clarified water flows upward to the effluent collection trough and out through the treated water outlet pipe. The precipitates settle to the bottom of the reactivator clarifier where they periodically blown down to plant drains.

The cycle water is further treated to remove entrained dissolved and suspended materials that would be detrimental to the integrity of the boiler. To accomplish this, the pretreated water is first sent to an activated carbon filter to remove any chlorine or dissolved organic material in the service water before it is demineralized. In demineralization, an exchange of ions takes place so that cations are replaced by hydrogen ions (H+), and anions are replaced by hydroxide ions (OH-), the components of pure water itself. After demineralization, all but a trace of the dissolved minerals is removed.

Plant personnel reported that new bulk acid, caustic, and day tanks were installed in 2010. Plant personnel reported that the supply line from the wells was degrading and that it would need to be replaced as it is has failed in multiple locations.

Within the wastewater system, water is collected in a settling pond and then is sent to the City of Independence's sewer district for treatment.

6.3 Compressed Air

The air compressors and drier systems at Blue Valley were replaced within the last five years. The site also utilizes the original joy compressors as a backup. Based on plant personnel feedback, the system has not been problematic but the cooling towers for the compressors and the receiver tanks are old.

6.4 Fire Protection

The Facility utilizes city water for fire protection. The Facility also has deluge spray systems on key equipment such a transformers and dry systems for batteries.

7.0 OPERATION AND MAINTENANCE

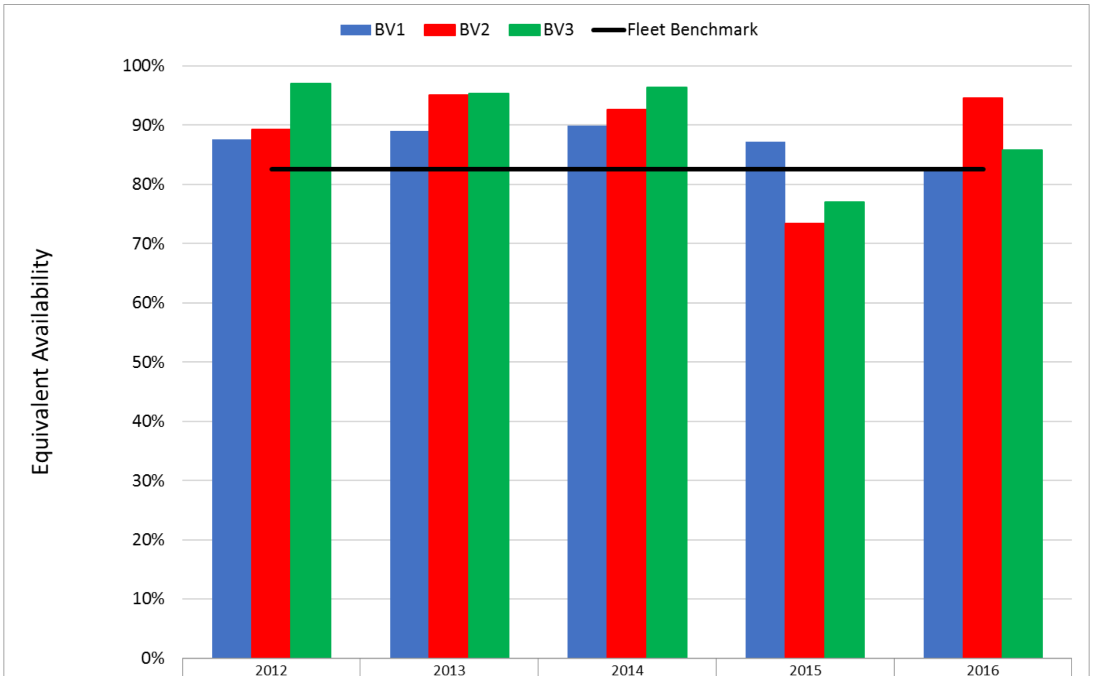
Burns & McDonnell evaluated the overall anticipated costs to operate and maintain BV1, BV2, and BV3 over varying operating horizons of 5, 10, and 20 years to support the economic evaluation of the Energy Master Plan. Based on the information reviewed, plant staff interviews, and visual observations of the Units, Burns & McDonnell estimated project expenditures and baseline fixed O&M costs associated with operating the Units safely and reliably within the SPP market. The assessment consisted of a benchmarking analysis that considered reliability performance and overall baseline fixed O&M costs as well as a detailed evaluation of project specific costs associated with operating the Units.

7.1 Historical Performance

Burns & McDonnell evaluated the overall reliability and performance of BV1, BV2, and BV3 against a fleet average of similar generating stations. Figure 7-1 presents the EAF for the Units against the fleet benchmark data as provided from the NERC GADS for similar natural gas-fired STG units with capacities between 10 MW and 100 MW. Similarly, Figure 7-2 presents the EFOR for the Units against the fleet benchmark.

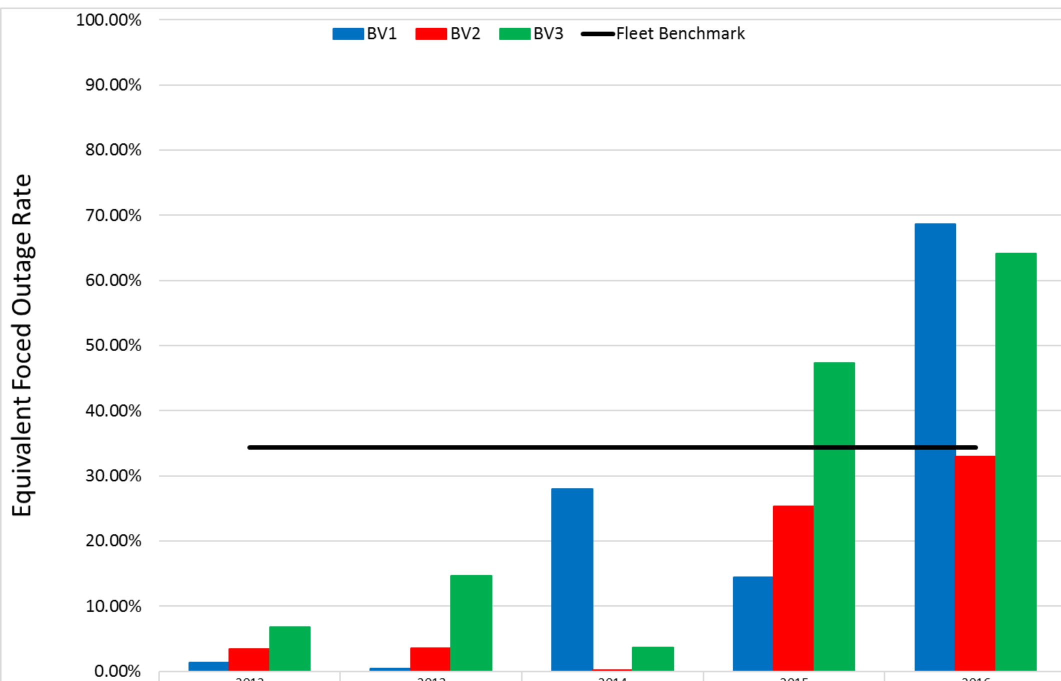
As depicted in Figure 7-1, the EAF of BV1 exceeded the fleet EAF benchmark in every year except in 2016 when it was just slightly below the benchmark. The EAF of BV2 and BV3 have also been very high with both only being less than the industry benchmark in 2015. As illustrated in Figure 7-2, the EFOR of BV1, BV2, and BV3 has become significantly higher and more volatile. Unit 2 has operated below the industry benchmark in every year, while BV1 has exceeded the benchmark in only 2016, and BV3 has exceeded the benchmark in only 2015 and 2016. The increased EFOR in these later years can be attributed to the decrease in operating hours of the Units when they were converted from coal to natural gas operation. With such low capacity factors operating on natural gas, one forced outage event can significantly increase the EFOR of a unit.

Figure 7-1: Equivalent Availability Factor (%)



	2012	2013	2014	2015	2016
BV1	87.63%	88.98%	89.97%	87.20%	82.22%
BV2	89.22%	95.14%	92.61%	73.34%	94.57%
BV3	97.03%	95.38%	96.40%	77.05%	85.80%
Fleet Benchmark	82.61%	82.61%	82.61%	82.61%	82.61%

Figure 7-2: Equivalent Forced Outage Rate (%)



	2012	2013	2014	2015	2016
BV1	1.39%	0.43%	28.03%	14.40%	68.62%
BV2	3.46%	3.53%	0.23%	25.35%	32.93%
BV3	6.81%	14.64%	3.67%	47.30%	64.09%
Fleet Benchmark	34.33%	34.33%	34.33%	34.33%	34.33%

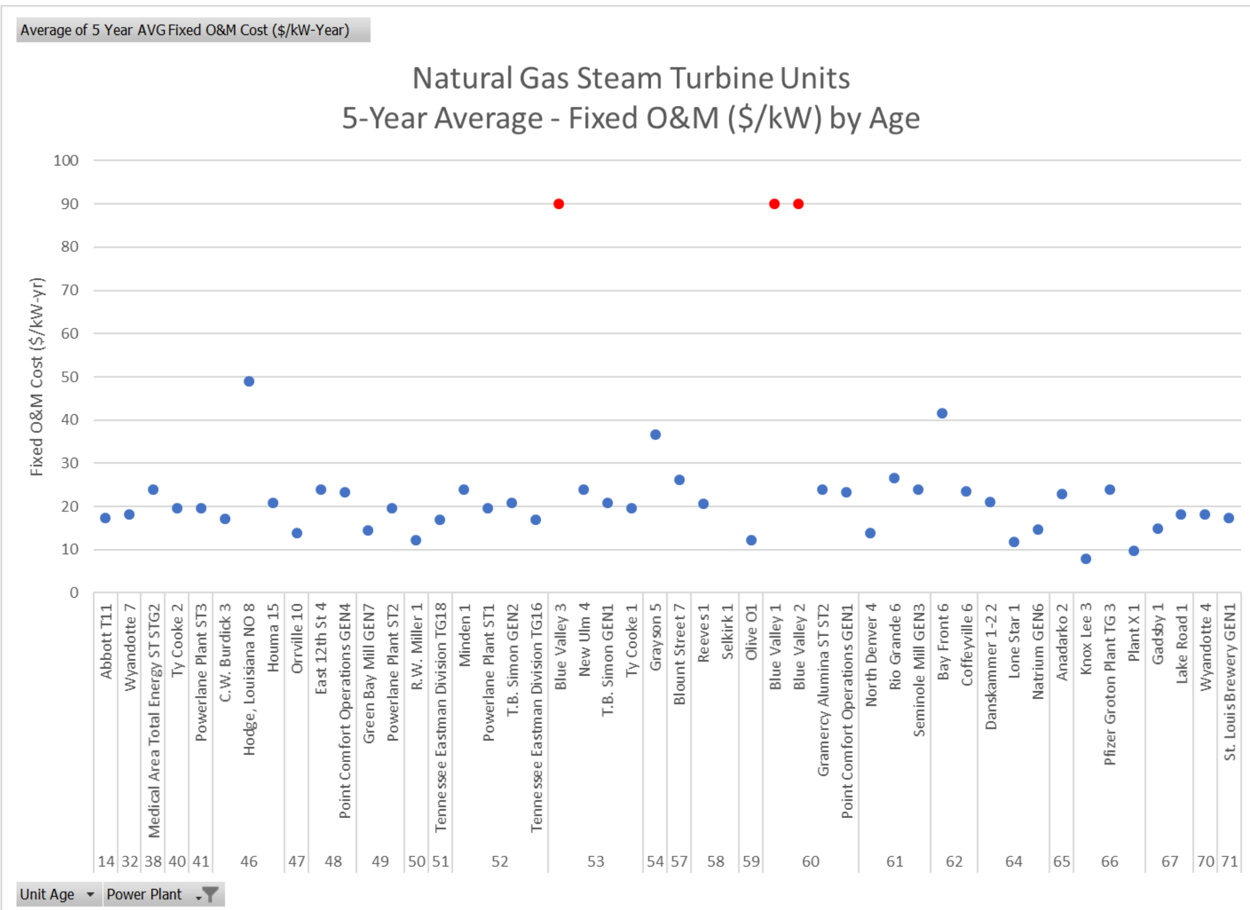
7.2 Baseline Fixed Maintenance Costs Projection

Burns & McDonnell evaluated the anticipated baseline fixed maintenance costs of the Units through the study period using a fleet benchmarking assessment as well as a review of the Units' historical maintenance costs. Furthermore, the costs associated with maintaining reliability of the Units through project upgrades based on this condition assessment were also captured in this analysis.

7.2.1 O&M Cost Benchmarking Analysis

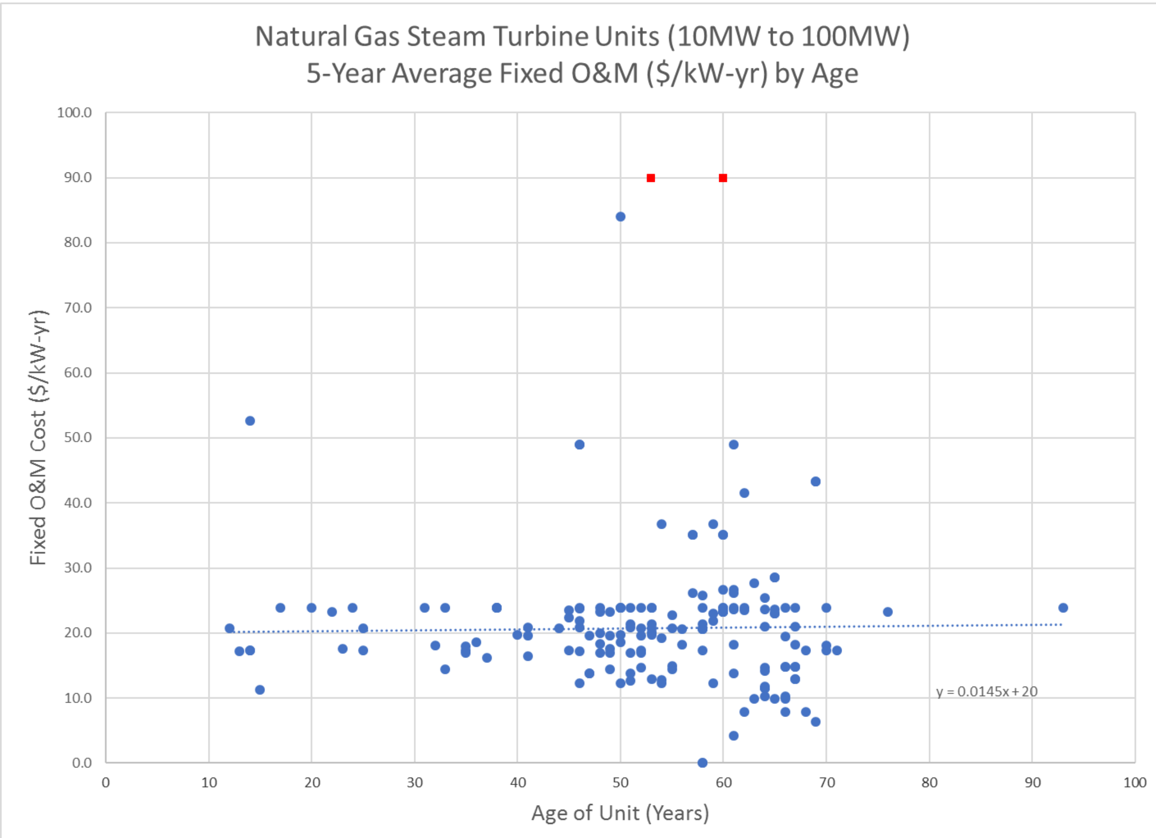
In addition to replacing key equipment and components through major project upgrades, much of the remaining equipment would require increased maintenance as the Units continue to age. Figure 7-3 presents the range of baseline fixed O&M costs of other similar natural gas fired steam generating power plants rated between 10 MW to 100 MW, with BV1, BV2, and BV3 highlighted in red.

Figure 7-3: Baseline Fixed Operation & Maintenance Cost Trend Evaluation



A comprehensive benchmark analysis of similar natural gas-fired steam turbine generators nationwide demonstrates an increasing trend of baseline fixed maintenance costs associated with the age of the units. Burns & McDonnell evaluated the trend in baseline fixed operation and maintenance costs associated with similar units (in the 10 MW to 100 MW range). Figure 7-4 presents the baseline fixed O&M costs for similar natural gas-fired steam generating power plants arranged according to the age of the units, with BV1, BV2, and BV3 highlighted in red.

Figure 7-4: Baseline Fixed O&M Cost Trend Evaluation (X-Y Scatter)



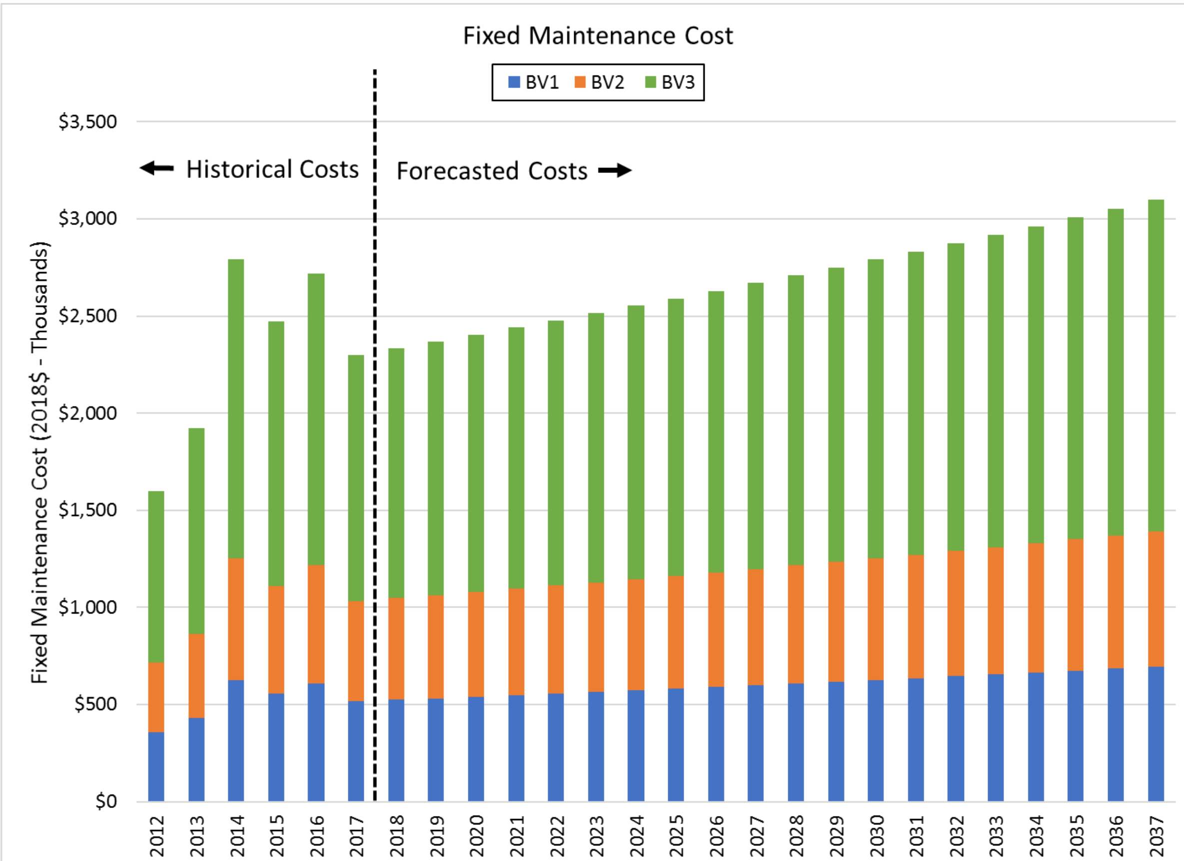
The average baseline fixed O&M of the Blue Valley Units for the past five years is significantly higher in comparison to the other units. Overall, the benchmark analysis indicates an upward trend of baseline maintenance costs of approximately 1.5 percent per year as power plants age.

7.2.2 Baseline Fixed Maintenance Costs Forecast

Utilizing both the fleet benchmarking analysis and the historical baseline fixed maintenance costs, Burns & McDonnell forecasted the overall baseline maintenance costs for the Units, excluding payroll expenses. As presented in Figure 7-5, the historical baseline fixed maintenance budget peaked in 2015 and has since decreased for all units. The average historical baseline fixed maintenance cost for BV1 and BV2 is $524k per year while the average historical maintenance cost for BV3 is $1.29M.

As demonstrated within the fleet benchmarking analysis, overall the baseline fixed maintenance of large gas fired power plants is expected to increase approximately 1.5 percent per year. Burns & McDonnell developed a baseline fixed maintenance cost forecast starting in 2018 utilizing the overall average from 2012 to 2016 and then applied the 1.5 percentage-based escalation factor to estimate baseline fixed maintenance costs for the next 20 years. Figure 7-5 presents the baseline fixed maintenance cost forecasts for BV1, BV2, and BV3 over the next 20 years.

Figure 7-5: Blue Valley Baseline Maintenance Cost Forecasts



Applying the escalation to the average historical and projected baseline fixed maintenance presented in the prior section throughout the Study period shows that baseline fixed maintenance costs would continue to increase for BV1 and BV2 over time from an average of $524k in 2018 to approximately $695k in 2037. Furthermore, baseline fixed maintenance costs continue to increase for BV3 over time from an average of $1.29M in 2018 to $1.70M in 2037. The costs presented in Figure 7-5 are presented in real, constant dollars (2018$) without inflation.

7.3 Project Cost Estimate

Typical power plant design assumes a 30-year to 40-year service life, yet the service life of a unit can be extended if equipment is refurbished or replaced. The Blue Valley Units have already served over 50 years, which is past the typical power plant design life. As such, it is expected that additional expenditures will be required for reliable operation through the Study period. Burns & McDonnell developed a forecast of specific project cost expenditures that would likely be required if the Units are to run reliably for the next 5, 10, and 20 years; this detailed forecast is provided in Appendix A. The forecast was developed based on findings from the site visit, Plant documentation, interviews with plant personnel, and the five-year capital forecast document provided for the Blue Valley Plant. The project cost forecast was not developed to capture all the maintenance and capital expenditures required for operating the Units, but rather is reflective of major equipment projects that will likely need to be implemented to maintain unit reliability. Other baseline fixed maintenance costs such as replacing filters, changing lube oil, and other miscellaneous costs are captured in the baseline fixed maintenance forecast discussed above.

7.3.1 Unit 1 Project Cost Estimate

Burns & McDonnell recommends the following activities be performed to provide safe, reliable operation of BV1 during the 5-year, 10-year, and 20-year operating scenarios. The complete list of recommended activities is included in Appendix A.

5-Year Operating Horizon:

1. Replace/repair the Generator Step-up Transformer cable bus.
2. Refurbish BFP 1-1 if follow up testing yields unsatisfactory results
3. Refurbish condensate pump 1-2 if follow up testing yields unsatisfactory results

10-Year Operating Horizon:

1. The 5-year maintenance activities listed above
2. Steam turbine major inspection
3. Steam turbine control valve steam replacement
4. Replace the stack gunite liner
5. Drone cavity inspection
6. Replace the well water line (common)

20-Year Operating Horizon:

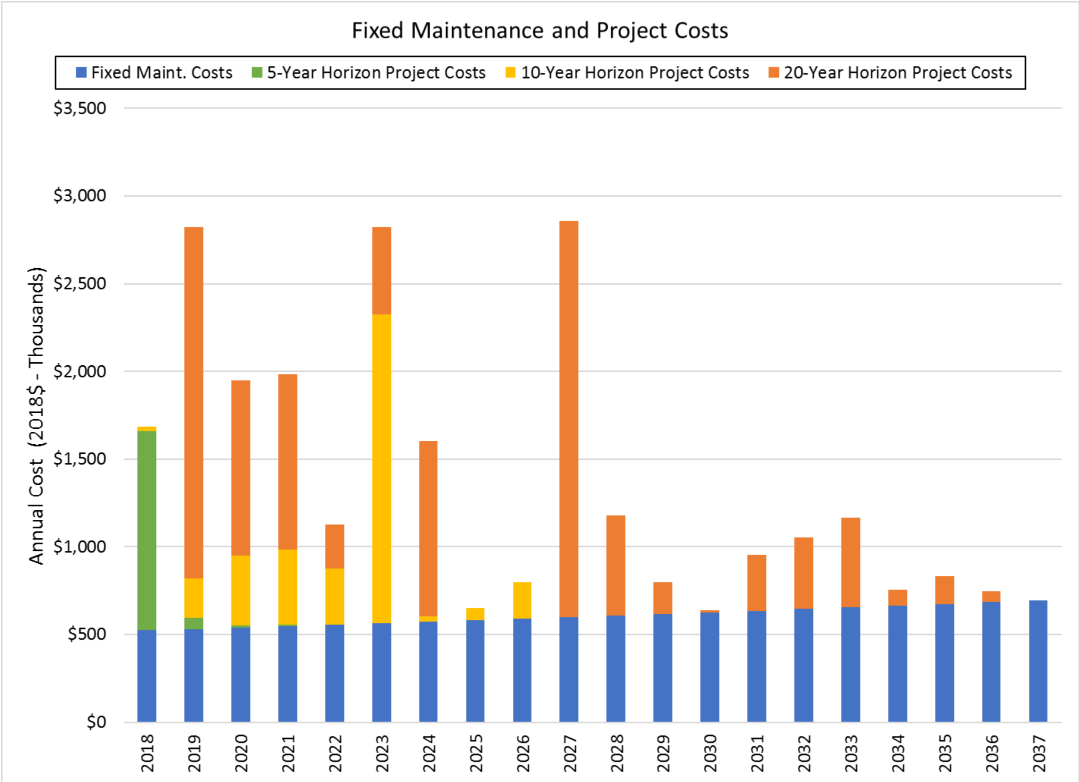
1. The 10-year maintenance activities listed above

2. Air heater basket replacement
3. Replace the boiler roof tubes
4. Retube the condenser
5. Replace one GSU or UAT
6. Perform a generator rewind
7. Repair circulating piping
8. HEP replacements
9. Replace the control system (common)

Additionally, as mentioned previously, regular inspection and maintenance of major equipment will need to continue. Specifically, the turbine valves will need to be inspected, the boiler feed pumps will need to be inspected on a regular schedule, and so will the transformers (GSU, auxiliary, and standby). Appendix A provides a detailed schedule of the forecasted project expenditures and baseline fixed maintenance costs required for reliable operation for the next 5, 10, and 20 years. Note that it has been assumed that there will be no recurring inspection and maintenance events in the last year of the specific scenario as the Plant is getting close to retirement and would avoid those costs.

Figure 7-6 presents a summary of the cost projection estimates derived by Burns & McDonnell for BV1 in real/constant dollars (2018$) with no inflation included. Depending on the operating horizons for the Unit, various levels of spend will be required.

Figure 7-6: Blue Valley Unit 1 Project Cost Forecast



7.3.2 Unit 2 Project Cost Estimate

Burns & McDonnell recommends the following activities be performed to provide safe, reliable operation of BV2 during the 5-year, 10-year, and 20-year operating scenarios. The complete list of recommended activities is included in Appendix A.

<u>5-Year Operating Horizon:</u>

1. Replace/repair the Generator Step-up Transformer cable bus.

<u>10-Year Operating Horizon:</u>

1. The 5-year maintenance activities listed above
2. Steam turbine major inspection
3. Steam turbine control valve steam replacement
4. Retube condenser
5. Drone cavity inspection
6. Replace the well water line (common)

<u>20-Year Operating Horizon:</u>

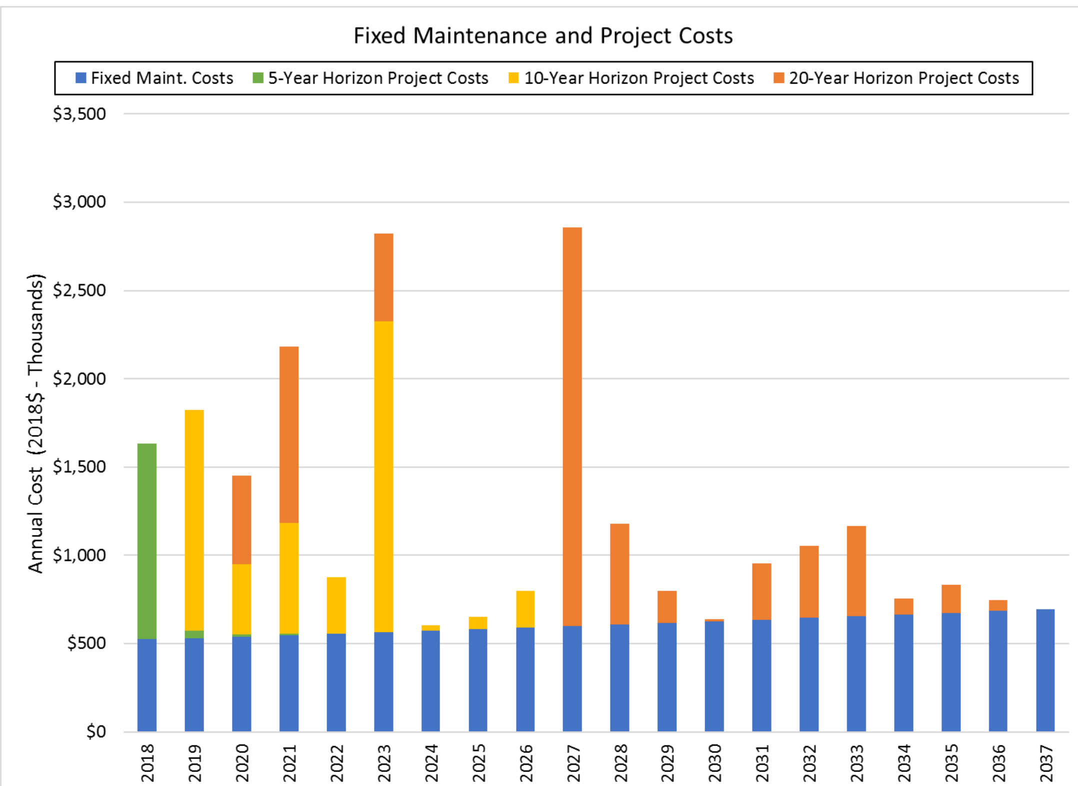
1. The 10-year maintenance activities listed above

2. HEP replacements
3. Boiler tube replacements
4. Replace one GSU or UAT
5. Replace the control system (common)

Additionally, as mentioned previously, regular inspection and maintenance of major equipment will need to continue. Specifically, the turbine valves will need to be inspected, the boiler feed pumps will need to be inspected on a regular schedule, and so will the transformers (GSU, auxiliary, and standby). Appendix A provides a detailed schedule of the forecasted project expenditures and baseline fixed maintenance costs required for reliable operation for the next 5, 10, and 20 years. Note that it has been assumed that there will be no recurring inspection and maintenance events in the last year of the specific scenario as the Plant is getting close to retirement and would avoid those costs.

Figure 7-7 presents a summary of the cost projection estimates derived by Burns & McDonnell for BV2 in real/constant dollars (2018$) with no inflation. Depending on the different operating horizons for the Unit, various levels of spend will be required.

Figure 7-7: Blue Valley Unit 2 Project Cost Forecast



7.3.3 Unit 3 Project Cost Estimate

Burns & McDonnell recommends the following activities be performed to provide safe, reliable operation of BV3 during the 5-year, 10-year, and 20-year operating scenarios. The complete list of recommended activities is included in Appendix A.

5-Year Operating Horizon:

1. Replace external stack sheath

10-Year Operating Horizon:

1. The 5-year maintenance activities listed above
2. Steam turbine major inspection
3. Drone cavity inspection
4. Replace the well water line (common)

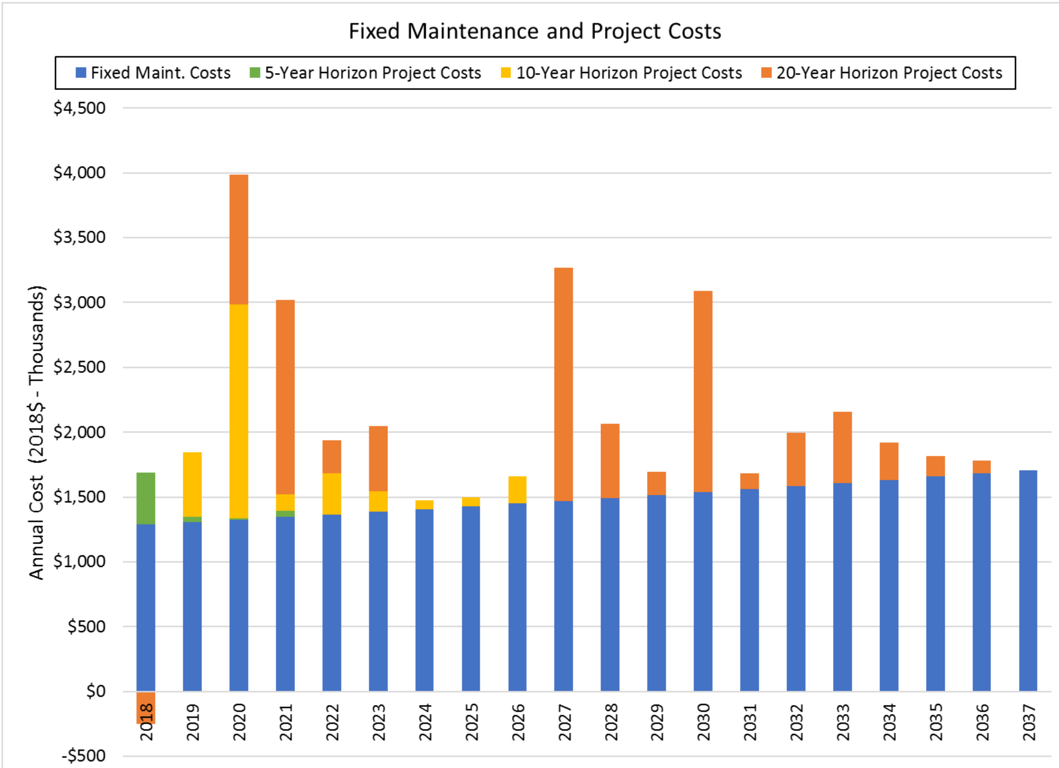
20-Year Operating Horizon:

1. The ten-year maintenance activities listed above
2. HEP replacements
3. Replace stack
4. Boiler tube replacements
5. Replace one GSU or UAT
6. Replace the control system (common)

Additionally, as mentioned previously, regular inspection and maintenance of major equipment will need to continue. Specifically, the turbine valves will need to be inspected, the boiler feed pumps will need to be inspected on a regular schedule, and so will the transformers (GSU, auxiliary, and standby). Appendix A provides a detailed schedule of the forecasted project expenditures and baseline fixed maintenance costs required for reliable operation for the next 5, 10, and 20 years. Note that it has been assumed that there will be no recurring inspection and maintenance events in the last year of the specific scenario as the Plant is getting close to retirement and would avoid those costs.

Figure 7-8 presents a summary of the cost projection estimates derived by Burns & McDonnell for BV3in real/constant dollars (2018$) with no inflation included. Depending on the different operating horizons for the Unit, various levels of spend will be required.

Figure 7-8: Blue Valley Unit 3 Project Cost Forecast



8.0 CONCLUSIONS & RECOMMENDATIONS

8.1 Conclusions

The following conclusions are based on the observations and analysis from this Study.

1. Blue Valley Unit 1 and Unit 2 were placed into commercial service in 1958 while Unit 3 was commissioned in 1965 meaning the newest unit is 53 years old. The typical power plant design assumes a service life of approximately 30 to 40 years, therefore the Units have exceeded the typical service life of a power generation facility. Many power plant operators have extended the service life of units past the design life by replacing or refurbishing many components.
2. The Units appear to have been maintained well, at or exceeding typical industry standards, over the last 50 years to be in as good of condition as the Units are presently.
3. Some of the major components and equipment for the Units will need to be repaired or replaced to provide reliable operation of the Units over the next 20 years. If the Units are to only operate for the next 10 years, then significantly less Project Costs will be needed. Finally, if the Units are to operate for only 5 more years, then very limited Project Costs are required.
4. The Units have experienced a significant increase in forced outage rates over the past few years, likely due to changes in operational mode and reduced service hours which impacts the overall calculation of the forced outage rate.
5. As indicated within the fleet benchmarking analysis, the Facility has significantly higher baseline fixed O&M costs when compared to similar natural gas-fired STG units.
6. Based on the analysis of the O&M costs of STG natural gas units in the United States that were used as a comparison in this benchmarking study, overall maintenance costs increase as the units age by roughly 1.5 percent per year, which is to be expected. Burns & McDonnell expects the Facility to follow a similar trend.

8.2 Recommendations

Based on the information provided to Burns & McDonnell for review, interviews with site personnel, and the site visit, Burns & McDonnell recommends the following:

1. Common to all Units at the Facility
   a. IPL should perform a boiler and high energy piping condition assessment every five years. IPL should also inspect the high energy piping and headers for creep damage. It would also be prudent to implement a regular NDE program, to provide early warning of major component deterioration.

   b. NDE inspections be performed on the superheater.
   c. Regular steam drum inspections including a detailed visual inspection with internals removed, magnetic particle examination of all girth, socket, and nozzle welds, as well as ultrasonic inspection of the welds and thickness readings at the normal water level.
   d. NDE inspections be performed on the headers on a three-year basis as they have not been performed recently
   e. Inspecting the expansion joints and seals throughout the system to identify potential leak locations.
   f. Continued inspection of the stacks on a set interval to confirm that liner degradation is not impacting stack integrity
   g. Inspecting the blowdown tanks for erosion and FAC
   h. Inspecting the STGs per the original equipment manufacture's recommendations and that all new and outstanding issues be resolved.
   i. Perform a piping stress study to identify location of high stress to inspect with nondestructive examination techniques to potentially identify creep failure location. Furthermore, the pipe support systems should continue to be visually inspected annually.
   j. Load test the spring hangers to determine their actual current loading and that a stress analysis be completed to verify that all loads and stresses are within the allowable limits.
   k. Continue the current maintenance and testing plan for the site transformers including dissolved gas analysis
   l. Continue breaker maintenance and testing programs
   m. Continue testing large motors and replaced/refurbished on an as needed basis.
   n. Monitor condensate chemistry levels to identify when potential tube leaks arise.
   o. Replace the control systems.
   p. Replace the well water line.
2. Unit 1
   a. Investigate all pre-boiler circuitry to identify the potential hydrogen source that would be causing hydrogen damage in the water wall tubes.
   b. Investigate the reason for BV1 having more superheater leaks than BV2, especially if long-term continued operation is anticipated.
   c. Replacing the roof tubes if the unit is to operate for the next 20 years.
   d. Monitoring the FD motor for further degradation and repairing if megohm readings become unacceptable.
   e. Replace the bus bar in kind to enhance unit reliability.

3. Unit 2
    a. Investigate all pre-boiler circuitry to identify the potential hydrogen source that would be causing hydrogen damage in the water wall tubes.
    b. Replace the bus bar in kind to enhance unit reliability.
    c. Retube the condenser if the unit becomes back pressure limited and can no longer achieve full load
4. Unit 3
    a. Inspect the boiler ducting and repair the affected area.
    b. Inspect the attemperator periodically for thermal fatigue cracking as downstream piping is very susceptible to quench cracking.
    c. Continued inspection of the stacks to confirm the exterior sheath of the stack is not degrading and impacting its structural integrity as well as monitoring the interior gunite liner for further degradation.
    d. Perform the recommended steam turbine work in the 2008 GE inspection report.

APPENDIX A - CAPITAL & MAINTENANCE COST FORECASTS

Independence Power & Light
Blue Valley Unit 1
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
Investigate source(s) of hydrogen	Boiler	Never	Once	2018	$50	$50																	
Refurbish BFP 1-1	Feedwater	Never	Once	2019	$25		$25																
Refurbish condensate pump 1-2	Condensate	Never	Once	2018	$25	$25																	
Repair/replace cable bus	Electrical	Never	Once	2018	$1,000	$1,000																	
Perform IR survey	Electrical	Unknown	1	2018	$40	$10	$10	$10	$10														
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Inspect hangers	Piping	Never	5	2019	$20		$20																
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$10		$10																
5 Year TOTAL																							
5 YEAR TOTAL					**$1,220**	$1,135	$65	$10	$10	$0													
10 Year Forecast																							
Investigate source(s) of hydrogen	Boiler	Never	Once	2018	$50	$50																	
Perform NDE inspection of the high temp. headers	Boiler	2017	3	2020	$150			$50			$50			$50									
Perform steam drum visual, MT, and UT inspections	Boiler	Never	3	2019	$150		$50			$50			$50										
Perform boiler cavity drone inspection	Boiler	Never	3	2020	$300			$100			$100			$100									
Test SH tubes for signs of creep and fatigue	Boiler	Never	Once	2021	$75				$75														
Refurbish BFP 1-1	Feedwater	Never	Once	2019	$25	$25																	
Refurbish condensate pump 1-2	Condensate	Never	Once	2018	$25	$25																	
Repair/replace cable bus	Electrical	Never	Once	2018	$1,000	$1,000																	
Perform IR survey	Electrical	Unknown	1	2018	$90	$10	$10	$10	$10	$10	$10	$10	$10	$10									
Repair leaks and expansion joints	Combustion Air	Unknown	Once	2019	$200		$200																
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Replace/refurbish motors allowance	Motors	N/A	5	2022	$250					$250													
Perform FAC evaluation	Feedwater	2016	5	2021	$100				$50					$50									
Inspect hangers	Piping	Never	5	2019	$40		$20					$20											
Replace internal gunite liner	Stack	Never	Once	2020	$250			$250															
Perform major inspection	Steam Turbine	2011	12	2023	$1,600						$1,600												
Replace three control valve stems	Steam Valves	Unknown	Once	2021	$300				$300														
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$30		$10			$10			$10										
10 Year TOTAL																							
10 YEAR TOTAL					**$4,685**	$1,160	$290	$410	$435	$320	$1,760	$30	$70	$210	$0								
20 Year Forecast																							
Replace baskets	Air preheater	2011	20	2031	$200														$200				
Replace bearing support	Air preheater	Never	Once	2022	$250					$250													
Replace roof tubes	Boiler	Never	Once	2019	$2,000		$2,000																
Investigate source(s) of hydrogen	Boiler	Never	Once	2018	$50	$50																	
Perform NDE inspection of the high temp. headers	Boiler	2017	3	2020	$300			$50			$50			$50			$50			$50			$50
Perform steam drum visual, MT, and UT inspections	Boiler	Never	3	2019	$300		$50			$50			$50			$50			$50			$50	
Perform boiler cavity drone inspection	Boiler	Never	3	2020	$600			$100			$100			$100			$100			$100			$100
Test SH tubes for signs of creep and fatigue	Boiler	Never	Once	2021	$75				$75														
Tube replacement allowance	Boiler	N/A	5	2023	$1,500						$500					$500					$500		
Refurbish condensate pump 1-2	Condensate	Never	Once	2018	$25	$25																	
Refurbish BFP 1-1	Feedwater	Never	Once	2019	$25	$25																	
Repair piping	Circulating Water	Never	Once	2021	$1,000				$1,000														
Fix condenser air leakage issues	Condensate	Never	Once	2020	$500			$500															
Retube condenser	Condensate	Never	Once	2024	$1,000							$1,000											
Repair/replace cable bus	Electrical	Never	Once	2018	$1,000	$1,000																	
Perform IR survey	Electrical	Unknown	1	2018	$190	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
Replace FD fan motor	Combustion Air	Never	Once	2020	$500			$500															
Repair leaks and expansion joints	Combustion Air	Unknown	Once	2019	$200		$200																
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Rewind field or stator allowance	Generator	Never	Once	2027	$500										$500								
Replace/refurbish motors allowance	Motors	N/A	5	2022	$750					$250					$250					$250			
Perform FAC evaluation	Feedwater	2016	5	2021	$200				$50					$50					$50				
Inspect hangers	Piping	Never	5	2019	$80		$20					$20					$20					$20	
Replace internal gunite liner	Stack	Never	Once	2020	$250			$250															
Perform major inspection	Steam Turbine	2011	12	2023	$1,600						$1,600												
Replace three control valve stems	Steam Valves	Unknown	Once	2021	$300				$300														
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$60		$10			$10			$10			$10			$10			$10	
Replace one GSU and one Aux Transformer allowance	Electrical	Never	Once	2027	$1,500										$1,500								
20 Year TOTAL																							
20 YEAR TOTAL					**$14,945**	$1,160	$2,290	$1,410	$1,435	$570	$2,260	$1,030	$70	$210	$2,260	$570	$180	$10	$320	$410	$510	$90	$160

Independence Power & Light
Blue Valley Unit 2
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
Investigate source(s) of hydrogen	Boiler	Never	Once	2018	$50	$50																	
Repair/replace cable bus	Electrical	Never	Once	2018	$1,000	$1,000																	
Perform IR survey	Electrical	Unknown	1	2018	$40	$10	$10	$10	$10														
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Inspect hangers	Piping	Never	5	2019	$20		$20																
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$10		$10																
5 Year TOTAL																							
5 YEAR TOTAL					**$1,170**	$1,110	$40	$10	$10	$0													
10 Year Forecast																							
Investigate source(s) of hydrogen	Boiler	Never	Once	2018	$50	$50																	
Perform NDE inspection of the high temp. headers	Boiler	2017	3	2020	$150			$50			$50			$50									
Perform steam drum visual, MT, and UT inspections	Boiler	Never	3	2019	$150		$50			$50			$50										
Perform boiler cavity drone inspection	Boiler	Never	3	2020	$300			$100			$100			$100									
Test SH tubes for signs of creep and fatigue	Boiler	Never	Once	2021	$75				$75														
Retube condenser	Condensate	Never	Once	2019	$1,000		$1,000																
Repair/replace cable bus	Electrical	Never	Once	2018	$1,000	$1,000																	
Perform IR survey	Electrical	Unknown	1	2018	$90	$10	$10	$10	$10	$10	$10	$10	$10	$10									
Repair leaks and expansion joints	Combustion Air	Unknown	Once	2019	$200		$200																
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Replace/refurbish motors allowance	Motors	N/A	5	2022	$250					$250													
Perform FAC evaluation	Feedwater	2016	5	2021	$100				$50					$50									
Inspect hangers	Piping	Never	5	2019	$40		$20					$20											
Replace internal gunite liner	Stack	Never	Once	2020	$250			$250															
Perform major inspection	Steam Turbine	2011	12	2023	$1,600						$1,600												
Replace five control valve stems	Steam Valves	Unknown	Once	2021	$500				$500														
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$30		$10			$10			$10										
10 Year TOTAL																							
10 YEAR TOTAL					**$5,835**	$1,110	$1,290	$410	$635	$320	$1,760	$30	$70	$210	$0								
20 Year Forecast																							
Replace baskets	Air preheater	2011	20	2031	$200														$200				
Investigate source(s) of hydrogen	Boiler	Never	Once	2018	$50	$50																	
Perform NDE inspection of the high temp. headers	Boiler	2017	3	2020	$300			$50			$50			$50			$50			$50			$50
Perform steam drum visual, MT, and UT inspections	Boiler	Never	3	2019	$300		$50			$50			$50			$50			$50			$50	
Perform boiler cavity drone inspection	Boiler	Never	3	2020	$600			$100			$100			$100			$100			$100			$100
Test SH tubes for signs of creep and fatigue	Boiler	Never	Once	2021	$75				$75														
Tube replacement allowance	Boiler	N/A	5	2023	$1,500						$500					$500					$500		
Repair piping	Circulating Water	Never	Once	2021	$1,000				$1,000														
Fix condenser air leakage issues	Condensate	Never	Once	2020	$500			$500															
Retube condenser	Condensate	Never	Once	2019	$1,000		$1,000																
Repair/replace cable bus	Electrical	Never	Once	2018	$1,000	$1,000																	
Perform IR survey	Electrical	Unknown	1	2018	$190	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
Repair leaks and expansion joints	Combustion Air	Unknown	Once	2019	$200		$200																
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Rewind field or stator allowance	Generator	Never	Once	2027	$500										$500								
Replace/refurbish motors allowance	Motors	N/A	5	2022	$750					$250					$250					$250			
Perform FAC evaluation	Feedwater	2016	5	2021	$200				$50					$50					$50				
Inspect hangers	Piping	Never	5	2019	$80		$20					$20					$20					$20	
Replace internal gunite liner	Stack	Never	Once	2020	$250			$250															
Perform major inspection	Steam Turbine	2011	12	2023	$1,600						$1,600												
Replace five control valve stems	Steam Valves	Unknown	Once	2021	$500				$500														
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$60		$10			$10			$10			$10			$10			$10	
Replace one GSU and one Aux Transformer allowance	Electrical	Never	Once	2027	$1,500										$1,500								
20 Year TOTAL																							
20 YEAR TOTAL					**$12,345**	$1,110	$1,290	$910	$1,635	$320	$2,260	$30	$70	$210	$2,260	$570	$180	$10	$320	$410	$510	$90	$160

Independence Power & Light
Blue Valley Unit 3
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
Inspect for thermal fatigue cracking	Boiler	Never	3	2018	$40	$20			$20														
Perform IR survey	Electrical	Unknown	1	2018	$40	$10	$10	$10	$10														
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Inspect hangers	Piping	Never	5	2019	$20		$20																
Perform HEP piping stress stufy	Piping	Never	Once	2018	$50	$50																	
Inspect HEP piping	Piping	Never	3	2018	$40	$20			$20														
Replace external sheath	Stack	2004	10	2018	$250	$250																	
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$10		$10																
5 Year TOTAL																							
5 YEAR TOTAL					**$500**	$400	$40	$10	$50	$0													
10 Year Forecast																							
Replace baskets	Air preheater	Never	15	2019	$200		$200																
Perform NDE inspection of the high temp. headers	Boiler	2017	3	2020	$150			$50			$50			$50									
Perform steam drum visual, MT, and UT inspections	Boiler	Never	3	2019	$150		$50			$50			$50										
Perform boiler cavity drone inspection	Boiler	Never	3	2020	$300			$100			$100			$100									
Test SH tubes for signs of creep and fatigue	Boiler	Never	Once	2021	$75				$75														
Inspect for thermal fatigue cracking	Boiler	Never	3	2018	$60	$20			$20			$20											
Replace recirculation piping and valve	Feedwater	Never	Once	2019	$50		$50																
Perform IR survey	Electrical	Unknown	1	2018	$90	$10	$10	$10	$10	$10	$10	$10	$10	$10									
Repair leaks and expansion joints	Combustion Air	Unknown	Once	2019	$200		$200																
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Replace/refurbish motors allowance	Motors	N/A	5	2022	$250					$250													
Perform FAC evaluation	Feedwater	2016	5	2021	$100				$50					$50									
Inspect hangers	Piping	Never	5	2019	$40		$20					$20											
Perform HEP piping stress stufy	Piping	Never	Once	2018	$50	$50																	
Inspect HEP piping	Piping	Never	3	2018	$60	$20			$20			$20											
Replace external sheath	Stack	2004	10	2018	$250	$250																	
Perform major inspection	Steam Turbine	2010	10	2020	$1,500			$1,500															
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$30		$10			$10			$10										
10 Year TOTAL																							
10 YEAR TOTAL					**$3,605**	$400	$540	$1,660	$175	$320	$160	$70	$70	$210	$0								
20 Year Forecast																							
Replace baskets	Air preheater	Never	15	2019	$400		$200															$200	
Replace bearing support	Air preheater	Never	Once	2022	$250					$250													
Perform NDE inspection of the high temp. headers	Boiler	2017	3	2020	$300			$50			$50			$50			$50			$50			$50
Perform steam drum visual, MT, and UT inspections	Boiler	Never	3	2019	$300		$50			$50			$50			$50			$50			$50	
Perform boiler cavity drone inspection	Boiler	Never	3	2020	$600			$100			$100			$100			$100			$100			$100
Test SH tubes for signs of creep and fatigue	Boiler	Never	Once	2021	$75				$75														
Tube replacement allowance	Boiler	N/A	5	2023	$1,500						$500					$500					$500		
Replace damper	Boiler	Never	Once	2021	$500				$500														
Inspect for thermal fatigue cracking	Boiler	Never	3	2018	$140	$20			$20			$20			$20			$20			$20		
Replace recirculation piping and valve	Feedwater	Never	Once	2019	$50		$50																
Repair piping	Circulating Water	Never	Once	2021	$1,000				$1,000														
Perform IR survey	Electrical	Unknown	1	2018	$190	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
Repair leaks and expansion joints	Combustion Air	Unknown	Once	2019	$200		$200																
Install replacement FM certified trifecta valves	Fuel Gas	Never	Once	2018	$50	$50																	
Replace/refurbish motors allowance	Motors	N/A	5	2022	$750					$250					$250					$250			
Perform FAC evaluation	Feedwater	2016	5	2021	$200				$50					$50					$50				
Inspect hangers	Piping	Never	5	2019	$80		$20					$20					$20					$20	
Perform HEP piping stress stufy	Piping	Never	Once	2018	$50	$50																	
Inspect HEP piping	Piping	Never	3	2018	$140	$20			$20			$20			$20			$20			$20		
Replace with shorter stack	Stack	Never	Once	2020	$1,000			$1,000															
Perform major inspection	Steam Turbine	2010	10	2020	$3,000			$1,500										$1,500					
Inspect tanks for erosion and FAC	Blowdown	Unknown	3	2019	$60		$10			$10			$10			$10			$10			$10	
Replace one GSU and one Aux Transformer allowance	Electrical	Never	Once	2027	$1,500										$1,500								
20 Year TOTAL																							
20 YEAR TOTAL					**$12,235**	$150	$540	$2,660	$1,675	$570	$660	$70	$70	$210	$1,800	$570	$180	$1,550	$120	$410	$550	$290	$160

Independence Power & Light
Blue Valley Common Systems
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
					$0																		
5 Year TOTAL																							
5 YEAR TOTAL					**$0**	$0	$0	$0	$0	$0													
10 Year Forecast																							
Replace station batteries	Batteries	2015	10	2025	$200								$200										
Repair line from wells	Water Treatment	Never	Once	2020	$1,000			$1,000															
10 Year TOTAL																							
10 YEAR TOTAL					**$1,200**	$0	$0	$1,000	$0	$0	$0	$0	$200	$0	$0								
20 Year Forecast																							
Replace station batteries	Batteries	2015	10	2025	$400								$200										$200
Replace integrated control system	Controls	Never	Once	2023	$1,500						$1,500												
Repair line from wells	Water Treatment	Never	Once	2020	$1,000			$1,000															
20 Year TOTAL																							
20 YEAR TOTAL					**$2,900**	$0	$0	$1,000	$0	$0	$1,500	$0	$200	$0	$0	$0	$0	$0	$0	$0	$0	$0	$200

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APPENDIX C – CTG CONDITION ASSESSMENT

Condition Assessment for Combustion Turbines J, I & H

Independence Power & Light

Energy Master Plan
Project No. 103983

8/15/2018

Condition Assessment for Combustion Turbines J, I & H

prepared for

Independence Power & Light
Energy Master Plan
Independence, Missouri

Project No. 103983

8/15/2018

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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LIST OF ABBREVIATIONS

Abbreviation	**Term/Phrase/Name**
API	American Petroleum Institute
Burns & McDonnell	Burns & McDonnell Engineering Company, Inc.
CI	Combustion inspections
CTG	Combustion turbine generator
DC	Direct current
EAF	Equivalent availability factor
EFOR	Equivalent forced outage rate
FERC	Federal Energy Regulatory Commission
FOD	Foreign object damage
GADS	Generator Availability Database System
GE	General Electric
GSU	Generator step-up
HGP	Hot gas path
H5	Substation H Unit 5
H6	Substation H Unit 6
IPL	Independence Power and Light
I3	Substation I Unit 3
I4	Substation I Unit 4
J1	Substation J Unit 1
J2	Substation J Unit 2
kV	Kilovolt

Abbreviation	Term/Phrase/Name
kW	Kilowatt
MI	Major Inspections
MVA	Megavolt amperes
MW	Megawatt
NDE	Nondestructive examination
NERC	North American Electric Reliability Corporation
O&M	Operation and maintenance
Project Costs	Costs for projects identified by Burns & McDonnell
psig	Pounds per square inch gauge
SPP	Southwest Power Pool
Study	Condition Assessment
Units	J1, J2, I3, I4, H5, and H6
V	Volt
VDC	Volts DC

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1.0 EXECUTIVE SUMMARY

1.1 Objective & Background

Independence Power & Light ("IPL") retained the services of Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell") to perform a study to assess the condition of J, I, and H substation combustion turbines ("Facilities") Unit 1, Unit 2, Unit 3, Unit 4, Unit 5, and Unit 6 ("J1," "J2," "I3," "I4," "H5," and "H6" respectively or "Units" collectively) to determine the overall costs associated with operating the Units reliably within the Southwest Power Pool ("SPP") energy market ("Study").

The intent of this Study is to assist IPL in determining the maintenance and capital expenditures associated with operating the Facilities at a level which meets or exceeds the average reliability of similar units within the United States ("U.S.") to support resource planning efforts. The analysis conducted herein is based on historical operations data, maintenance and operating practices of units like J, I, and H as well as Burns & McDonnell's professional opinion. For this Study, Burns & McDonnell reviewed data provided by IPL, interviewed plant personnel, and conducted a walk-down of the Facilities. Additionally, historical performance data was obtained through S&P Global Market Intelligence database, which compiles Federal Energy Regulatory Commission ("FERC") Form 1 data. Burns & McDonnell then used the gathered information to determine the necessary maintenance activities that would provide reliable operation of the Units over varying operational horizons.

1.2 Results

1.2.1 Performance & Benchmarking

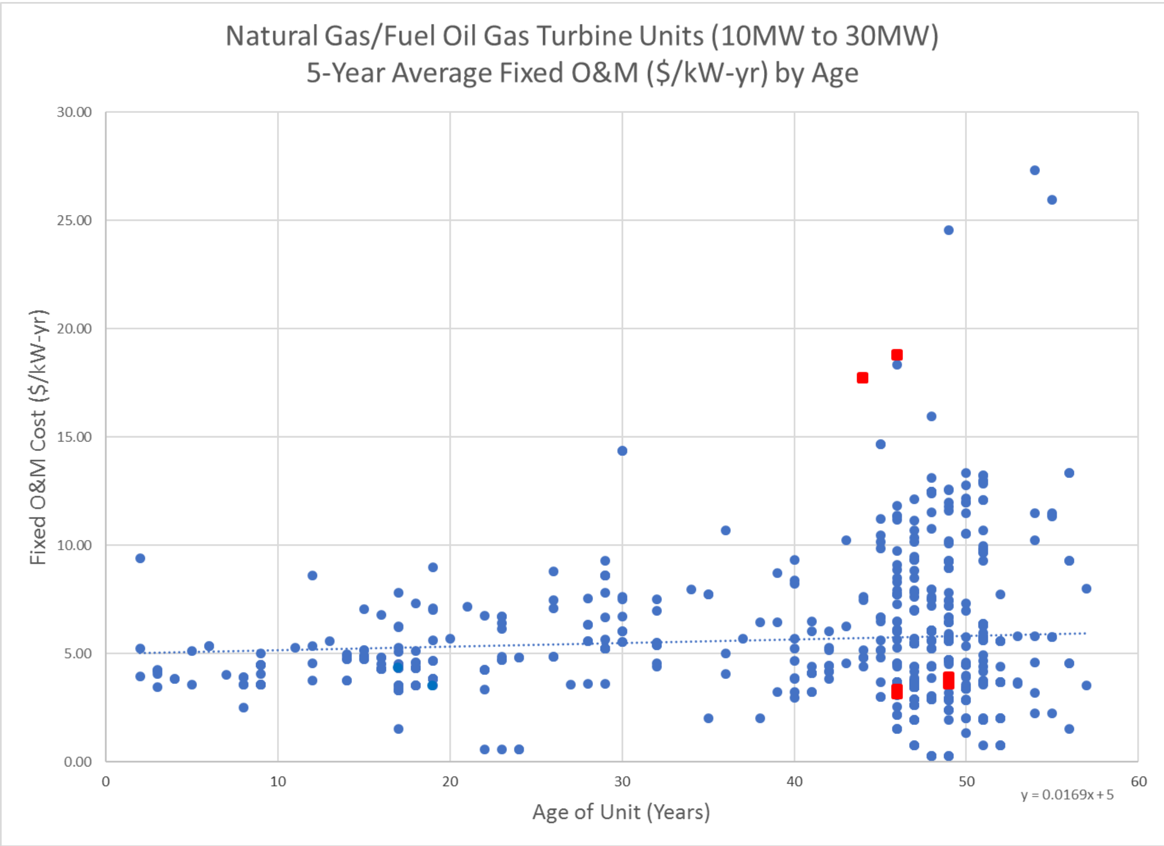
Burns & McDonnell evaluated the overall reliability and performance of J1, J2, I3, I4, H5, and H6 against a fleet average of similar generating stations. The Units were benchmarked against fleet data as provided from the North American Electric Reliability Corporation ("NERC") Generator Availability Database System ("GADS") for similar combustion turbine generator ("CTG") units with capacities between 10 megawatts ("MW") and 30 MW across the U.S.

Overall, the reliability of all Units is worse than the fleet average as measured by equivalent forced outage rate ("EFOR"). Furthermore, the availability of the Units as measured by equivalent availability factor ("EAF") differs significantly by Unit, but is on average, worse than the peer benchmark group.

Figure 1-1 presents the baseline fixed operation and maintenance ("O&M") costs for these Units compared against the fleet benchmark by the age of the facilities. Overall, the baseline fixed O&M costs associated with operating the Units are slightly higher for Substation H than the fleet benchmark as illustrated within on a per MW basis. This is due to the fact that Substation H has recently undergone a number of inspection and repairs due to Units' higher number of starts and run hours. For Substation J and Substation I, the O&M costs are less than the fleet benchmark. The Units are presented in red and the fleet benchmark units are presented in blue.

Additionally, as illustrated in Figure 1-1, the overall baseline fixed costs required to operate and maintain units appear to increase with age. Overall, there appears to be a 1.7 percent increase in overall costs per year as a combustion turbine of this size ages.

Figure 1-1: O&M Cost Benchmarking



1.2.2 Cost Projections

Burns & McDonnell evaluated the overall costs of maintaining the Facilities. Baseline fixed maintenance costs were considered as well as specific project costs. The total annual costs were developed utilizing a combination of information supplied by IPL, Burns & McDonnell's analysis of required projects for each Unit, and an analysis of the overall costs compared to the fleet benchmark. Historical baseline fixed maintenance costs were supplied by IPL. Furthermore, Burns & McDonnell assumed that the baseline fixed maintenance costs contained expenditures such as lubrication costs, motor filters, etc. that are normally associated with maintaining and operating a facility. For 2018 and beyond, the baseline fixed maintenance costs were derived utilizing the average of the historic maintenance costs with an age-based escalation of 1.7 percent, as determined in the benchmarking study, applied throughout the various operational scenarios. Baseline fixed maintenance costs also excluded major inspections and projects that were performed over the last five years as these costs are accounted for as project costs going forward.

Figure 1-2, Figure 1-3, Figure 1-4, Figure 1-5, Figure 1-6, and Figure 1-7 present the total annual baseline fixed maintenance expenses and project expenditures required to operate each Unit under varying time horizons for the next 5, 10, and 20 years for J1, J2, I3, I4, H5, and H6 respectively. These costs include projects identified by IPL, costs for the projects identified by Burns & McDonnell (collectively "Project Costs"), and baseline fixed maintenance costs that are also identified in Appendix A. The costs are presented in 2018$ and do not include inflation. As illustrated within the figures, the Project Costs are reduced for the shorter operating horizons.

Figure 1-2: J Unit 1 Total Annual Cost Summary (2018$)

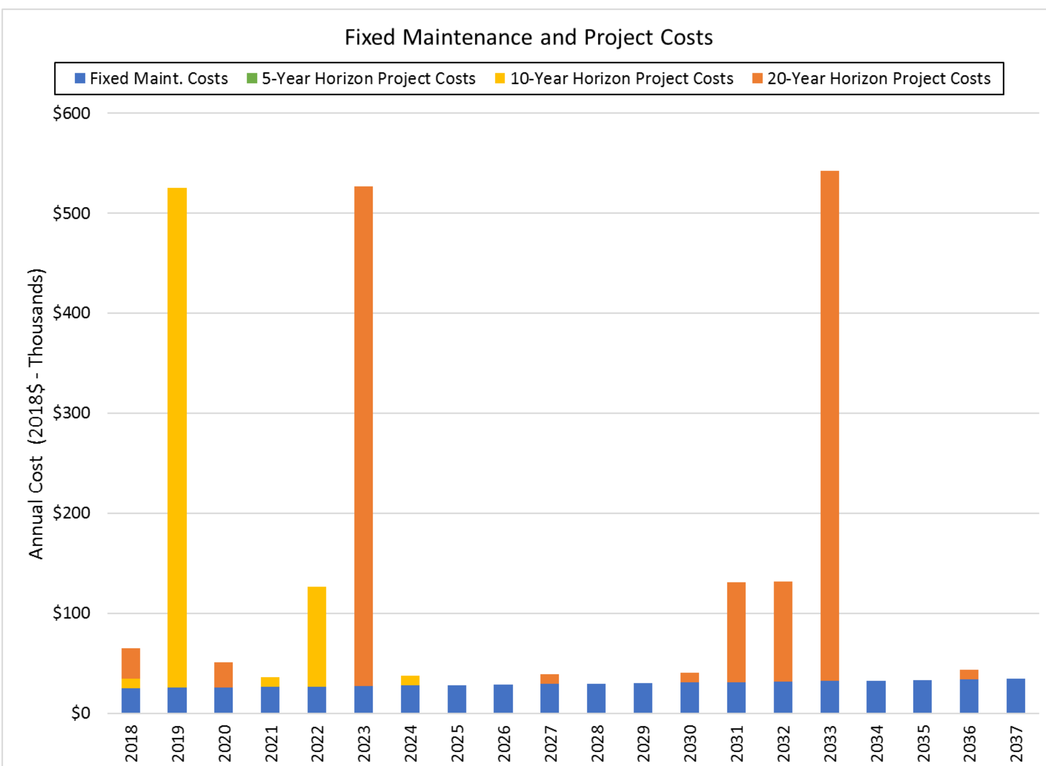


Figure 1-3: J Unit 2 Total Annual Cost Summary (2018$)

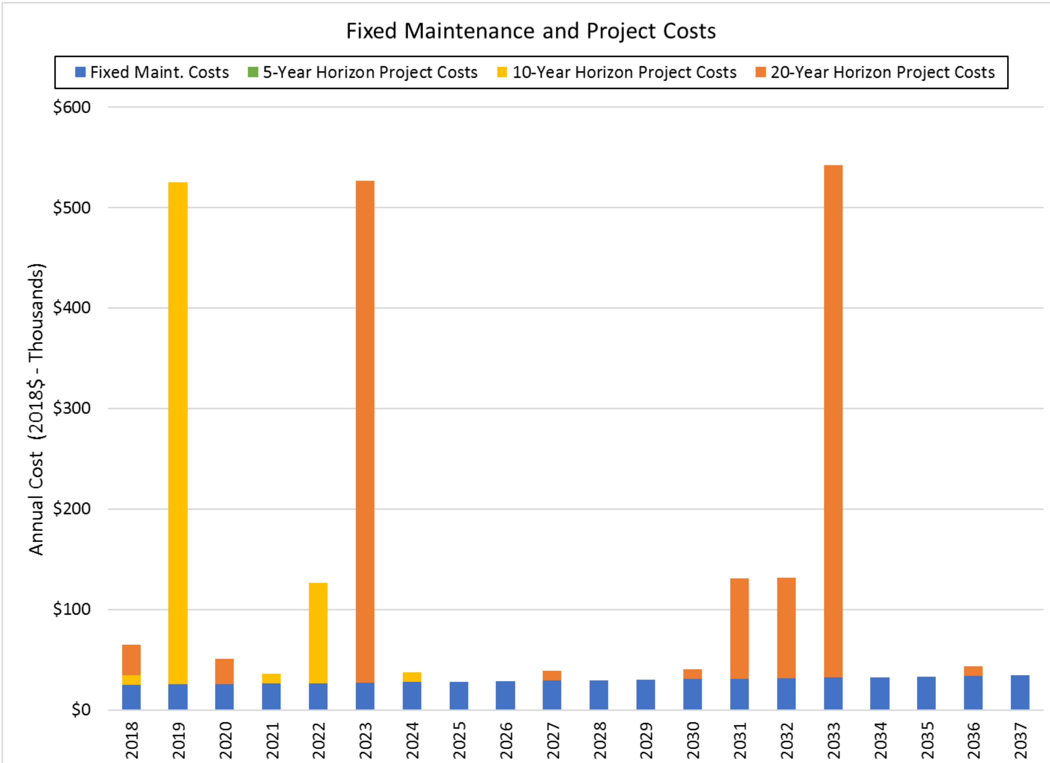


Figure 1-4: I Unit 3 Total Annual Cost Summary (2018$)

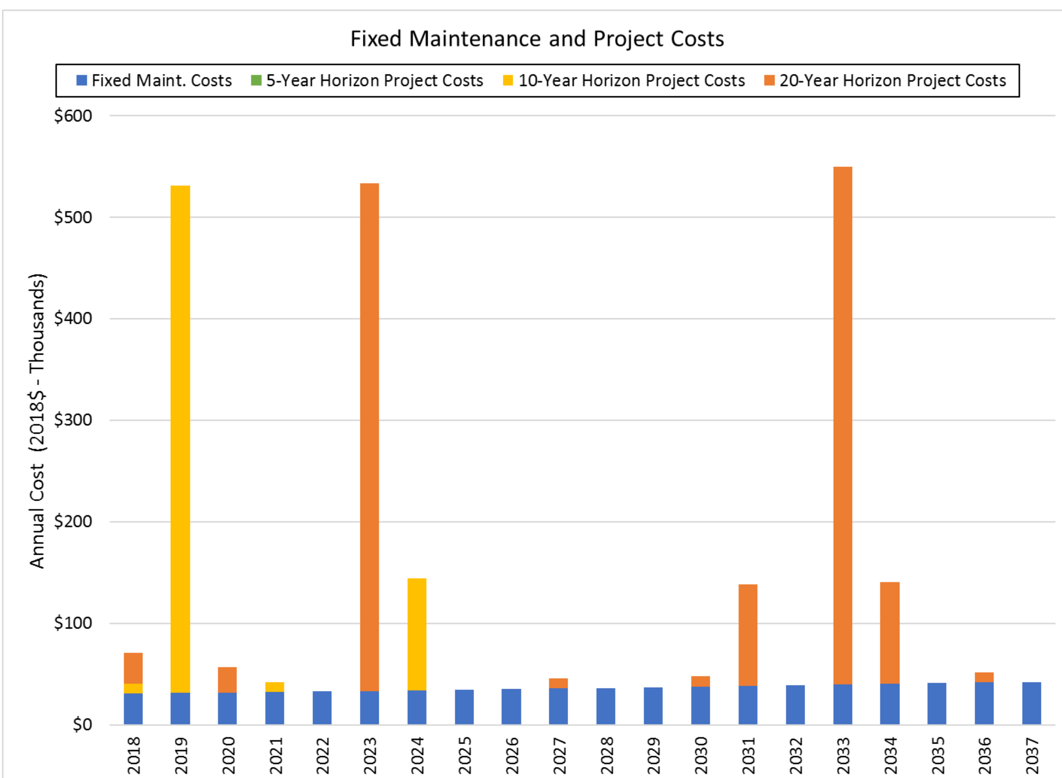


Figure 1-5: I Unit 4 Total Annual Cost Summary (2018$)

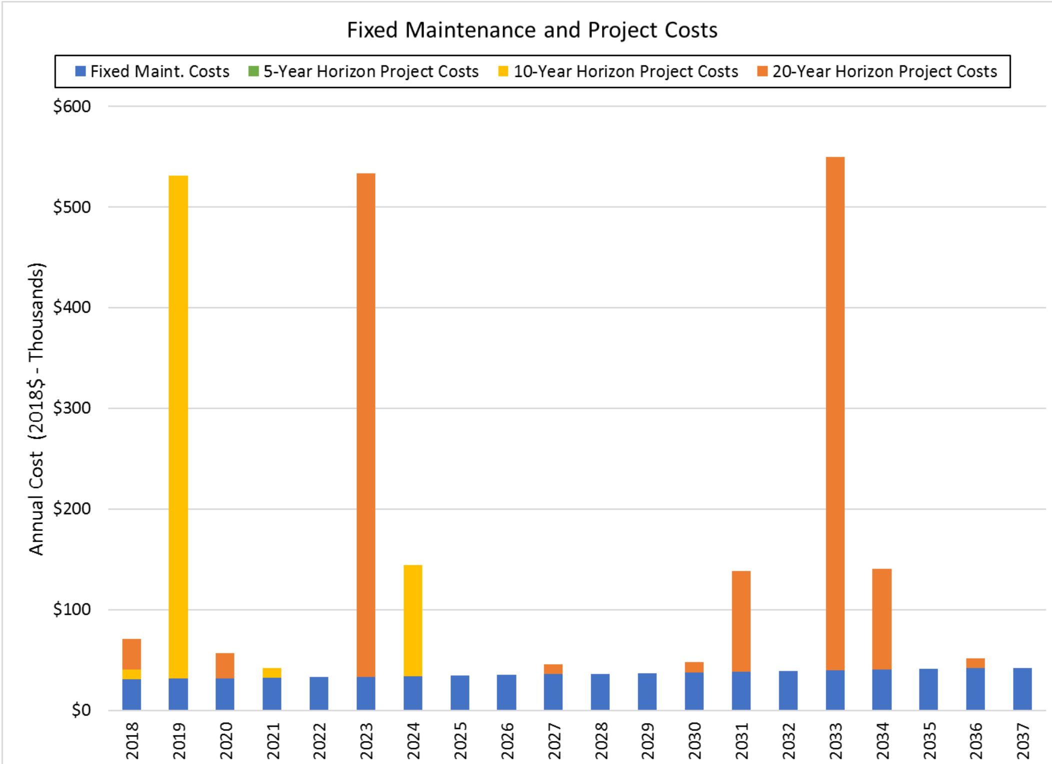


Figure 1-6: H Unit 5 Total Annual Cost Summary (2018$)

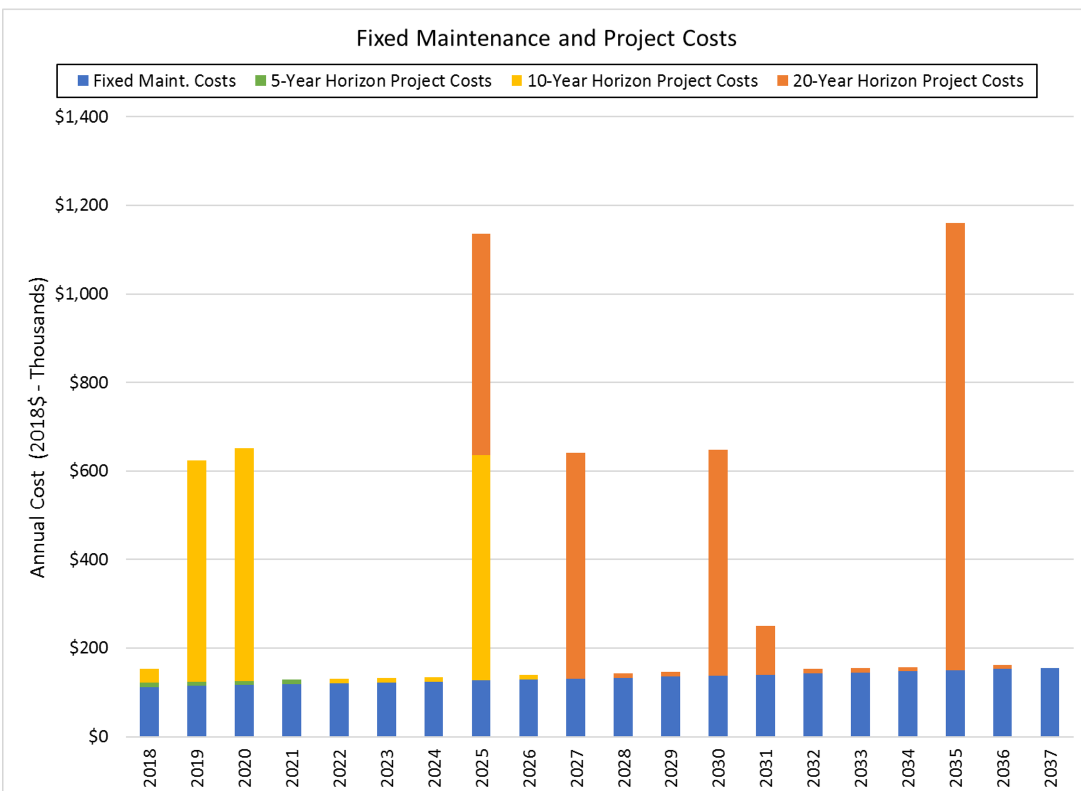
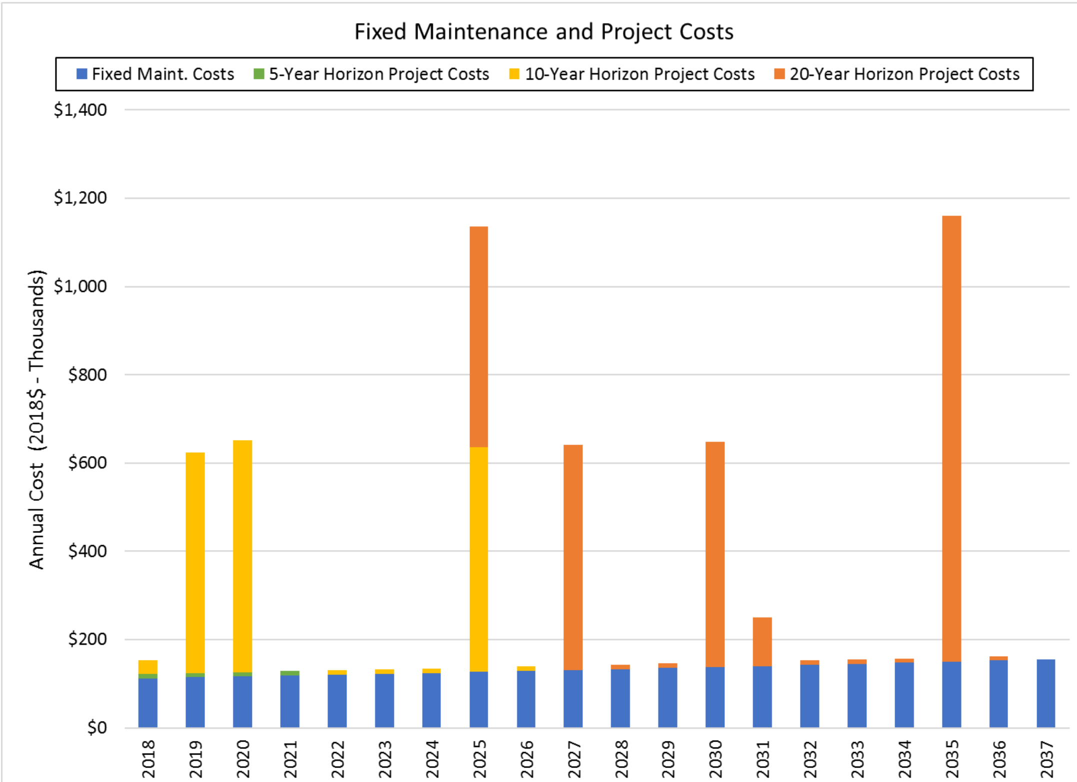


Figure 1-7: H Unit 6 Total Annual Cost Summary (2018$)



1.3 Conclusions & Recommendations

1.3.1 Conclusions

The following conclusions are based on the observations and analysis from this Study.

1. These combustion turbines were placed into commercial service between 1968 and 1972 meaning the newest unit is 46 years old. The typical power plant design assumes a service life of approximately 30 to 40 years, therefore the Units have exceeded the typical service life of a power generation facility. Many power plant operators have extended the service life of units past the design life by replacing or refurbishing many components.
2. Many of the major components and equipment for the Units will need to be repaired or replaced to provide reliable operation of the Units over the next 20 years. If the Units are to only operate for the next 10 years, then significantly less Project Costs will be needed. Finally, if the Units are to operate for only 5 more years, then very limited Project Costs are required.
3. The reliability of the Units is significantly less than the peer benchmark. Burns & McDonnell believes in order to resolve this issue, the Units would have to be significantly overhauled from an instrumentation perspective.

4. As indicated within the fleet benchmarking analysis, the Facilities are operating with EFOR and EAF metrics that are higher and lower than the peer group. This discrepancy is a direct result of the number of service hours on each machine.
5. The benchmarking data also indicates that as power plants age, their overall maintenance costs increase, which is to be expected. Burns & McDonnell expects the Facilities to follow a similar trend.

1.3.2 Recommendations

Based on the information provided to Burns & McDonnell for review, interviews with site personnel, and the site visit, Burns & McDonnell recommends the following:

1. Perform the major projects (>$100K) listed in Figure 1-8 below to ensure the reliability of the combustion turbines over the next 5-year, 10-year, and 20-year operating horizons.

Figure 1-8: Substation J, I, and H Major Projects

	Unit					
Horizon/Maintenance Activity	**J1**	**J2**	**I3**	**I4**	**H5**	**H6**
5-Year Operating Horizon						
	No major projects identified					
10-Year Operating Horizon						
Replace the Controls Wiring Harness	X	X	X	X	X	X
Replace Station Batteries	X	X	X	X	X	X
Perform Combustion Inspection					X	X
20-Year Operating Horizon						
Perform a Combustion Inspection	X	X	X	X	X	X
Replace Control System	X	X	X	X	X	X
Perform a Hot Gas Inspection					X	X
Rewind Stator or Field Allowance					X	X

2. Common to all Units at the Facilities
3. IPL should continue to proactively inspect the combustion turbines. This includes borescoping the Substation H machines every year and the Substation J and I machines every three years.
4. Continue the current maintenance and testing plan of the transformers including dissolved gas analysis.
5. J Unit 1

   a. Analyze spectrum vibration data to determine the root cause of the vibration anomaly on the combustion turbine generator.

6. I Unit 4
   a. Resample the CTG lube oil to confirm if the noted oil contamination is an issue.
7. H Unit 5
   a. Resample the CTG lube oil to confirm if the noted oil contamination is an issue.
8. H Unit 6
   a. Resample the CTG lube oil to confirm if the noted oil contamination is an issue.

2.0 INTRODUCTION

2.1 General Plant Description

Independence Power & Light, established in 1901, is a municipal electric utility providing the residents and businesses of Independence, Missouri, with electric service. Located in Independence, Missouri, the J, I, and H substation combustion turbines began commercial operation between 1968 and 1972. Specifically, J1 and J2 were commissioned in 1968, I3, I4, and H5 were commissioned in 1972 and H6 was commissioned in 1974. The Facility is dispatched into the SPP integrated market.

IPL prioritizes maintenance activities using a five-year O&M and capital forecast which details replacements to be made. The current five-year plan was reviewed as part of this Study and was utilized to determine the overall maintenance and capital expenditures associated with operating the Units for varying periods of time.

J Unit 1 and J Unit 2 are GE Frame 5LA combustion turbines that are fired using fuel oil and can generate 13 MW and 12 MW, respectively. I Unit 3 and I Unit 4 are GE Frame 5N combustion turbines that are fired using fuel oil and can generate 17 MW and 16 MW. H Unit 5 is a GE Frame 5N combustion turbine that is fired using either natural gas or fuel oil and can generate 17 MW. Finally, H Unit 6 is a GE Frame 5P combustion turbine that is fired using either natural gas or fuel oil and can generate 18 MW. Substation H combustion turbines utilize natural gas booster compressors to increase the incoming natural gas pressure to the units. The use of natural gas fuel at substation H has resulted in the units being dispatched significantly more than the units at substations J and I resulting in more run time hours, inspections, and issues/repairs.

2.2 Study Objectives & Overview

IPL retained the services of Burns & McDonnell to perform the Study to evaluate the condition of the Substation J, I, and H combustion turbines to determine the expected and anticipated costs to maintain reliable operations into the future over several operating horizons including 5, 10, and 20 years. This Study also considered current and future operational profiles, maintenance activities, and environmental factors to determine how these items would impact the Plant’s forecasted budgets. The condition assessment of the Units was completed using historical operational data, inspection/condition assessment reports provided by IPL, maintenance and operating practices of units similar to the combustion turbines as well as Burns & McDonnell’s professional opinion. To further aid in this assessment, Burns & McDonnell engineers reviewed plant documentation, interviewed IPL Plant personnel, and conducted a walkdown of the Facilities to determine the condition of the equipment. Burns & McDonnell did not perform any detailed equipment testing such as non-destructive or destructive testing, turbine/generator inspections, performance testing, etc. for this Study.

2.3 Study Contents

The following report details the current condition of the Units and presents the baseline and project maintenance expenditures that would be associated with continuing to operate Substation J, I, and H combustion turbines reliably within the SPP market. Since virtually any single component can be replaced, the remaining useful life of these units is typically driven by the economics of replacing the various components as necessary to keep the plant operating economically at industry standards, versus shutting it down and either purchasing power or building a replacement facility. Specifically, the critical physical components that will likely determine the Facilities' remaining useful life include the following:

1. Compressor and turbine blading (stationary and rotating)
2. Rotor integrity
3. Main generator rotor shaft, stator and rotor windings, stator and rotor insulation, and retaining rings
4. Transformers

The following items, although not as critical as the above, are also influential components that affect the remaining life of the plant:

1. Instrumentation and controls issues
2. Balance of plant, including cooling systems, controls, and auxiliary switchgear

3.0 SITE VISIT

Representatives from Burns & McDonnell, along with IPL staff, visited the Facilities on December 19, 2017. The purpose of the site visit was to gather information to conduct the condition assessment, interview plant management and operations staff, and conduct an on-site review of the Facilities.

The following representatives from IPL provided information during the site visit:

1. Ryan Clark, IC&E Supervisor

The following Burns & McDonnell representatives comprised the condition assessment team:

2. Sandro Tombesi, Mechanical Engineer
3. Kyle Haas, Mechanical Engineer

During the site visit, all units were offline. All equipment appeared to be in good working condition. The Facilities were free from clutter and well illuminated. The moving equipment that was visually assessed appeared to be in proper order, free from leakage, and free from any abnormal noise production. Piping appeared to be insulated, sealed, and free from apparent significant leaks.

4.0 SUBSTATION J UNIT 1 & UNIT 2

4.1 Combustion Turbines

Substation J Unit 1 and Unit 2 are GE Frame 5LA combustion turbines rated at 13 and 12 MW, respectively. Both turbines started operating in 1968. The Units are fired using fuel oil and are started using diesel engines and twin disc torque converters. The gas turbine assemblies consist of three basic components: axial flow compressors, combustion sections, and the turbines. Atmospheric air is drawn into the compressors where it is passed through multiple stages of compression and discharged to the combustion chambers. As the air passes through the combustion chambers, it is heated to the required turbine inlet temperature by fuel oil which is burned in the chambers. The resulting high temperature gas is then expanded through the two-stage turbines that drive the compressors and the generators. After passing through the turbines, the gas is exhausted through the stacks to the atmosphere.

GE recommends combustion inspections (“CI”) every 400 starts, hot gas path (“HGP”) inspections every 800 starts, and major inspections (“MI”) every 1,600 starts. Based on operational data supplied by IPL, J1 has started only 35 times since 2012 meaning it will be roughly 57 years before a CI is required per GE’s maintenance guidelines under the current operating profile. Alternatively, IPL has adopted a time interval approach to inspecting this turbine to ensure the equipment is inspected more frequently. The last major inspection was completed in 2011. During this outage, GE replaced all the first stage buckets. No other major issues were noted in the major inspection report. Plant personnel did recently report, however, that J1 has been experiencing some vibration issues during operation. Burns & McDonnell recommends analyzing spectrum vibration data to determine the root cause of this vibration anomaly. Costs associated with rectifying this issue are not known at this point because the root cause of this issue hasn’t been diagnosed. It is assumed that the costs associated with this work are covered by the baseline fixed maintenance cost forecast.

Similar to J1, J2 has started only 30 times since 2012 based on the information provided by IPL. Therefore, following GE’s maintenance guidelines, it will be roughly 67 years before a CI is required based on the current operational profile. IPL has also adopted a time interval approach to inspecting this turbine. The last major inspection was completed in 2012. During startup from this outage, the unit experienced vibration issues which was caused by issues with the marriage coupling rabbet fit, S1B rubs, S2B rubs, R1 rub, and compressor tie bolt galling. These issues were rectified, and upon starting back up, the unit operated without any vibration issues. Substation J Unit 2 is listed as a black start capable unit per current NERC filings.

Based on the frequency that these Units operate; Burns & McDonnell recommends that IPL borescope these machines every three years.

4.1.1 Air Inlet Equipment

The J1 and J2 inlet duct assemblies contain inlet air silencers and a trash screens. The inlet air silencers are comprised of several acoustical panels to attenuate the high frequency noise in the air inlet caused by the compressor blading. Trash screens are also installed in the ductwork feeding into the compressor inlet to prevent foreign objects from entering the machine. Site personnel reported no issues with this equipment.

4.1.2 Compressors

The J1 and J2 compressors are a 16-stage axial compressor that increases incoming ambient air pressure to combustion air conditions. The compressors achieve this by utilizing rotor and stator blading. These machines have been susceptible to failures associated with the thin ligament at the 10th stage extraction slot that holds one side of the 9th stage compressor stator vane in place. If the casing cracks around this location, the 9th stage stator vane is then free to travel downstream and cause significant foreign object damage ("FOD"). This ligament issue was not noted in any inspection report provided by GE meaning it does not appear to be affecting these machines. Plant personnel reported no issues with this equipment.

4.1.3 Combustion and Fuel Systems

The J1 and J2 combustion sections consist of combustion chamber assemblies, fuel nozzles, ignition system, and flame detectors. Combustion takes place in 10 cylindrical combustion chambers which are arranged concentrically around the axial-flow compressor and assembled to the compressor discharge casing and turbine frame bulkhead.

Combustion of the fuel and air mixture is initiated by two spark plugs which have retracting electrodes. The spark plugs are installed in two different combustion chambers. These spark plugs receive their power from ignition transformers. Crossfire tubes, which interconnect the chambers, enable the flame from the fired chambers to propagate to the unfired chambers. A flame detector system is also provided as a part of the overall control system to indicate the presence or absence of flame in the combustion chambers. Plant personnel reported no issues with the combustion section.

Fuel is fed into the combustion chambers through fuel nozzles which project into the liner cap. This fuel comes from a fuel forwarding system consisting of a factory assembled pumping and heating unit assembly which is used to transfer No. 2 distillate fuel oil from the two 50,000-gallon storage tanks to the gas turbine at the pressure, temperature, and flow rate required by the turbine fuel system. During the site walk down, the fuel tanks appeared to be in good condition with no leaks, cracks, or bulges. The last American Petroleum Institute ("API") inspection (API-653) was completed in 2016. The combustors are also original. Plant personnel reported no issues with the fuel forwarding skid/heater.

4.1.4 Turbines

In the turbine, the high temperature gases discharged from the combustion section are converted to useful shaft horsepower. The power requirements of the generator and compressor are provided by the two-stage turbine rotor. The first-stage, or high pressure, wheel and the second stage, or low pressure, wheel are bolted together to form a single operating unit. The first and second-stage nozzles direct the flow of gas through the Unit. These components with associated air seals and deflectors are contained within the turbine shell. The turbine exhaust temperatures are rated at 930°F. During the J1 2011 major inspection, the first and second stage bucket tips were found to be damaged. IPL elected to replace all the first stage buckets and weld repair/machine the second stage buckets. During the J2 2012 major outage, GE replaced all the first stage buckets. Furthermore, the S2 buckets were weld repaired and machined. Plant personnel reported no issues with the turbine sections or either Unit.

4.1.5 Stack

The combustion gases from the gas turbine are discharged into the exhaust plenum where they are diffused and exhausted through a stack to atmosphere. Plant personnel reported no issues with this equipment.

4.1.6 Starting Equipment

The J1 and J2 gas turbines is cranked for starting by a Cummins Model V8-300-B1, 300-hp diesel engine rotating at 3,000 rpm through a torque-converter drive. The torque-converter drive is connected by a jaw clutch to an accessory gear which is, in turn, connected by a coupling to the gas turbine. The diesel engine is operated at startup to bring the gas turbine to self-sustaining speed. When the gas turbine reaches the governor speed of the diesel engine, the starting clutch disengages, and the engine will shut down after its cooldown cycle. Plant personnel reported no issues with this equipment.

4.1.7 Gears

Both J1 and J2 utilize an accessory gear that is mounted over the lube oil tank and is driven by the gas turbine. The accessory gear is an assembly of two separate gear units: 1) a larger main gear, containing the drive shafts for driving the basic accessories for operating a gas turbine, and 2) a smaller "fuel pack drive" gear mounted on, and driven by the main gear, containing the drive shafts for driving the fuel system accessories. Plant personnel reported no issues with the accessory gear system.

Both J1 and J2 also use a hydraulic ratchet gear assembly that is mounted on top of the accessory gear. This ratcheting system is used to break away the turbine rotor on startup, to turn the turbine rotor during cooldown and to jog the turbine when necessary for inspections. Plant personnel reported no issues with the ratchet gear system.

Finally, J1 and J2 use a reduction gear to reduce the turbine operating speed to the generator. It is a vertically offset, high-speed, precision, helical reduction gear. The gears are solidly coupled to the generators and provide the support for the gear end of the generator rotors. The gear pinions are driven by the gas turbines through flexible couplings. The collector ends of the generator rotors are supported by pedestal bearings outside the generator frames. The load gears are rated at 19.6 MVA and reduce turbine shaft speeds from 5,105 rpm to 3,600 rpm. Plant personnel reported no issues with the reducing gear systems.

4.1.8 Lube Oil and Cooling Systems

Both J1 and J2 utilize unit specific lube oil systems for the turbine, generator, reduction gear, accessory gear, and other related equipment. These systems are comprised of an oil reservoir, a main lube oil pump driven by the accessory gear, AC/DC cooldown and emergency lube oil pumps, and a single U-tube lube oil cooler. The lube oil coolers are cooled by closed cooling water that is cooled by fin fan coolers. Both J1's and J2's turbine lube oils were tested in October 2017 and showed no signs degradation or contamination. Plant personnel reported no issues with bearing temperatures, the lube oil systems, or the closed cooling water systems.

4.2 Generators

Both of J1's and J2's generators are manufactured by GE and rated at 21.2 MVA, 13.8 kilovolt ("kV"), and a 0.85 power factor. For each Unit, the generator, exciter, reduction gear, and associated equipment are installed in a separate enclosure from the gas turbine. Strip heaters are installed in the generator to keep the windings dry during standby periods. The generator package is furnished with an open-ventilated, air cooled, synchronous generator. Both exciters have recently been upgraded to EX2100E static exciters and are rated for 60 kW, 250 volts, and 240 amps. The generators are air cooled and furnished with a cooling and ventilating system that consists of inlet air filters, silencers, and the adjustable louvers, ducting, and baffles which are required to regulate and direct the air flow to maintain permissible air and equipment temperatures inside the package. The collector rings have been upgraded to an 18/18 material.

Substation J Unit 1's generator was inspected in 2012. During this time GE performed several electrical tests including insulation and polarization resistance, winding resistance, power factor, DC step voltage and ramp tests which yielded no issues. Substation J Unit 2's generator was also inspected in 2012. During this time GE performed several electrical tests including insulation and polarization resistance, winding resistance, power factor, DC step voltage and ramp tests which yielded no issues. Plant personnel reported no issues with either generator.

4.3 Main Transformers (Generator Step-up Transformers)

Both J1's and J2's GSU transformers are Waukesha three-phase units that step up the generator output voltages from 13.8 kV to 69 kV. The main unit transformers are rated at 30 MVA. The GSU were both replaced in 2015. Plant personnel reported no operational issues with either GSU. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including annual dissolved gas analysis.

4.4 Cable Bus

The isophase bus ducts transfer power from the generator to the generator step up transformer. Plant personnel reported no issues with this equipment on either Unit.

4.5 Control Systems

Both J1 and J2 utilize GE Mark VIe control systems that can be controlled locally or utilizing a dedicated fiber optic line back to the Blue Valley Station. Plant personnel reported the N-2 event that occurred in 2016 was a result of a controls upgrade issue caused by higher ambient conditions and an incorrect constant in the temperature control logic. After this event, plant personnel opened a case with GE and the faulty control code was revised. When evaluating the event log for J1, there appears to have been only five failed starts or forced outages since 2012 with the last one occurring in September 2016. For J2, there appears to be seven failed starts or forced outages since 2012 with the last one occurring in April 2017. Plant personnel reported that instrumentation issues were the reason for the major lost generation events for these Units.

The service life for a control system is roughly 15 years before it becomes obsolete. As such, Burns & McDonnell has included spend in the 20-year operating horizon to upgrade the control system for both Units.

Both J1 and J2 utilize electric and mechanical overspeed trip mechanisms. Plant personnel reported no issues with this equipment.

4.6 Station Emergency Power Systems

Both J1 and J2 use 125-VDC batteries for emergency power. These batteries were replaced in 2012. They receive NERC-mandated testing as required. Testing includes cell voltage and resistance, intercell resistance, temperature, specific gravity, charger connections, display functions, cell, strap and rack condition. Based on information provided by IPL, the station batteries have a 10-year life span and will need to be replaced if the Units operate for 10 years or longer. Plant personnel reported no issues with the battery system.

4.7 Fire Protection

The Units have no fire pumps. Fire protection is provided by unit specific high-pressure CO_2 systems consisting of 12, 100-psi bottles located in a custom-built shed outside the Control Cab (relocated due to arc flash exposure within the cab). There is smoke detection in the CTG enclosures and refurbished MEA buildings. A contractor completes monthly, quarterly and annual inspections of handheld CO_2 fire extinguishers. Plant personnel reported no issues with the fire protection systems.

5.0 SUBSTATION I UNIT 3 & UNIT 4

5.1 Combustion Turbines

Substation I Unit 3 and Unit 4 are GE Frame 5N (MS-5000N) combustion turbines rated at 17 MW and 16 MW, respectively. Each Unit started operating in 1972. The Units are fired using fuel oil and are started using diesel engines and torque converters. The gas turbine assemblies consist of three basic components; axial flow compressors, combustion sections, and the turbines. Atmospheric air is drawn into the compressors where it is passed through multiple stages of compression and discharged to the combustion chambers. As the air passes through the combustion chambers, it is heated to the required turbine inlet temperature by fuel oil which is burned in the chambers. The resulting high temperature gas is then expanded through a two-stage turbine that drives the compressors and the generators. After passing through the turbines, the gas is exhausted through stacks to the atmosphere.

The Units utilize the same GE maintenance guidelines as Substation J's combustion turbines. Based on operational data supplied by IPL, I3 has started only 35 times since 2012 meaning it will be roughly 57 years before a CI is required per GE's maintenance guidelines under the current operating profile. Therefore, in order to ensure more frequent inspections of the equipment, IPL has adopted a time interval approach to inspecting this turbine. The last HGP inspection was completed in 2012 at which time GE inspected and refurbished the fuel nozzles, first stage nozzles, and second stage nozzles. Furthermore, the rotor inspections revealed unexpected, out of tolerance thrust bearing readings. This was rectified by GE by installing correctly sized active and inactive thrust bearing shims.

Based on operational data supplied by IPL, I4 has started only 43 times since 2012 meaning it will be roughly 46 years before a CI is required per GE's maintenance guidelines under the current operating profile. Therefore, IPL has adopted a time interval approach to inspecting this turbine. The last HGP inspection was completed in 2012 at which time GE inspected and refurbished the fuel nozzles, first stage nozzles, and second stage nozzles. GE also removed to torque converter which was sent to a local repair facility for refurbishment. No major issues were discovered by GE during this inspection.

Based on the frequency that these Units operate; Burns & McDonnell recommends that IPL borescope these machines every three years.

5.1.1 Air Inlet Equipment

Both I3 and I4 inlet duct assemblies contain inlet air silencers and a trash screens. The inlet air silencers are comprised of several acoustical panels to attenuate the high frequency noise in the air inlet caused by the compressor blading. Trash screens are also installed in the ductwork feeding into the compressor inlet to prevent foreign objects from entering the machine. Site personnel reported no issues with this equipment.

5.1.2 Compressors

Both I3 and I4 compressors are a 17-stage axial compressor that increases incoming ambient air pressure to combustion air conditions. The compressors achieve this by utilizing rotor and stator blading. These machines have been susceptible to failures associated with the thin ligament at the 10^{th} stage extraction slot that holds one side of the 9^{th} stage compressor stator vane in place. If the casing cracks around this location, the 9^{th} stage stator vane is then free to travel downstream and cause significant FOD. This ligament issue was not noted in any inspection report provided by GE meaning it does not appear to be affecting these machines. Variable inlet guide vanes also allow for fast, smooth acceleration of the turbine without compressor surge. Plant personnel reported no other issues with the compressors.

5.1.3 Combustion and Fuel Systems

Both I3 and I4 combustion sections consist of combustion chamber assemblies, fuel nozzles, ignition system, and flame detectors. Combustion takes place in 10 cylindrical combustion chambers which are arranged concentrically around the axial-flow compressor and assembled to the compressor discharge casing and turbine frame bulkhead.

Combustion of the fuel and air mixture is initiated by two spark plugs which have retracting electrodes. The spark plugs are installed in two different combustion chambers. These spark plugs receive their power from ignition transformers. Crossfire tubes, which interconnect the chambers, enable the flame from the fired chambers to propagate to the unfired chambers. A flame detector system is also provided as a part of the overall control system to indicate the presence or absence of flame in the combustion chambers. Plant personnel reported no issues with this equipment.

Fuel is fed into the combustion chambers through fuel nozzles which project into the liner cap. This fuel comes from a fuel forwarding system consisting of a factory assembled pumping and heating unit assembly which is used to transfer No. 2 distillate fuel oil from the two 50,000-gallon storage tanks to the gas turbine at the pressure, temperature, and flow rate required by the turbine fuel system. Both I3 and I4 have one AC/DC tandem motor driven centrifugal fuel pump and one AC motor driven pump. During the site walk down, the fuel tanks appeared to be in good condition with no leaks, cracks or bulges. Furthermore, plant personnel reported no issues with the fuel forwarding skid/heater.

5.1.4 Turbines

In the turbine, the high temperature gases discharged from the combustion section are converted to useful shaft horsepower. The power requirements of the generator and compressor are provided by the two-stage turbine rotor. The first-stage, or high pressure, wheel and the second stage, or low pressure, wheel are bolted together to form a single operating unit. The first and second-stage nozzles direct the flow of gas through the Unit. These components with the associated air seals and deflectors are contained within the turbine shell. The turbine exhaust temperatures are rated at 950°F. Plant personnel reported no issues with the turbine assemblies.

5.1.5 Stacks

The combustion gases from the gas turbines are discharged into the exhaust plenum where they are diffused and exhausted through a stack to atmosphere. Plant personnel reported no issues with this equipment.

5.1.6 Starting Equipment

The I3 and I4 gas turbines is cranked for starting by a 500-hp diesel engine rotating at 2,300 rpm through a torque-converter drive. The torque-converter drive is connected by a clutch to an accessory gear which is, in turn, connected by a coupling to the gas turbine. The diesel engine is operated at startup to bring the gas turbine to self-sustaining speed. When the gas turbine reaches the governor speed of the diesel engine, the starting clutch disengages, and the engine will shut down after the engine cooldown cycle. Plant personnel reported no issues with this equipment.

5.1.7 Gears

Both I3 and I4 utilize accessory gears that are furnished to support and drive the turbine driven accessories. These gears transmit torque to the gas turbine during startup. They are also used to drive the main lube oil pump. Plant personnel reported no issues with the accessory gear systems

Both I3 and I4 also use hydraulic ratchet gear assemblies that are mounted on top of the accessory gear. These ratcheting systems are used to break away the turbine rotor on startup, to turn the turbine rotor during cooldown and to jog the turbine when necessary for inspections. Plant personnel reported no issues with the ratchet gear systems.

Finally, I3 and I4 use reduction gears to reduce the turbine operating speeds to the generators. The gears are solidly coupled to the generators and provide the support for the gear end of the generator rotors. They are connected by flexible couplings to the turbines. The load gears are rated at 24 MVA and reduces turbine shaft speed from 5,105 rpm to 3,600 rpm. Plant personnel reported no issues with the reducing gear systems.

5.1.8 Lube Oil and Cooling Systems

Both I3 and I4 utilize unit specific lube oil system for the turbine, generator, reduction gear, accessory gear, and other related equipment. These systems are comprised of oil reservoirs, main lube oil pumps driven by the accessory gears, AC/DC cooldown and emergency lube oil pumps, and single U-tube lube oil coolers. The lube oil coolers are cooled by closed cooling water that is cooled by on site fin fan coolers. The Units' turbine lube oil was tested in November 2017 and showed no degradation or contamination. This Units also utilizes an aftermarket fin fan cooling system to further transfer heat from the closed cooling water system. Plant personnel reported no issues with bearing temperatures, the lube oil systems, or the closed cooling water systems.

5.2 Generators

Both I3 and I4 generators were manufactured by GE and are rated at 23 MVA, 13.8 kV and a 0.85 power factor. For each Unit. the generator, exciter, reduction gear, and associated equipment are installed in a separate enclosure from the gas turbine. Strip heaters are installed in the generator itself for keeping the windings dry during standby periods. The generator package is furnished with an open-ventilated, air-cooled, synchronous generator. The exciters are EX2100E static exciters. The generators are air-cooled and furnished with a cooling and ventilating system that consists of inlet air filters, silencers, and the adjustable louvers, ducting, and baffles which are required to regulate and direct the air flow to maintain permissible air and equipment temperatures inside the package. The collector rings have been upgraded to an 18/18 material.

Both of I3's and I4's generators were inspected in 2012. During this time, GE performed DC high voltage tests and visually inspected the generators which yielded no issues. Plant personnel reported no issues with the generators.

5.3 Main Transformers (Generator Step-up Transformers)

Both I3's and I4's GSU transformers are three-phase units that step up the generator output voltages from 13.8 kV to 69 kV. The main unit transformers are rated at 30 MVA and were being replaced when Burns & McDonnell visited the site. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including annual dissolved gas analysis.

5.4 Cable Bus

The isophase bus ducts transfer power from the generator to the generator step up transformer. Plant personnel reported no issues with this equipment.

5.5 Control Systems

Both I3 and I4 utilize a GE Mark VIe control system that can be controlled locally or utilizing a dedicated fiber optic line back to Blue Valley Station. When evaluating the event log for I3, there were four failed starts or forced outages since 2012 with the last one occurring in January 2016. For I4, there were six failed starts or forced outages since 2012 with the last one occurring in July 2016. Plant personnel reported that instrumentation issues were the reason for the major lost generation events for these Units.

The service life for a control system is roughly 15 years before it becomes obsolete. As such, Burns & McDonnell has included spend in the 20-year operating horizon to upgrade the control system for both Units.

Both I3 and I4 utilize electric and mechanical overspeed trip mechanisms. Plant personnel reported no issues with this equipment.

5.6 Station Emergency Power Systems

Both I3 and I4 use 125VDC batteries for emergency power. They receive NERC-mandated testing as required. Testing includes cell voltage and resistance, intercell resistance, temperature, specific gravity, charger connections, display functions, cell, strap and rack condition. Based on information provided by IPL, the station batteries have a 10-year life span and will need to be replaced if the Units operate for 10 years or longer. Plant personnel reported no issues with the battery system.

5.7 Fire Protection

Both I3 and I4 have no fire pumps. Fire protection is provided by unit specific high-pressure CO_2 systems consisting of 12, 100 psi bottles located in a custom-built shed outside the Control Cab (relocated due to arc flash exposure within the cab). A contractor completes monthly, quarterly, and annual inspections of handheld CO_2 fire extinguishers.

6.0 SUBSTATION H UNIT 5 & UNIT 6

6.1 Combustion Turbines

Substation H Unit 5 is a GE Frame 5N (MS-5000N) combustion turbine rated at 17 MW that started operating in 1972. Unit 6 is a GE Frame 5P (MS-5000P) combustion turbine rated at 18 MW that started operating in 1974. The Units are fired primarily using natural gas with fuel oil as a secondary fuel source. The combustion turbines are started using a diesel engine and torque converter. The gas turbine assemblies consist of three basic components; axial flow compressors, combustion sections, and the turbines. Atmospheric air is drawn into the compressor where it is passed through multiple stages of compression and discharged to the combustion chambers. As the air passes through the combustion chambers, it is heated to the required turbine inlet temperature by fuel oil which is burned in the chambers. The resulting high temperature gas is then expanded through the two-stage turbines that drive the compressors and the generators. After passing through the turbines, the gas is exhausted through a stack to the atmosphere.

The Units utilize the same GE maintenance guidelines as Substation J's combustion turbines. Based on operational data supplied by IPL, H5 has started 275 and H6 has started 297 times since 2012. The Substation H Units are dispatched much more than J1, J2, I3, and I4 due to its use of natural gas as a primary fuel source. During the H5 hot gas inspection in 2008, GE replaced the first and second stage nozzles with refurbished diaphragms and new hardware/packing. GE further replaced the nozzle tips and refurbished. During the last combustion inspection in 2015, the fuel nozzles were replaced due to coking, several R0 blades were found with end damage which were repaired by blending and the number one bearing seal air orifice was replaced. Finally, during the 2017 borescope inspection, the turbine S1 blades showed some discoloration possibly due to thermal barrier coating spallation and the S2 nozzles showed possible weld cracks and some foreign object damage. GE is currently performing a major inspection and findings from this inspection report will need to be considered once the work has been completed.

During the H6 hot gas inspection in 2007, GE found no major issues and refurbished the combustion equipment. During the last combustion inspection in 2015, the fuel nozzles were replaced due to coking caused by the oil leak over in the gas compressors, the first stage buckets were replaced with a refurbished set, R0 and R1 blade damage was blended, the number one bearing seal orifice was replaced, new thrust shims were installed, the lube oil system was inspected and overhauled. Finally, during the 2017 borescope inspection, the compressor showed some foreign object damage, rotor rub indication, and tip curl. Furthermore, the turbine section had some discoloration due to possible oxidation and some small foreign object damage. A major inspection was scheduled to occur in 2018 but was postponed until after the results of the Energy Master Plan were issued. If H6 is expected to operate going forward, Burns & McDonnell recommends that the major inspection that was originally scheduled in 2018, be performed at the next available outage. The cost for this inspection is expected to be roughly $1.5 million, but was not captured within the forecast presented herein, since it was assumed to have already taken place.

Based on the frequency that these Units operate; Burns & McDonnell recommends that IPL borescope these machines every year.

6.1.1 Air Inlet Equipment

The H5 and H6 inlet duct assemblies contain inlet air silencers and trash screens. The inlet air silencers contain several acoustical panels to attenuate the high frequency noise in the air inlet caused by the compressor blading. Trash screens are also installed in the ductwork feeding into the compressor inlet to prevent foreign objects from entering the machine. Site personnel reported no issues with this equipment.

6.1.2 Compressors

The H5 and H6 compressors are 17-stage axial compressors that increase incoming ambient air pressure to combustion air conditions. The compressors achieve this by utilizing rotor and stator blading. These machines have been susceptible to failures associated with the thin ligament at the 10^{th} stage extraction slot that holds one side of the 9^{th} stage compressor stator vane in place. If the casing cracks around this location, the 9^{th} stage stator vane is then free to travel downstream and causes significant FOD. This ligament issue was not noted in any inspection report provided by GE meaning it does not appear to be affecting these machines. Variable inlet guide vanes also allow for fast, smooth acceleration of the turbine without compressor surge. Plant personnel reported no issues with the compressor. Plant personnel reported no other issues with the compressor.

6.1.3 Combustion Systems

Both H5 and H6 combustion sections consist of combustion chamber assemblies, fuel nozzles, ignition system and flame detectors. Combustion takes place in 10 cylindrical combustion chambers which are arranged concentrically around the axial-flow compressor and assembled to the compressor discharge casing and turbine frame bulkhead.

Combustion of the fuel and air mixture is initiated by two spark plugs which have retracting electrodes. The spark plugs are installed in two different combustion chambers. These spark plugs receive their power from ignition transformers. Crossfire tubes, which interconnect the chambers, enable the flame from the fired chambers to propagate to the unfired chambers. A flame detector system is also provided as a part of the overall control system to indicate the presence or absence of flame in the combustion chambers. Fuel is fed into the combustion chambers through fuel nozzles which project into the liner cap. Plant personnel reported no issues with this equipment.

6.1.3.1 Fuel Oil Systems

Fuel oil at low pressure (from the fuel tanks) is fed through the primary fuel oil filter and fuel stop valve to the fuel pump which is driven directly by an AC/DC tandem motor driven centrifugal pump or one AC motor driven pump. The fuel pump boosts the fuel oil pressure and feeds it through a secondary filter to the flow divider. The flow divider receives the high-pressure fuel oil and distributes it evenly to the 10 fuel nozzles in the combustion chambers. No. 2 distillate fuel oil is stored in the two 40,000-gallon storage tanks. During the site walk down, the fuel tanks appeared to be in good condition with no leaks, cracks or bulges. Plant personnel reported no issues with the fuel forwarding skid/heater.

6.1.3.2 Natural Gas Systems

Low natural gas pressure supply at Substation H necessitates supplementary means to increase gas pressure which is provided by a skid-mounted White Superior gas booster compressor for H5 and a skid-mounted Ingersoll-Rand gas booster compressor for H6. The H5 gas compressor is a heavy-duty two stage compressor that is driven by a 900-rpm, 1,100-hp motor. The two-stage compressor is designed to increase natural gas pressure from 33.7 psig to 245 psig. The compressor has a self-contained lube oil cooling package and contains an aftercooler assembly to maintain gas discharge temperature at 150°F ± 15°F. The compressor is controlled remotely from the gas turbine controls system. Plant personnel reported no issues with the gas compressor package.

The H6 gas compressor is a heavy-duty two stage compressor that is driven by an 890-rpm, 1,250-hp induction motor. The two-stage compressor is designed to increase natural gas pressure from 49.25 psia to 262 psia. The compressor has a self-contained lube oil cooling package and contains an aftercooler assembly to maintain gas discharge temperature at 150°F ± 15°F. The compressor is controlled remotely from the gas turbine controls system. In 2015, the H6 fuel nozzles were found to have heavy carbon deposits. It was found that the primary source of these carbon deposits for was from the lubricating oil of the natural gas booster compressor. H Unit 6’s gas compressor was subsequently overhauled in 2016 at which time the foundation of the compressor was also refurbished due to cracking concerns. Plant personnel reported no other issues with the gas compressor package.

6.1.4 Turbines

In the turbine, the high temperature gases discharged from the combustion section are converted to useful shaft horsepower. The power requirements of the generator and compressor are provided by the two-stage turbine rotor. The first-stage, or high pressure, wheel and the second stage, or low pressure, wheel are bolted together to form a single operating unit. The first and second-stage nozzles direct the flow of gas through the Unit. These components with associated air seals and deflectors are contained within the turbine shell. The turbine exhaust temperature is rated at 945°F when operating with natural gas. Plant personnel reported no issues with this equipment.

6.1.5 Stacks

The combustion gases from the gas turbine are discharged into the exhaust plenum where they are diffused and exhausted through a stack to atmosphere. Plant personnel reported no issues with this equipment.

6.1.6 Starting Equipment

Both the H5 and H6 gas turbines are started by 500-hp diesel engines rotating at 2,300-rpm through torque-converter drives. The torque-converter drives are connected by a clutch to accessory gears which are, in turn, connected by couplings to the gas turbines. The diesel engines are operated at startup to bring the gas turbines to self-sustaining speed. When the gas turbines reach the governor speed of the diesel engines, the starting clutch disengages, and the engine will shut down after the engine cooldown cycle. Plant personnel reported no issues with this equipment.

6.1.7 Gears

Both H5 and H6 utilize accessory gears that are furnished to support and drive the turbine driven accessories. Furthermore, these gears transmit torque to the gas turbines during startup. They are also used to drive the main lube oil pump.

Both H5 and H6 also use hydraulic ratchet gear assemblies that are mounted on top of the accessory gear. These ratcheting systems are used to break away the turbine rotor on startup, to turn the turbine rotor during cooldown and to jog the turbine when necessary for inspections. Plant personnel reported no issues with the H5 ratchet gear system. In 2014, the H6 ratchet gear failed to rotate the turbine. All applicable equipment was inspected for binding, but none was found. The turbine was spun using a ratchet system and eventually was able to be started. Plant personnel reported no issues with the ratchet gear system since this binding event.

Finally, H5 and H6 use reduction gears to reduce the turbine operating speed to the generators. The gears are solidly coupled to the generator and provide the support for the gear end of the generator rotors. They are connected by flexible couplings to the turbines. The H5 load gear is rated at 24 MVA and reduces turbine shaft speed from 5,105 rpm to 3,600 rpm. The H6 load gear is rated at 26.5 MVA and also reduces turbine shaft speed from 5,105 rpm to 3,600 rpm. Plant personnel reported no issues with the reducing gear systems.

6.1.8 Lube Oil and Cooling Systems

Both H5 and H6 use common, unit specific lube oil system for the turbine, generator, reduction gear, accessory gear, and other related equipment. These systems are comprised of oil reservoirs, main lube oil pumps driven by the accessory gears, AC/DC cooldown and emergency lube oil pumps, and U-tube lube oil coolers. The lube oil coolers are cooled by closed cooling water that is cooled by on site fin fan coolers. Both H5's and H6's turbine lube oils were tested in October 2017 and showed some anomalies as particle count had increased since the last inspection. These Units also utilize aftermarket fin fan cooling systems to further transfer heat from the closed cooling water system. Plant personnel reported no issues with bearing temperatures, the lube oil systems, or the closed cooling water systems. Burns & McDonnell recommends monitoring oil particulate count and a filter service or an off-line purification if it continues to rise.

6.2 Generators

H Unit 5's generator is manufactured by GE and rated at 23 MVA, 13.8 kV and a 0.85 power factor. H Unit 6's generator is manufactured by GE and rated at 29.6 MVA, 13.8 kV and a 0.85 power factor. The generators, exciters, reduction gears, and associated equipment are installed in a separate enclosure from the gas turbines. Strip heaters are installed in the generator itself for keeping the windings dry during standby periods. The generator packages are furnished with an open-ventilated, air-cooled, synchronous generator. The exciters are EX2100E static exciters with a rating of 250 volts. The generators are air-cooled and furnished with a cooling and ventilating system that consists of inlet air filters, silencers, and the adjustable louvers, ducting, and baffles which are required to regulate and direct the air flow to maintain permissible air and equipment temperatures inside the package. The collector rings have been upgraded to an 18/18 material.

H Unit 5's generator was inspected in 2013. During this time, GE performed a DC high voltage test set and visually inspected the generator which yielded no issues. Based on the recent major inspection of H5, there appears to be some issues with the generator that may require it to be rewound in the future. Plant personnel also reported no issues with the H6 generator. Burns & McDonnell has included allowances in the 20-Year forecast to rewind these generators as their conditions appear to be worsening.

6.3 Main Transformers (Generator Step-up Transformers)

Both H5 and H6 GSU transformers were manufactured by ABB and are three-phase units that step up the generator output voltages from 13.8 kV to 69 kV. The main unit transformers are rated at 33 MVA. The GSUs are 19 years old but were reported to show no oil degradation in AIG's 2016 inspection report. Burns & McDonnell recommends that the Plant continue its current maintenance and testing plan including annual dissolved gas analysis.

6.4 Cable Bus

The isophase bus ducts transfer power from the generator to the generator step up transformer. Plant personnel reported no issues with this equipment.

6.5 Control System

H5 and H6 utilize GE Mark VIe control systems that can be controlled locally or by utilizing a dedicated fiber optic line back to Blue Valley Station. Plant personnel reported a number of reliability issues associated with instrumentation for both Units and this was the reason for the major lost generation events. When evaluating the event log for H5, there appears to have been 10 failed starts or forced outages since 2012 with the last one occurring in June 2017. For H6, there appears to have been 23 failed starts or forced outages since 2012 with the last one occurring in October 2017.

The service life for a control system is roughly 15 years before it becomes obsolete. As such, Burns & McDonnell has included spend in the 20-year operating horizon to upgrade the control system for both Units.

Both H5 and H6 utilize electric and mechanical overspeed trip mechanisms. Plant personnel reported no issues with this equipment.

6.6 Station Emergency Power Systems

Both H5 and H6 use 125VDC batteries for emergency power. They receive NERC-mandated testing as required. Testing includes cell voltage and resistance, intercell resistance, temperature, specific gravity, charger connections, display functions, cell, strap and rack condition. Based on information provided by IPL, the station batteries have a 10-year life span and will need to be replaced if the Units operate for 10 years or longer. Plant personnel reported no issues with the battery system.

6.7 Fire Protection

The Units have no fire pumps. Fire protection is provided by unit specific high-pressure CO_2 systems consisting of 12, 100 psi bottles located in a custom-built shed outside the Control Cab (relocated due to arc flash exposure within the cab). A contractor completes the monthly, quarterly and annual inspections of handheld CO_2 fire extinguishers.

7.0 OPERATION AND MAINTENANCE

Burns & McDonnell evaluated the overall anticipated costs to operate and maintain Substation J, I and H combustion turbines for 5, 10, and 20 years to support the economic evaluation of the Energy Master Plan. Based on the information reviewed, Plant staff interviews, and visual observations of the Units, Burns & McDonnell estimated project expenditures and baseline fixed O&M costs associated with operating the Units safely and reliably within the SPP market. The assessment consisted of a benchmarking analysis that considered reliability performance and overall baseline fixed O&M costs as well as a detailed evaluation of project specific costs associated with operating the Units.

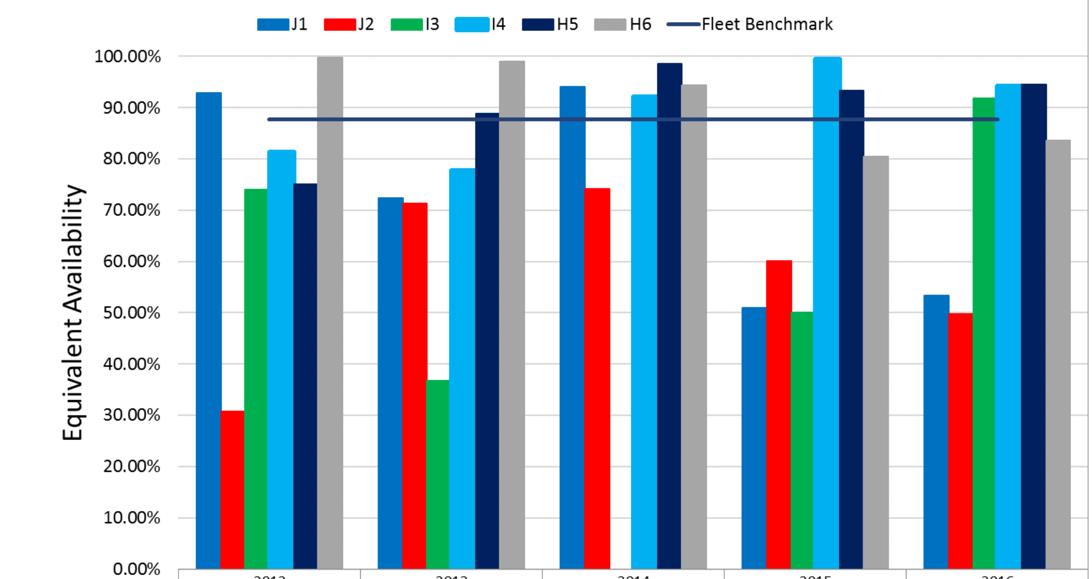
7.1 Historical Performance

Burns & McDonnell evaluated the overall reliability and performance of J1, J2, I3, I4, H5, and H6 against a fleet average of similar generating stations. Figure 7-1 presents the EAF for the Units against the fleet benchmark data as provided from the NERC GADS for similar natural gas-fired and oil fired CTG units with capacities between 10 MW and 30 MW. Similarly, Figure 7-2 presents the EFOR for the Units against the fleet benchmark.

As depicted in Figure 7-1, the EAF of J1 has exceeded the fleet EAF benchmark in only 2012 and 2014. In every other year J1 has been below the fleet benchmark and J2 has never been above it. Furthermore, I3 has only been above the fleet benchmark in 2016. Substation I Unit 4 has also only been above the fleet benchmark between 2014 to 2016. Substation H Unit 5 has also been above the fleet benchmark for the past four years. Finally, H6 was above the fleet benchmark between 2012 to 2014, but not in 2015 or 2016.

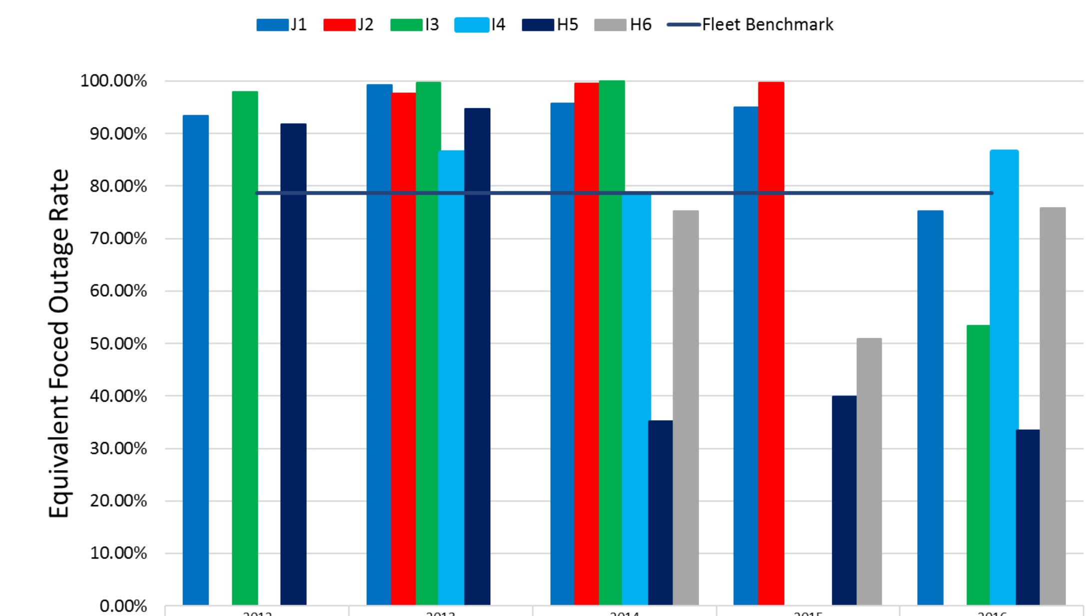
Similarly, as illustrated in Figure 7-2, the EFOR of units has been significantly higher (worse) than the EFOR benchmark during some years and significantly less (better) in other years. Burns & McDonnell believes this is likely a result of the limited number of run time hours on the machines and thus any reliability issues materially affect the overall figure for the year.

Figure 7-1: Equivalent Availability Factor (%)



	2012	2013	2014	2015	2016
J1	92.83%	72.33%	94.00%	50.94%	53.39%
J2	30.80%	71.28%	74.18%	60.10%	49.83%
I3	74.05%	36.78%	0.00%	50.03%	91.77%
I4	81.33%	77.69%	92.04%	99.48%	94.21%
H5	75.12%	88.84%	98.48%	93.24%	94.50%
H6	99.69%	99.01%	94.29%	80.48%	83.56%
Fleet Benchmark	87.64%	87.64%	87.64%	87.64%	87.64%

Figure 7-2: Equivalent Forced Outage Rate (%)



	2012	2013	2014	2015	2016
J1	93.43%	99.25%	95.72%	94.94%	75.20%
J2	0.00%	97.58%	99.54%	99.72%	0.00%
I3	97.94%	99.75%	100.00%	0.00%	53.43%
I4	0.00%	86.37%	78.63%	0.00%	86.46%
H5	91.82%	94.73%	35.16%	39.84%	33.41%
H6	0.00%	0.00%	75.22%	50.95%	75.75%
Fleet Benchmark	78.67%	78.67%	78.67%	78.67%	78.67%

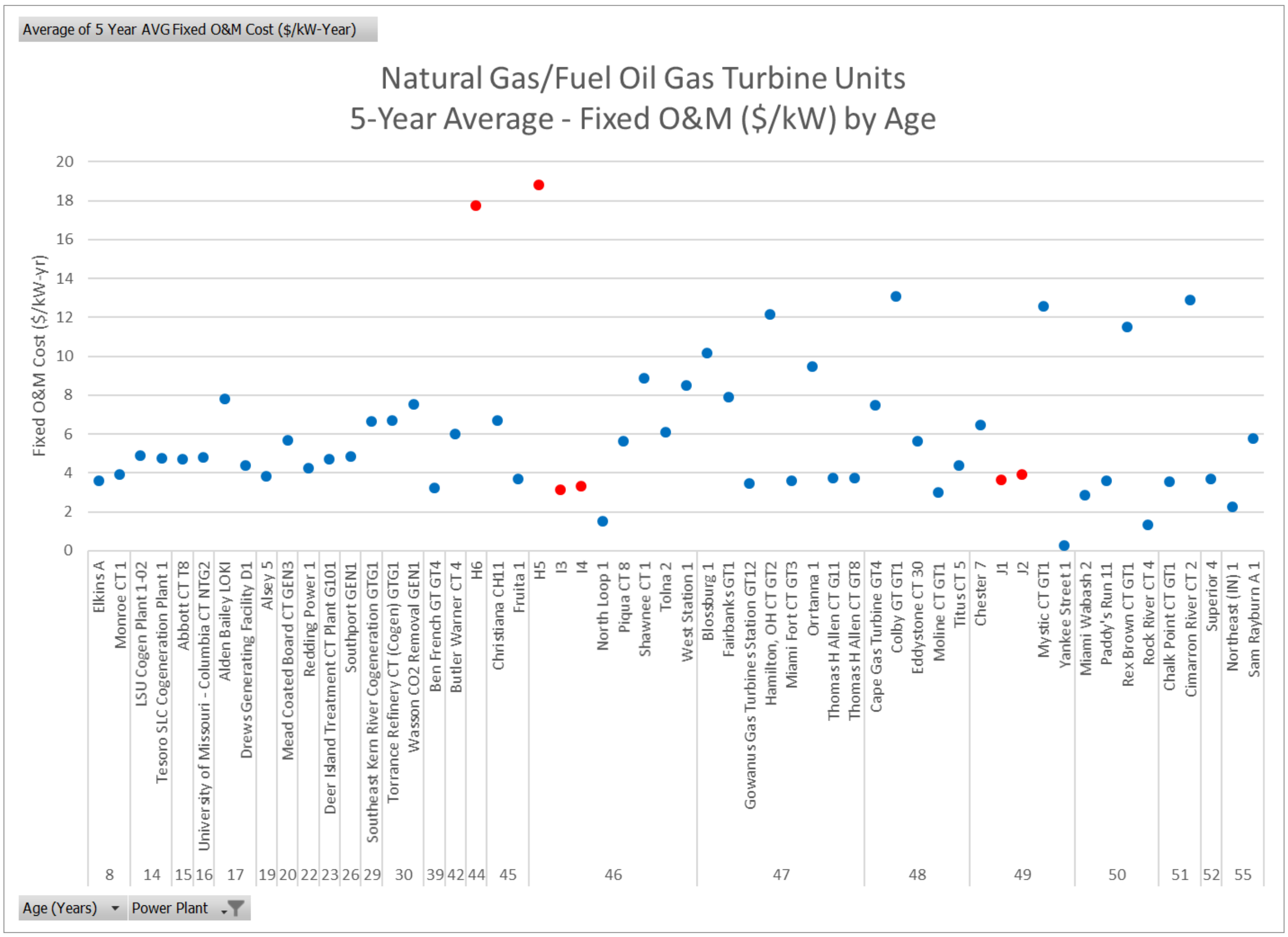
7.2 Baseline Fixed Maintenance Costs Projection

Burns & McDonnell evaluated the anticipated baseline fixed maintenance costs of the Units through the study period using a fleet benchmarking assessment as well as a review of the Units' historical and budgeted maintenance costs. Furthermore, the costs associated with maintaining reliability of the Units through project upgrades based on this condition assessment were also captured in this analysis.

7.2.1 O&M Cost Benchmarking Analysis

In addition to replacing key equipment and components through project upgrades, much of the remaining equipment would require increased maintenance as the Units continue to age. Figure 7-3 presents the range of baseline fixed O&M costs of other similar simple cycle generating power plants rated between 10 MW to 30 MW, with J1, J2, I3, I4, H5, and H6 highlighted in red.

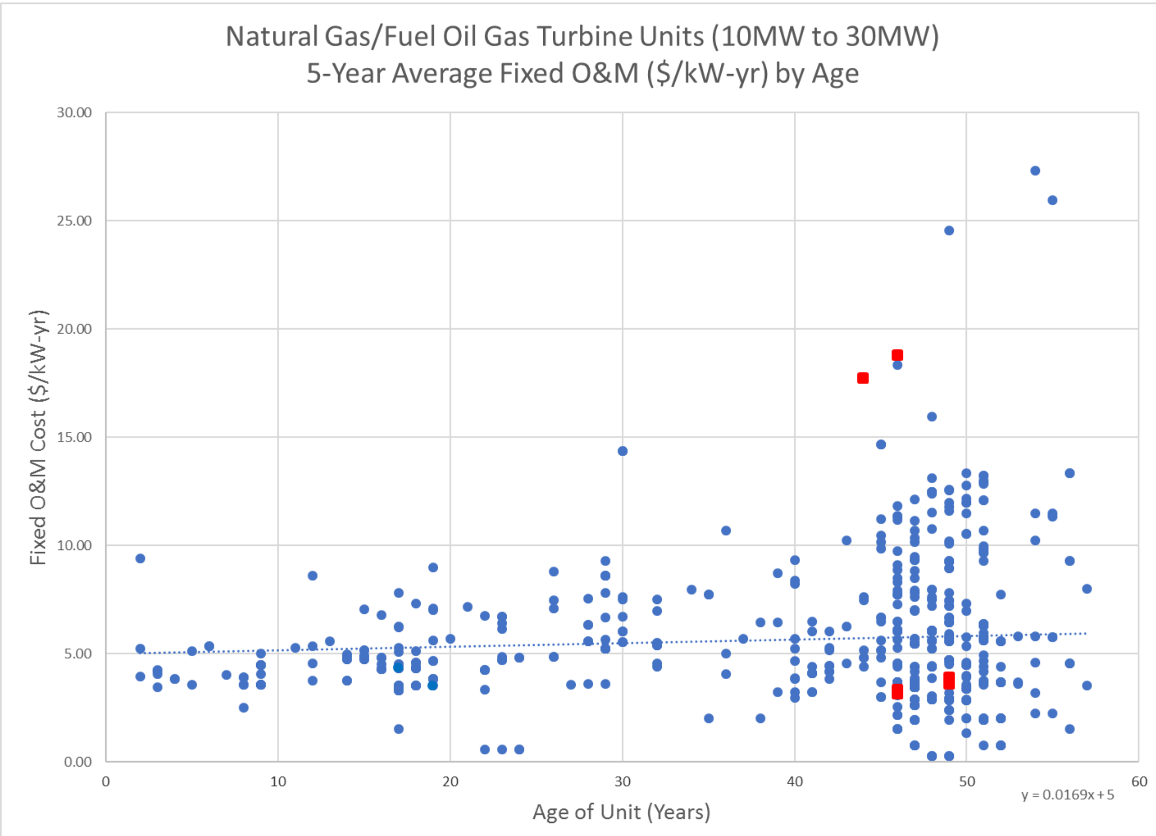
Figure 7-3: Baseline Fixed O&M Cost Trend Evaluation



A comprehensive benchmark analysis of similar combustion turbine generators nationwide demonstrates an increasing trend of baseline fixed maintenance costs associated with the age of the units. Burns &

McDonnell evaluated the trend in baseline fixed operation and maintenance costs associated with similar units (in the 10 MW to 30 MW range). Figure 7-4 presents the baseline fixed O&M costs for similar combustion turbine generating power plants arranged according to the age of the units, with IPL's units highlighted in red.

Figure 7-4: Baseline Fixed O&M Cost Trend Evaluation (X-Y Scatter)



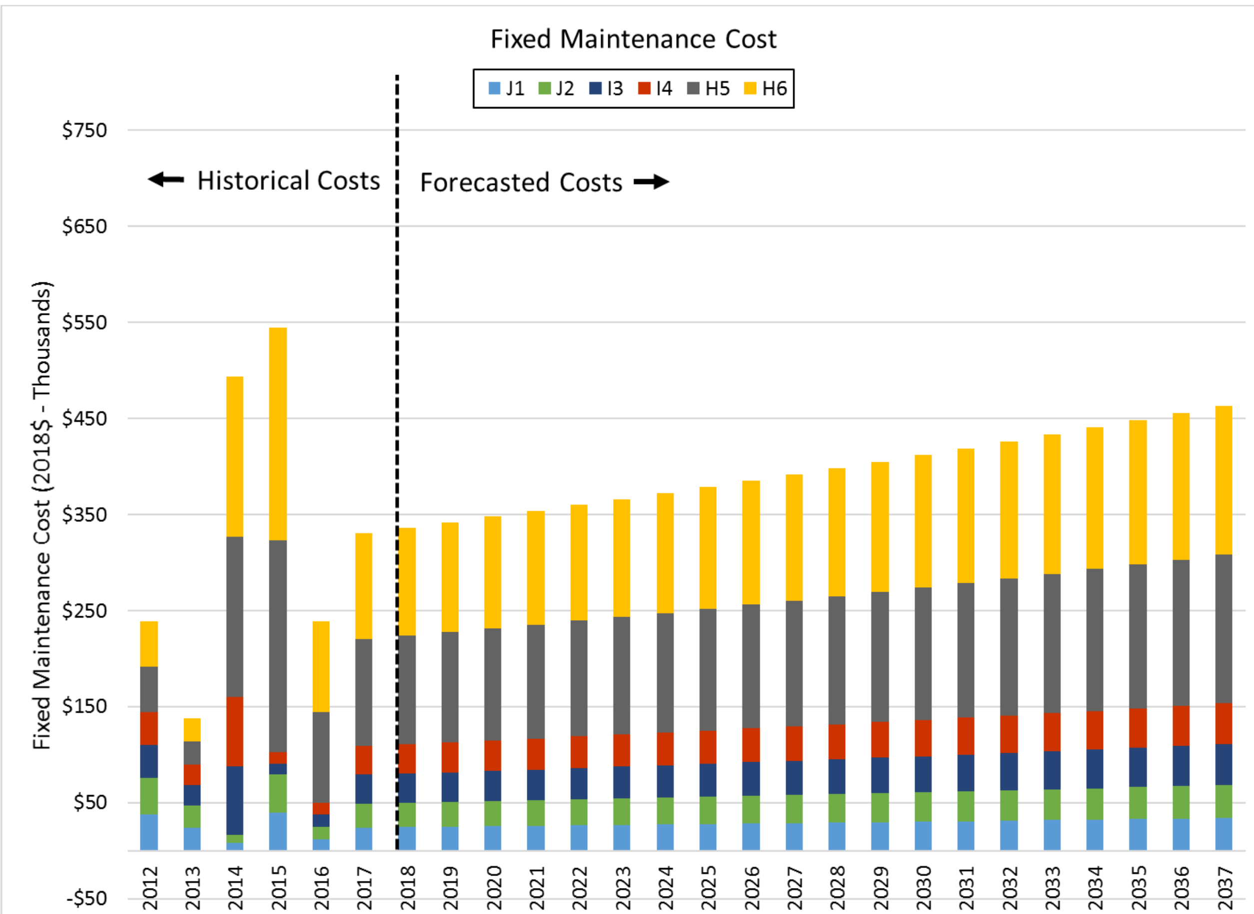
The average baseline fixed O&M of the Substation H Units for the past 5 years is relatively high in comparison to the other units. The O&M costs associated with the J and I substations, however, are much lower than the benchmark. Burns & McDonnell believes this discrepancy is due to the higher number of run hours and starts on the Substation H machines resulting in more inspections and repairs. Overall, the analysis indicates an upward trend of baseline fixed maintenance costs of approximately 1.7 percent per year as the engines age.

7.2.2 Baseline Fixed Maintenance Costs Forecast

Utilizing both the fleet benchmarking analysis and the historical baseline fixed maintenance costs, Burns & McDonnell forecasted the overall baseline fixed maintenance costs for the Units, excluding payroll expenses. As presented in Figure 7-5, the historical baseline fixed maintenance budget peaked in 2015 and has since decreased for all units. The average historical baseline fixed maintenance cost for J1 and J2 is $25k per year while I3 and I4 is $31k and H5 and H6 is $113k per year.

As demonstrated within the fleet benchmarking analysis, overall the baseline fixed maintenance of similar sized combustion turbines is expected to increase approximately 1.7 percent per year. Burns & McDonnell developed a baseline fixed maintenance cost forecast starting in 2018 utilizing the overall average from 2012 to 2016 and then applied the 1.7 percentage-based escalation factor to estimate baseline fixed maintenance costs for the next 20 years. Figure 7-5 presents the baseline fixed maintenance cost forecasts for J1, J2, H3, H4, I5, and I6 over the next 20 years

Figure 7-5: Substation J, I, and H Baseline Fixed Maintenance Cost Forecasts



Applying the escalation to the average historical and projected baseline fixed maintenance presented in the prior section throughout the Study period shows that baseline fixed maintenance costs would continue to increase for the J1 and J2 over time from an average of $25k in 2018 to approximately $34k in 2037. Furthermore, baseline fixed maintenance costs continue to increase for I3 and I4 over time from an average of $31k in 2018 to $42k in 2037. Finally, baseline fixed maintenance costs continue to increase for H5 and H6 over time from an average of $113k in 2018 to $155k in 2037. The costs presented in Figure 7-5 are presented in real, constant dollars (2018$) without including inflation.

7.3 Major Project Cost Estimate

Typical power plant design assumes a 30-year to 40-year service life, yet the service life of a unit can be extended if equipment is refurbished or replaced. The substation combustion turbines have already served at least 46 years, which is past the typical design life. As such, it is expected that additional expenditures will be required for reliable operation through the Study period. Burns & McDonnell developed a forecast of specific project cost expenditures that would likely be required if the Units are to run reliably for the next 5, 10, and 20 years; this detailed forecast is provided in Appendix A. The forecast was developed based on findings from the site visit, Plant documentation, interviews with Plant personnel, and the five-year capital forecast document provided for the combustion turbines. The project cost forecast was not developed to capture all the maintenance and capital expenditures required for operating the Units, but rather is reflective of major equipment projects that will likely need to be implemented to maintain unit reliability. Other baseline fixed maintenance costs such as replacing filters, changing lube oil, and other miscellaneous costs are captured in the baseline fixed maintenance forecast discussed above.

Table 7-1 presents the major project activities that Burns & McDonnell recommends to be performed to provide safe, reliable operation of J1, J2, I3, I4, H5, and H6 during the 5-year, 10-year, and 20-year operating scenarios. The complete list of recommended activities is included in Appendix A.

Table 7-1 : Substation J, I, and H Major Projects

	Unit					
Horizon/Maintenance Activity	**J1**	**J2**	**I3**	**I4**	**H5**	**H6**
5-Year Operating Horizon						
	No major projects identified					
10-Year Operating Horizon						
Replace the Controls Wiring Harness	X	X	X	X	X	X
Replace Station Batteries	X	X	X	X	X	X
Perform Combustion Inspection					X	X
20-Year Operating Horizon						
Perform a Combustion Inspection	X	X	X	X	X	X
Replace Control System	X	X	X	X	X	X
Perform a Hot Gas Inspection					X	X
Rewind Stator or Field Allowance					X	X

Additionally, as mentioned previously, regular inspection and maintenance of major equipment will need to continue. Specifically, turbine lube oil will need to be monitored and potentially replaced, filters will need to be inspected on a regular schedule, and so will the transformers. Appendix A provides a detailed schedule of the forecasted project expenditures and baseline fixed maintenance costs required for reliable operation for the next 5, 10, and 20 years. Note that it has been assumed that there will be no recurring inspection and maintenance events in the last year of the specific scenario as the Unit is getting close to retirement and would avoid those costs.

7.4 Total Annual Cost Summary

Figure 7-6 through Figure 7-11 present the total annual baseline fixed maintenance expenses and project expenditures required to operate each Unit under varying time horizons for the next 5, 10, and 20 years for J1, J2, I3, I4, H5, and H6 respectively. These costs include projects identified by IPL, costs for the projects identified by Burns & McDonnell (collectively "Project Costs"), and baseline fixed maintenance costs that are also identified in Appendix A. The costs are presented in 2018$ and do not include inflation. As illustrated within the figures, the Project Costs are reduced for the shorter operating horizons.

Figure 7-6: J Unit 1 Total Annual Cost Summary (2018$)

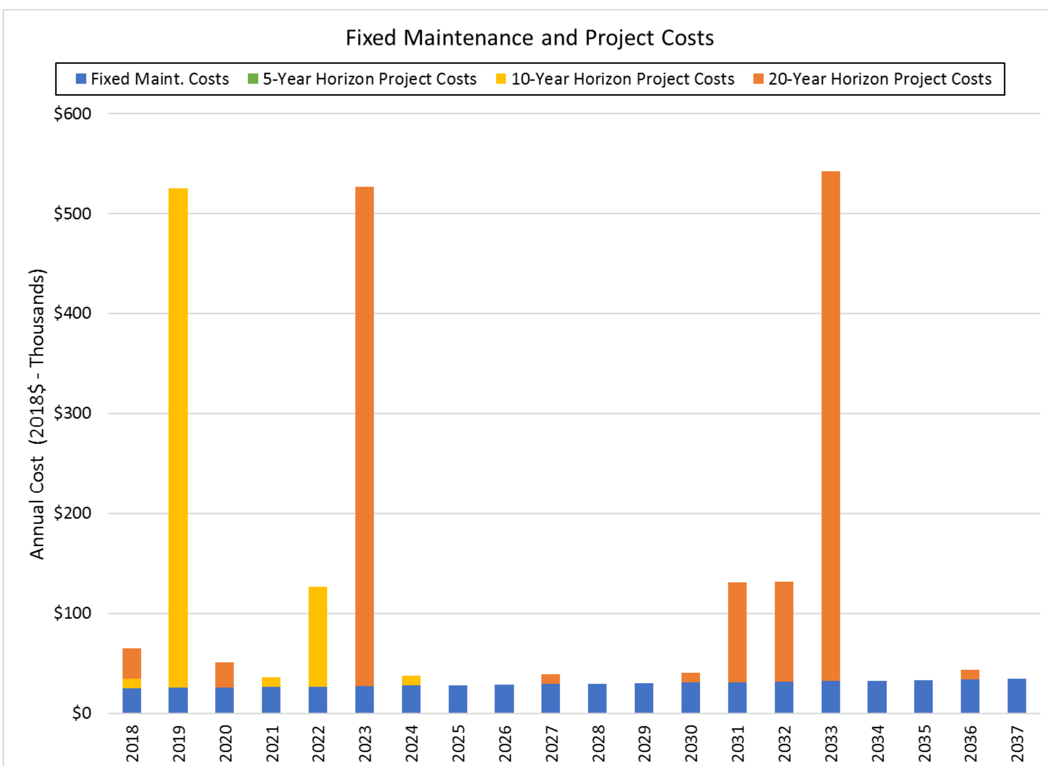


Figure 7-7: J Unit 2 Total Annual Cost Summary (2018$)

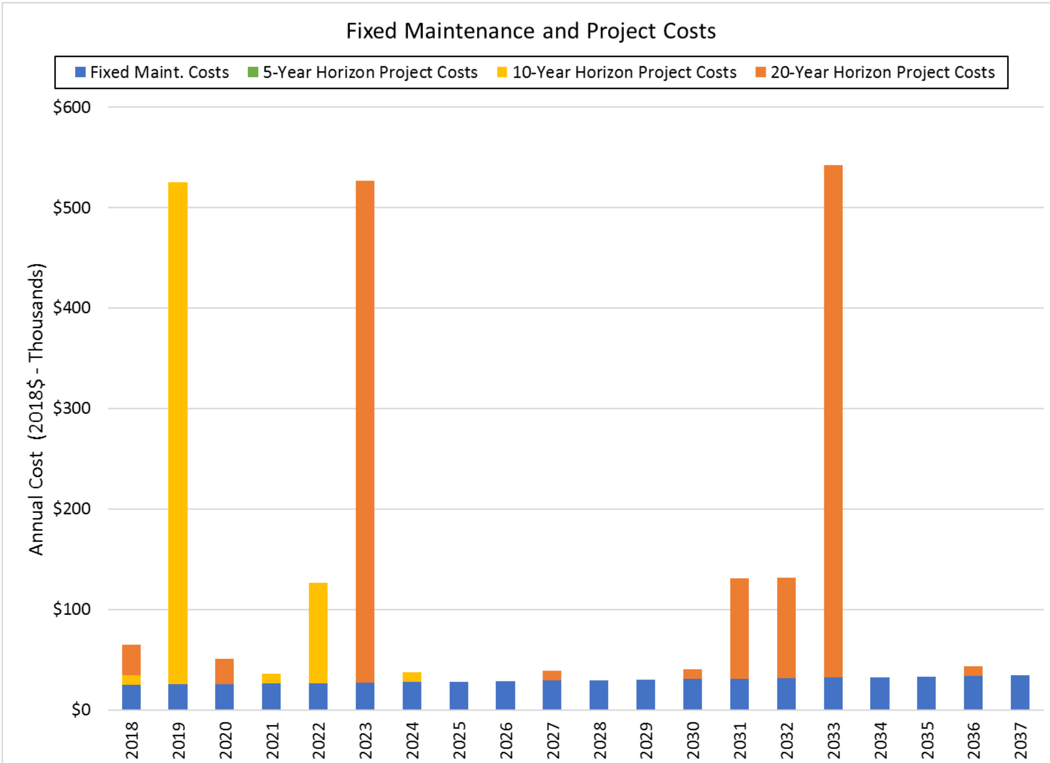


Figure 7-8: I Unit 3 Total Annual Cost Summary (2018$)

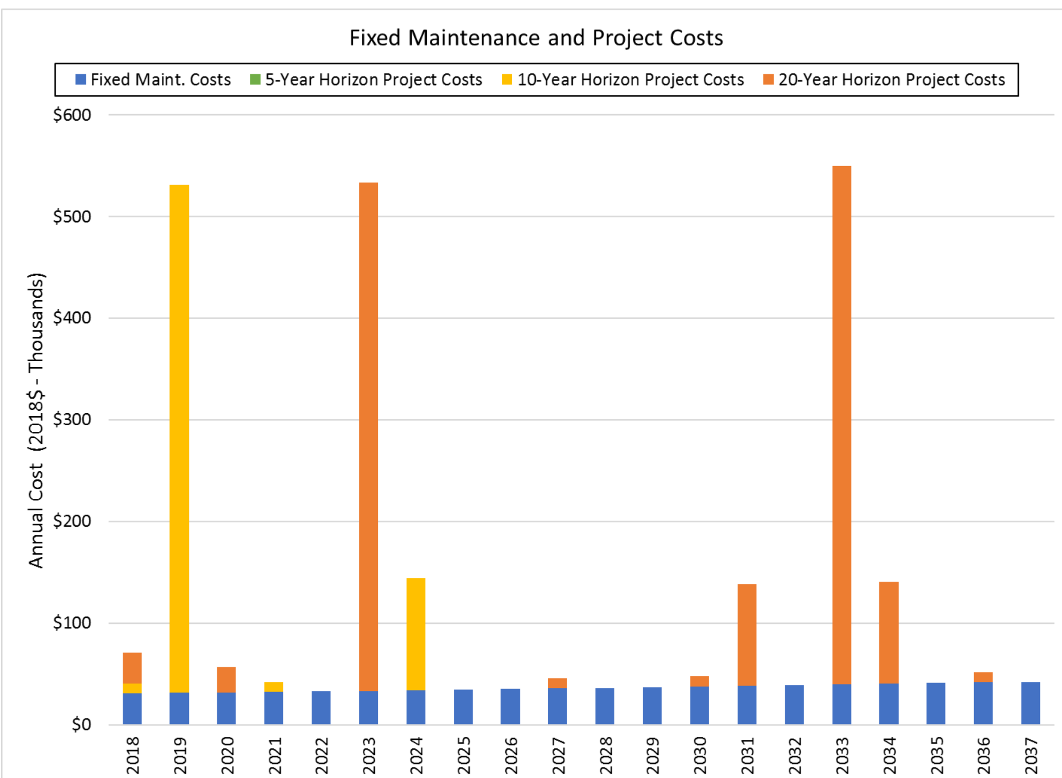


Figure 7-9: I Unit 4 Total Annual Cost Summary (2018$)

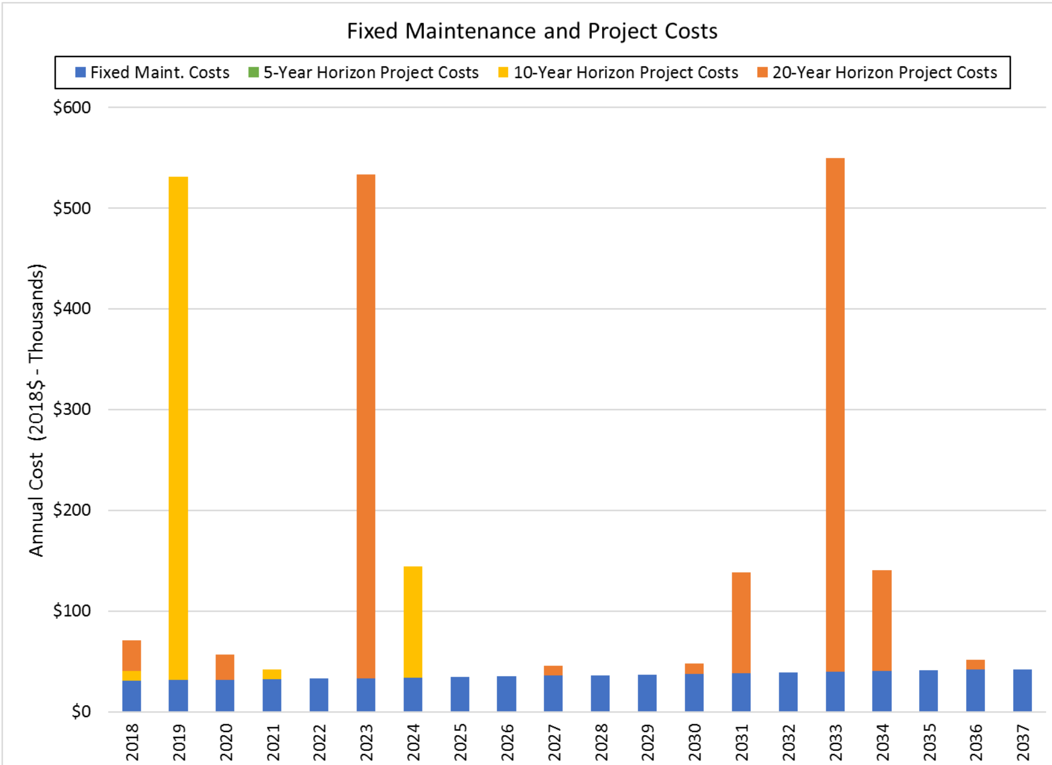


Figure 7-10: H Unit 5 Total Annual Cost Summary (2018$)

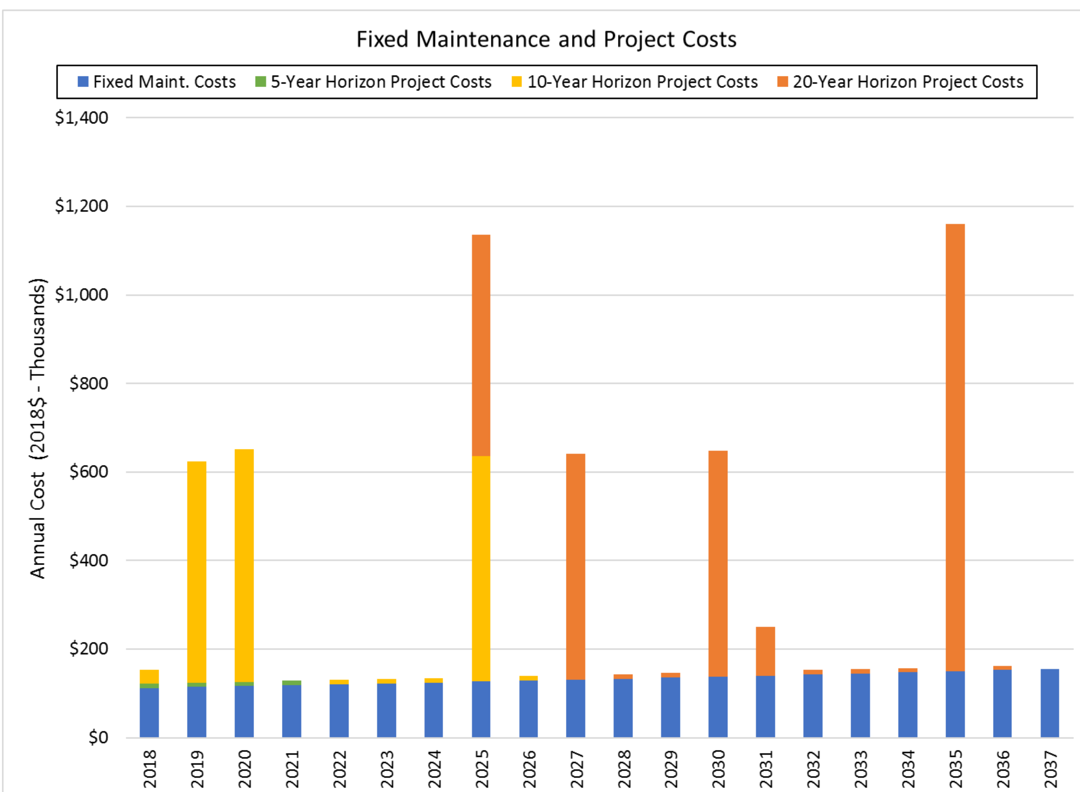
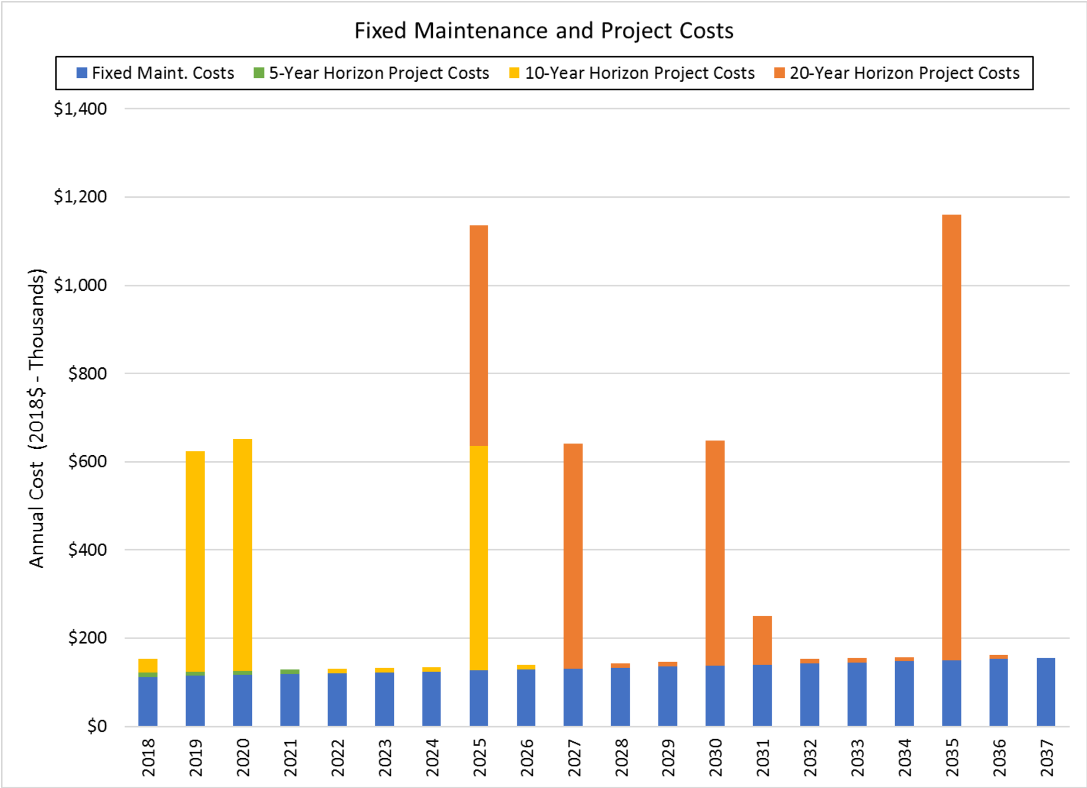


Figure 7-11: H Unit 6 Total Annual Cost Summary (2018$)



8.0 CONCLUSIONS & RECOMMENDATIONS

8.1 Conclusions

The following conclusions are based on the observations and analysis from this Study.

1. These combustion turbines were placed into commercial service between 1968 and 1972 meaning the newest unit is 46 years old. The typical power plant design assumes a service life of approximately 30 to 40 years, therefore the Units have exceeded the typical service life of a power generation facility. Many power plant operators have extended the service life of units past the design life by replacing or refurbishing many components.
2. Many of the major components and equipment for the Units will need to be repaired or replaced to provide reliable operation of the Units over the next 20 years. If the Units are to only operate for the next 10 years, then significantly less Project Cost will be needed. Finally, if the Units are to operate for only 5 more years, then very limited Project Costs are required.
3. The reliability of the Units is significantly less than the peer benchmark. Burns & McDonnell believes in order to resolve this issue, the Units would have to be significantly overhauled from an instrumentation perspective.
4. As indicated within the fleet benchmarking analysis, the Facilities are operating with EFOR and EAF metrics that are higher and lower than the peer group. This discrepancy is a direct result of the number of service hours on each machine. The benchmarking data also indicates that as power plants age, their overall maintenance costs increase, which is to be expected. Burns & McDonnell expects the Facilities to follow a similar trend.

8.2 Recommendations

Based on the information provided to Burns & McDonnell for review, interviews with site personnel, and the site visit, Burns & McDonnell recommends the following:

1. Perform the major projects (>$100K) listed in Figure 8-1 below to ensure the reliability of the combustion turbines over the next 5-year, 10-year, and 20-year operating horizons.

Figure 8-1: Substation J, I, and H Major Projects

	Unit					
Horizon/Maintenance Activity	**J1**	**J2**	**I3**	**I4**	**H5**	**H6**
5-Year Operating Horizon						
	No major projects identified					
10-Year Operating Horizon						
Replace the Controls Wiring Harness	X	X	X	X	X	X
Replace Station Batteries	X	X	X	X	X	X
Perform Combustion Inspection					X	X
20-Year Operating Horizon						
Perform a Combustion Inspection	X	X	X	X	X	X
Replace Control System	X	X	X	X	X	X
Perform a Hot Gas Inspection					X	X
Rewind Stator or Field Allowance					X	X

2. Common to all Units at the Facilities
3. IPL should continue to proactively inspect the combustion turbines. This includes borescoping the Substation H machines every year and the Substation J and I machines every three years.
4. Continue the current maintenance and testing plan of the transformers including dissolved gas analysis.
5. J Unit 1
    a. Analyze spectrum vibration data to determine the root cause of the vibration anomaly on the combustion turbine generator.
6. I Unit 4
    a. Resample the CTG lube oil to confirm if the noted oil contamination is an issue.
7. H Unit 5
    a. Resample the CTG lube oil to confirm if the noted oil contamination is an issue
8. H Unit 6
    a. Resample the CTG lube oil to confirm if the noted oil contamination is an issue

APPENDIX A – CAPITAL & MAINTENANCE COST FORECAST

Independence Power & Light
Substation J1
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
					$0																		
5 Year TOTAL																							
5 YEAR TOTAL					**$0**	$0	$0	$0	$0	$0													
10 Year Forecast																							
Replace station batteries	Batteries	2012	10	2022	$100					$100													
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$30	$10			$10			$10											
10 Year TOTAL																							
10 YEAR TOTAL					**$630**	$10	$500	$0	$10	$100	$0	$10	$0	$0	$0								
20 Year Forecast																							
Replace station batteries	Batteries	2012	10	2022	$200					$100										$100			
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$70	$10			$10			$10			$10			$10			$10		
Perform combustion inspection	Gas Turbine	2013	10	2023	$1,000						$500										$500		
Replace Controls System	Controls	2016	15	2031	$100														$100				
20 Year TOTAL																							
20 YEAR TOTAL					**$1,915**	$40	$500	$25	$10	$100	$500	$10	$0	$0	$10	$0	$0	$10	$100	$100	$510	$0	$0

Independence Power & Light
Substation J2
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
					$0																		
5 Year TOTAL																							
5 YEAR TOTAL					**$0**	$0	$0	$0	$0	$0													
10 Year Forecast																							
Replace station batteries	Batteries	2012	10	2022	$100					$100													
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$30	$10			$10			$10											
10 Year TOTAL																							
10 YEAR TOTAL					**$630**	$10	$500	$0	$10	$100	$0	$10	$0	$0	$0								
20 Year Forecast																							
Replace station batteries	Batteries	2012	10	2022	$200					$100										$100			
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$70	$10			$10			$10			$10			$10			$10		
Perform combustion inspection	Gas Turbine	2013	10	2023	$1,000						$500										$500		
Replace Controls System	Controls	2016	15	2031	$100														$100				
20 Year TOTAL																							
20 YEAR TOTAL					**$1,915**	$40	$500	$25	$10	$100	$500	$10	$0	$0	$10	$0	$0	$10	$100	$100	$510	$0	$0

Independence Power & Light
Substation I3
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
					$0																		
5 Year TOTAL																							
5 YEAR TOTAL					**$0**	$0	$0	$0	$0	$0													
10 Year Forecast																							
Replace station batteries	Batteries	2014	10	2024	$100							$100											
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$30	$10			$10			$10											
10 Year TOTAL																							
10 YEAR TOTAL					**$630**	$10	$500	$0	$10	$0	$0	$110	$0	$0	$0								
20 Year Forecast																							
Replace station batteries	Batteries	2014	10	2024	$200							$100										$100	
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$70	$10			$10			$10			$10			$10			$10		
Perform combustion inspection	Gas Turbine	2013	10	2023	$1,000						$500										$500		
Replace Controls System	Controls	2016	15	2031	$100														$100				
20 Year TOTAL																							
20 YEAR TOTAL					**$1,915**	$40	$500	$25	$10	$0	$500	$110	$0	$0	$10	$0	$0	$10	$100	$0	$510	$100	$0

Independence Power & Light
Substation I4
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
					$0																		
5 Year TOTAL																							
5 YEAR TOTAL					**$0**	$0	$0	$0	$0	$0													
10 Year Forecast																							
Replace station batteries	Batteries	2014	10	2024	$100							$100											
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$30	$10			$10			$10											
10 Year TOTAL																							
10 YEAR TOTAL					**$630**	$10	$500	$0	$10	$0	$0	$110	$0	$0	$0								
20 Year Forecast																							
Replace station batteries	Batteries	2014	10	2024	$200							$100										$100	
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	Unknown	3	2018	$70	$10			$10			$10			$10			$10			$10		
Perform combustion inspection	Gas Turbine	2013	10	2023	$1,000						$500										$500		
Replace Controls System	Controls	2016	15	2031	$100														$100				
20 Year TOTAL																							
20 YEAR TOTAL					**$1,915**	$40	$500	$25	$10	$0	$500	$110	$0	$0	$10	$0	$0	$10	$100	$0	$510	$100	$0

Independence Power & Light
Substation H5
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
Perform borescope inspection	Gas Turbine	2017	1	2018	$40	$10	$10	$10	$10														
5 Year TOTAL																							
5 YEAR TOTAL					**$40**	$10	$10	$10	$10	$0													
10 Year Forecast																							
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	2017	1	2018	$90	$10	$10	$10	$10	$10	$10	$10	$10	$10									
Perform combustion inspection	Gas Turbine	2015	5	2020	$1,000			$500					$500										
10 Year TOTAL																							
10 YEAR TOTAL					**$1,645**	$40	$510	$535	$10	$10	$10	$10	$510	$10	$0								
20 Year Forecast																							
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	2017	1	2018	$190	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
Perform combustion inspection	Gas Turbine	2015	5	2020	$1,000			$500										$500					
Perform hot gas path inspection	Gas Turbine	2008	10	2025	$2,000								$1,000										$1,000
Rewind field or stator allowance	Generator	Never	Once	2027	$500										$500								
Replace Controls System	Controls	2016	15	2031	$100														$100				
20 Year TOTAL																							
20 YEAR TOTAL					**$4,335**	$40	$510	$535	$10	$10	$10	$10	$1,010	$10	$510	$10	$10	$510	$110	$10	$10	$10	$1,010

Independence Power & Light
Substation H6
Burns & McDonnell Project No. 103983
Condition Assessment

Cost Forecasts
All costs are presented in 2018$, no inflation is included

PROJECT EXPENDITURES (Presented in $000)

						5 YEARS					10 YEARS					20 YEARS							
DESCRIPTION	**SYSTEM**	**LAST**	**FREQUENCY**	**NEXT**	**TOTAL**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**
5 Year Forecast																							
Perform borescope inspection	Gas Turbine	2017	1	2018	$40	$10	$10	$10	$10														
5 Year TOTAL																							
5 YEAR TOTAL					**$40**	$10	$10	$10	$10	$0													
10 Year Forecast																							
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	2017	1	2018	$90	$10	$10	$10	$10	$10	$10	$10	$10	$10									
Perform combustion inspection	Gas Turbine	2015	5	2020	$1,000			$500					$500										
10 Year TOTAL																							
10 YEAR TOTAL					**$1,645**	$40	$510	$535	$10	$10	$10	$10	$510	$10	$0								
20 Year Forecast																							
Replace wiring harness	Controls	Never	Once	2019	$500		$500																
Replace starting engine clutch	Gas Turbine	Never	Once	2018	$30	$30																	
Refurbish IGVs	Gas Turbine	Never	Once	2020	$25			$25															
Perform borescope inspection	Gas Turbine	2017	1	2018	$190	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10
Perform combustion inspection	Gas Turbine	2015	5	2020	$1,000			$500					$500					$500					
Perform hot gas path inspection	Gas Turbine	2008	10	2025	$2,000								$1,000										$1,000
Rewind field or stator allowance	Generator	Never	Once	2027	$500										$500								
Replace Controls System	Controls	2016	15	2031	$100														$100				
20 Year TOTAL																							
20 YEAR TOTAL					**$4,335**	$40	$510	$535	$10	$10	$10	$10	$1,010	$10	$510	$10	$10	$510	$110	$10	$10	$10	$1,010

CREATE AMAZING.

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APPENDIX D – POWER PRODUCTION STAFFING ANALYSIS

August 20, 2018

Mr. Randy Hughes
Manager, Planning and Rates
City of Independence – Power and Light Department
17221 E. 23Rd St. S
Independence, MO 64050

Re: Energy Master Plan Power Production Staffing Benchmarking Analysis

Dear Mr. Hughes,

As part of the Energy Master Plan, Independence Power & Light ("IPL") requested that Burns & McDonnell Engineering Company, Inc. ("Burns & McDonnell) conduct an evaluation of IPL's power production staffing requirements. Based on the sensitive nature of staffing levels, Burns & McDonnell considers this information confidential.

Burns & McDonnell compared IPL's current staffing levels by position to peer benchmarks throughout the power generation industry. These peers were comprised of several different operating plants ranging in size from one unit generating 80 MW to four units generating 1,600 MW as well as three municipal power utilities similar to IPL. An overview of each benchmark is below:

1. Power Plant Staffing Benchmarks
    a. Benchmark 1 – Single-unit plant with natural gas-fired, supercritical boiler and steam turbine generator ("STG") capable of generating 750 MW. The unit has operated for 40+ years and is currently being dispatched as a peaking unit in the MISO energy market. The plant is staffed with 29 full-time equivalents (FTE).
    b. Benchmark 2 – Two-unit plant with natural gas-fired boilers and steam turbine generators capable of generating 400 MW each. The units have operated for 40+ years and are currently being dispatched as intermediate units in the MISO energy market. The plant is staffed with 38 FTEs.
    c. Benchmark 3 – Single-unit plant with biomass fired-boiler and steam turbine generator capable of generating 80 MW. The unit has operated for 50+ years and is currently being dispatched as a base loaded unit in the Southeast energy market. The plant is staffed with 42 FTEs (which excludes fuel handling).
    d. Benchmark 4 – Single-unit plant with biomass-fired boiler and steam turbine generator capable of generating 100 MW. The unit has operated for 5 years and is currently being dispatched as an intermediate unit in the Southeast energy market. The plant is staffed with 31 FTEs (which excludes fuel handling).
    e. Benchmark 5 – Four-unit plant with natural gas-fired boilers and steam turbine generators capable of generating a total of 1,600 MW. The units have operated for 40+ years and are

currently being dispatched as intermediate units in the MISO energy market. The plant is staffed with 47 FTEs.

   f. Benchmark 6 – Single unit plant with coal-fired boiler and steam turbine generator capable of generating 250 MW. The unit has operated for 20 years and is currently being dispatched as an intermediate unit in the PJM energy market. The plant is staffed with 47 FTEs (which excludes fuel handling).

2. Municipal Utility Staffing Benchmarks
   a. Benchmark 7 – Municipal utility with three steam units and two combustion turbine generators ("CTG") units capable of generating 300 MW. The units have operated for 50+ years and are currently being dispatched as peaking units in the MISO energy market. The plants are staffed by a total 45 FTEs.
   b. Benchmark 8 - Municipal utility with three STG units and four CTG units capable of generating 475 MW. The units have operated for 15 to 60 years and are currently being dispatched as peaking units in the MISO energy market. The plants are staffed by a total 40 FTEs.
   c. Benchmark 9 – Municipal utility with one STG unit and one CTG unit capable of generating approximately 100 MW. The units have operated for between 35 and 45 years and are currently being dispatched as a baseloaded resource (STG) and emergency peaking (CTG). The plants are staffed by a total of 39 FTEs.

Based on a review of IPL's units and these benchmarks, Burns & McDonnell estimated staffing levels for each position to effectively operate Blue Valley and the Substation CTs (IPL Benchmark Staffing 1) as well as just the Substation CTs assuming Blue Valley was retired (IPL Benchmark Staffing 2).

1. IPL Benchmark Staffing 1 – 9 Units (3 STG and 6 CTG) – 200 MW – Age is 40 to 60 years
   a. Total – 44
   b. Management/Administration/Engineering – 8
   c. Operations – 22
   d. Maintenance – 13
   e. Store Room – 1
   f. Fuel Handling – 0
2. IPL Benchmark Staffing 2 – 6 Units (6 CTG) – 100 MW – Age is 40+ years
   a. Total – 23
   b. Management/Administration/Engineering – 7
   c. Operations – 21
   d. Maintenance – 9
   e. Store Room – 1

f. Fuel Handling – 0

Burns & McDonnell believes that the staffing levels presented above are in line with industry averages for operating natural gas-fired steam turbine units and simple cycle gas turbines. These estimates have accounted for the age of the units, number of units, and the technology of the units. A detailed analysis of position function was not performed as part of this staffing benchmarking effort rather it was assumed that the benchmarked units/utilities have similar complexity and operational issues. Furthermore, actual positions may vary from the staffing plans described above based on various reasons such as personnel skillset, equipment needs, or other market factors.

A more detailed breakdown by staffing position can be found in the enclosed *IPL Power Production Organization Review* document. Burns & McDonnell recommends that IPL continue to evaluate the staffing for its power production facilities as the overall dispatch of the facilitates continues to evolve as changes within the power industry impact resource generation.[1]

Sincerely,

Mike Borgstadt, PE
Project Manager

Enclosure: Power Production Staffing Evaluation

cc: Marty Barker

[1] During the course of the Energy Master Plan, IPL experienced opportunities to allow for similar staffing levels as outlined within Benchmark 1 above. Furthermore, at the conclusion of the Energy Master Plan, the staffing levels for IPL's power production staff were similar to that of Benchmark 1.

Independence Power & Light
Energy Master Plan
Burns & McDonnell Project No. 103983

Power Production Staffing Evaluation

	Independence Power & Light		Benchmark Units										Future Options for IPL	
Technology	**Org Chart 1**	**Org Chart 2**	**Plant Benchmark 1**	**Plant Benchmark 2**	**Plant Benchmark 3**	**Plant Benchmark 4**	**Plant Benchmark 5**	**Plant Benchmark 6**	**Utility Benchmark 7**	**Utility Benchmark 8**	**Utility Benchmark 9**	**Benchmark Average**	**STG/CTG Operation**	**CTG Only Operation**
No. of STG Units	3	3	1	2	1	1	4	1	3	3	1	2	1 to 3	0
No. of CTG units	6	6	0	0	0	0	0	0	2	4	1	0	1 to 6	1 to 6+
Size (MW)	200 MW	200 MW	750 MW	2 x 400 MW	80 MW	100 MW	1,600 MW	250 MW	300 MW	475 MW	79 MW	-	200 MW	100 MW
Age (years)	53 to 60 years	53 to 60 years	40+ years	40+ years	50+ years	5 years	39 to 56 years	20+ years	30 to 50 years	15 to 60 years	35 to 45 years	-	53 to 60 years	40+ years
Staffing/Positions														
Production Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Plant Admin	1	1	1	1	2	2	1	1	1	1	1	1	1	1
Plant Engineer	3	1	1	2	1	1	3	1	3	4	0	2	2	1
Plant Specialist (Data/Engineering Aide)	1	1	0	0	0	0	0	0	0	3	0	0	0	0
Maintenance Planner	0	0	1	1	0	1	2	0	0	1	0	1	1	1
Operations/Maintenance Superintendent	0	1	1	0	0	0	1	0	0	1	0	0	0	1
Operations Superintendent	2	1	0	1	1	1	0	1	5	0	4	1	1	0
Operations Supervisor	5	5	4	4	0	0	0	5	1	1	4	2	5	0
Operations - CRO (III)	6	5	4	5	4	4	5	5	0	7	4	4	5	4
Operations - I/II	18	12	8	12	8	12	12	15	16	11	8	11	12	4
Maintenance Superintendent	1	1	1	1	1	1	1	1	4	0	1	1	1	0
Maintenance Supervisor	4	3	0	0	2	0	2	2	1	2	1	1	0	0
Maintenance - Mechanics/Journeyman/Welders	22	10	2	4	16	4	8	5	8	2	11	7	7	4
Maintenance - Instruments/Controls/Electricians	8	8	3	4	5	3	8	5	3	4	3	4	5	4
I&C Supervisor	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Store Room Superintendent	1	1	0	0	0	0	0	1	0	0	0	0	0	0
Store Room Clerk	2	2	1	1	0	1	1	1	0	1	0	1	1	1
Safety Specialist	1	1	1	1	1	0	0	1	0	0	0	0	1	1
Lab Tech	1	1	0	0	0	0	2	2	1	0	1	1	1	0
Fuel Handling Supervisor	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Fuel Handling Worker	0	4	0	0	0	0	0	0	0	0	0	0	0	0
Total	**77**	**60**	**29**	**38**	**42**	**31**	**47**	**47**	**45**	**40**	**39**	**40**	**44**	**23**

APPENDIX E – TECHNOLOGY ASSESSMENT

New Generation Technology Assessment

Independence Power & Light

Energy Master Plan
Project No. 103983

June 2018

New Generation Technology Assessment

prepared for

Independence Power & Light
Energy Master Plan
Independence, Missouri

Project No. 103983

June 2018

prepared by

Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri

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LIST OF ABBREVIATIONS

Abbreviation	**Term/Phrase/Name**
Assessment	Technology Assessment
BACT	Best Available Control Technology
Btu/kWh	British thermal unit per kilowatt hour
Burns & McDonnell	Burns & McDonnell Engineering Company
CAES	Compressed air energy storage
CCGT	Combined cycle gas turbine
CI	Combustion inspection
CO	Carbon monoxide
CO_2	Carbon dioxide
COD	Commercial operation date
DLE	Dry-low emissions
DLN	Dry-low NO_x
DOE	Department of Energy
EFOR	Equivalent forced outage rate
EIA	Energy Information Administration
EPC	Engineer, Procure and Construct
F	Fahrenheit
FOM	Fixed operation and maintenance
FTE	Full time equivalent
GE	General Electric
GSU	Generator step-up transformer
GT	Gas Turbine
HAP	Hazardous air pollutants
HGP	Hot gas path
HHV	Higher heating value
HRSG	Heat recovery steam generator
IPL	Independence Power & Light
kW	Kilowatt
kWh	Kilowatt hour
lb/MMBtu	Pounds per million British thermal units
LHV	Lower heating value

Abbreviation	**Term/Phrase/Name**
LTSA	Long-term service agreement
MECL	Minimum emissions compliant load
MI	Major inspection
MM	Millions
Min	Minute
MMBtu/hr	Million British thermal units per hour
MW	Megawatt
MW/min	Megawatt per minute
MWh	Megawatt hour
NAAQS	National Ambient Air Quality Standards
NaS	Sodium sulfur
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_x	Nitrogen oxide
NREL	National renewable energy laboratory
NSPS	New source performance standard
O&M	Operations and maintenance
O_2	Oxygen
OEM	Original equipment manufacturers
Owner	Independence Power & Light
PM	Particulate matter
$PM_{2.5}$	Particulate matter 2.5 microns and smaller
ppm	Parts per million
PSD	Prevention of significant deterioration
psig	Pounds per square inch gauge
Reciprocating engine	Reciprocating internal combustion engine
RH	Relative humidity
RICE	Reciprocating internal combustion engine
SCGT	Simple cycle gas turbine
SCR	Selective catalytic reduction
SO_2	Sulfur Dioxide
SPP	Southwest Power Pool
STG	Steam turbine generator
Study	Technology Assessment

Abbreviation	Term/Phrase/Name
U.S.	United States
VOC	Volatile organic compound
VOM	Variable operation and maintenance

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1.0 INTRODUCTION

Independence Power & Light ("IPL" or "Owner") retained Burns & McDonnell Engineering Company ("Burns & McDonnell") to evaluate various power generation technologies in support of its power supply planning efforts (the Energy Master Plan). Within the Energy Master Plan, IPL is considering numerous power supply alternatives including the retirement of units, the addition of new resources, potential power purchases, or any combination of resources thereof. The Technology Assessment ("Study" or "Assessment") is screening-level in nature and includes a comparison of technical features, cost, performance, and emissions characteristics of power generation and storage technologies that may be available to IPL.

It is the understanding of Burns & McDonnell that this Assessment will be used for preliminary, screening level information in support of the IPL's long-term power supply planning process for identifying those technologies that best meet IPL needs. The technologies selected from this process will be examined in much more detail, including their expected economic and reliability performance in the Southwest Power Pool ("SPP") Integrated Market. Any technologies of interest to IPL should be followed by additional detailed studies to further investigate each technology and its direct application within the Owner's long-term plans.

1.1 Evaluated Technologies

Burns & McDonnell evaluated and considered numerous technologies for the Energy Master Plan to provide reliable, safe, and economic generation to meet IPL's power supply requirements. These technologies included natural gas-fired, renewable, and storage resources. Each type of resource presents advantages and disadvantages when being considered within a comprehensive power supply portfolio. Burns & McDonnell and IPL identified, evaluated, and preliminarily screened the resources for their ability to complement IPL's existing resources and meet future load requirements for its customers. Burns & McDonnell and IPL considered the following types of resources.

- Natural gas-fired resources including peaking and intermediate resources
- Renewable options including wind and solar
- Storage alternatives including batteries, compressed air energy storage, and pumped hydropower storage

After initial screening based on Burns & McDonnell's experience with planning and project execution, the following resources were selected for further evaluation within this Assessment. These technologies provide representative alternatives for meeting IPL's needs, such as output, operational flexibility, project development feasibility, under a variety of portfolio considerations within the economic evaluations:

- Simple cycle gas turbine ("SCGT") technologies
    - 40-megawatt ("MW") LM6000 PF aeroderivative SCGT (brownfield installation at an IPL location)
    - 220-MW F-class frame SCGT (brownfield installation at an IPL location)
- Reciprocating internal combustion engine ("RICE" or "reciprocating engine") technology
    - 2 x 18-MW engine plant (brownfield installation at an IPL location)
    - 6 x 18-MW engine plant (brownfield installation at an IPL location)
- Combined cycle gas turbine ("CCGT") technologies
    - 1,000-MW 2x1 J-class with duct firing (greenfield installation, partial ownership considered)
- Battery Storage (15-MW/60 megawatt-hour ("MWh") (brownfield installation at an IPL location)
- Battery Storage (1-MW/1-MWh) (brownfield installation at an IPL location)

Power production facilities are typically constructed at either greenfield or brownfield sites. A greenfield site is defined as a new site that includes no existing infrastructure such as electrical interconnections, (switchyards and/or substations), natural gas supply lines, or water supply). A brownfield site is defined as an existing power plant site, that in this case, would consist of redeveloping, or repurposing, an existing IPL generation site. The combined cycle option is the only option considered within this Assessment that assumes a greenfield site. Due to economies of scale, very large combined cycle units are more economic, but is unlikely to occur at an existing IPL generation site. For comparison to other options, it is assumed the large combined cycle unit would be developed and constructed by a third-party with IPL purchasing only a portion of the new unit. For technologies that may be implemented at the Owner's existing sites (i.e. brownfield sites), Burns & McDonnell made adjustments/reductions to the capital costs assuming key infrastructure is already located on-site. For the greenfield estimate, an allowance for off-site infrastructure was included within the cost estimate.

1.2 Assessment Approach

This report summarizes the evaluated results and compiles the assumptions and methodologies used by Burns & McDonnell during the Assessment. Its purpose is to articulate that the delivered information is in alignment with IPL's intent to advance its resource planning initiatives.

The following sections provide a description of the technologies considered within this assessment. Appendix A provides the scope matrix for the technologies which details what is included within the cost and performance estimates. Appendix B provides the cost and performance estimates for each technology.

1.3 Conclusions & Recommendations

This technology assessment provides information to support IPL's power supply planning efforts for further evaluation within the economic modeling efforts for the Energy Master Plan. Information provided in this assessment is preliminary in nature and is intended to highlight indicative, differential costs associated between each technology. After identifying the preferred combination of resources within the Energy Master Plan, IPL should pursue additional engineering studies to define specific items such as project scope, design, and equipment, budgets, and implementation timeline for the preferred technologies of interest.

The selected alternatives from this screening effort will be further evaluated within the Energy Master Plan for their ability to compliment or replace existing resources within IPL's power supply portfolio, both from a technical ability and economic evaluation. A brief highlight of the advantages and disadvantages of the technologies is presented in Table 1-1.

Table 1-1: Summary of Technologies

Technology	Advantages	Disadvantages
Gas-Fired Resources		
Aeroderivative	• Flexible operation (ability to quickly turn-on/off in response to market signals) • More efficient than large frame units • Ability for on-system installation	• High fuel gas pressure • Higher capital cost compared to other peaking resources on $/kW basis
F-Class	• Lowest cost peaking resource on a $/kW basis • Flexible compared to CCGT, but slightly less than Aeroderivative and reciprocating engines • Ability for on-system installation	• High fuel gas pressure • Large capacity on a single shaft • Less flexible compared to aeroderivatives and reciprocating engines • Higher heat rate compared to aeroderivative turbines
Reciprocating Engines	• Most flexible gas-fired resource (ability to quickly turn-on/off in response to market signals) • Low fuel gas pressure • Shaft diversification (9-18MW)[1] • Ability for on-system installation	• Higher capital cost compared to F-Class or CCGT technology on a $/kW basis
CCGT	• Most efficient gas-fired technology • Lower capital cost due to economies of scale on a $/kW basis	• Lacks flexibility compared to other gas-fired technologies • Must be one of potentially several pseudo-owners of a large unit • Most likely located off-system

[1] Shaft diversification provides a utility the opportunity for increased reliability since it would have the ability to utilize multiple engines providing the same level of capacity and generation, as opposed to having all of the energy sourced from a single engine.

Technology	Advantages	Disadvantages
Renewables		
Local Wind (Jackson County, Missouri)	• Reduced transmission congestion	• No Production Tax Credit or Interconnection Tax Credit (need taxable partner) • Uneconomical compared to resources available in nearby regions • Wind farms cannot be easily integrated into residential, commercial, or industrial areas
Regional Wind (Kansas, Oklahoma)	• Economically justifiable • Production Tax Credit through PPA • Large wind farms reduce the overall cost of the technology	• IPL is not the operator of the wind farms • Potential congestion costs
Local Solar	• Increased to renewable energy production for utility portfolio	• Lack of solar resource availability in Midwest • Higher cost of energy compared to regional wind
Storage		
Flow Battery	• Scalable technology in development • Higher cycling life compared to conventional batteries • Offsets electric peak loads	• Technology is not entirely mature currently • Required operation of ancillary equipment
Conventional Battery (Lead Acid and Lithium Ion)	• Low capital costs • Responsive to changes in grid demand • Offsets electric peak loads	• Life is dependent on cycling and discharge rates, potentially 5 to 10 years for high cycling utilization • High maintenance cost • Materials used are associated with being high toxicity
High Temperature	• High discharge rates • Life expected to be around 15 years • Offsets electric peak loads	• Energy requirement to maintain liquid electrolytes • Technology is still being developed for utility level applications • Uneconomically compared to other storage technologies
Pumped Hydro	• Large reservoir of storage energy • Offsets electric peak loads	• Geology required for water storage • Environmental impacts to surrounding areas • High capital costs
Compressed Air Energy Storage (“CAES”)	• Large reservoir of storage energy • Offsets electric peak loads	• Specific geology required for compressed air storage (not ideal for limestone mines) • High capital costs

2.0 NATURAL GAS-FIRED TECHNOLOGY OVERVIEW

In general, there are three main natural gas-fired technologies that have been implemented within the industry for power generation including simple cycle gas turbines, reciprocating internal combustion engines, and combined cycle gas turbines. The following section provides an overview and description of the natural gas-fired technologies considered within this Assessment.

2.1 Simple Cycle Gas Turbine Technologies

A simple cycle gas turbine plant utilizes natural gas to produce power in a gas turbine generator. The gas turbine cycle (the Brayton cycle) is one of the most efficient cycles for the conversion of gaseous fuels to mechanical power to produce electricity.

2.1.1 Technology Description

Simple cycle gas turbine generation is a widely used, mature technology, typically used for peaking power due to their fast load ramp rates and relatively low capital costs. However, the units have higher heat rates compared to combined cycle gas turbine technologies.

The output of combustion turbine technologies is dependent on the mass of flow through the turbine. This is impacted by both altitude and ambient temperatures. To achieve higher output at elevated ambient temperatures, evaporative coolers are often used to cool the air entering the gas turbine by evaporating additional water vapor into the air, which increases the mass flow through the turbine and therefore increases the output. Evaporative coolers are included on all SCGT technologies in this assessment.

While this is a mature technology category, it is also a highly competitive marketplace. Manufacturers are continuously seeking incremental gains in output and efficiency while reducing emissions and onsite construction time. Both frame and aeroderivative manufacturers are striving to implement faster starts and improved efficiency. Advances in frame unit combustor design allow improved ramp rates, turndown, fuel variation, efficiency, and emissions characteristics. Alternatively, aeroderivative turbines benefit from the research and development efforts of the aviation industry, including advances in metallurgy and other materials.

Low load or part load capability may be an important characteristic depending on the market price signals and the resulting operational profile of the plant. Low load operation allows the SCGTs to remain online and generate a small amount of power while having the ability to quickly ramp to full load without going through the full start sequence.

2.1.2 Aeroderivative Gas Turbines

Aeroderivative gas turbine technology is based on aircraft jet engine design, built with high quality materials that allow for increased turbine cycling. The output of commercially available aeroderivative turbines ranges from less than 20 MW to approximately 100 MW in generation capacity. In simple cycle configurations, these machines typically operate more efficiently than larger frame units and exhibit shorter ramp up and turndown times, making them ideal for peaking and load following applications. Aeroderivative units typically require fuel gas to be supplied at higher pressures (i.e. 675 pounds per square inch gauge ("psig") to 960 psig for many models) than more traditional frame units. This requires the addition of natural gas compressors, which are included in the cost estimates for this technology.

A desirable attribute of aeroderivative turbines is the ability to start and ramp up load quickly. Most manufacturers will guarantee 10-minute starts, measured from the time the start sequence is initiated to when the unit is at 100 percent load. Simple cycle starts are generally not affected by cold, warm, or hot temperature conditions of the equipment. Depending on the original equipment manufacturer ("OEM") and packages included with the major equipment, some combustion turbines can have very quick turnaround times from shutdown to start cycles with others requiring longer down periods between cycles. However, all gas turbine start times in this Assessment assume that all start permissives are met, which can include items such as lube oil temperature and fuel pressure. Costs have been included with the operation and maintenance cost estimates in order to operate in this manner.

Aeroderivative turbines are considered mature technology and have been used in power generation applications for decades. These machines are commercially available from several vendors, including General Electric ("GE"), Siemens, and Mitsubishi-owned PW Power Systems (formerly known as Pratt & Whitney). This assessment bases aeroderivative performance estimations on the GE LM6000, which is well-established in the marketplace.

2.1.3 Frame Gas Turbines

Frame style turbines are more conventionally designed industrial engines that are typically used in intermediate to baseload applications. In simple cycle configurations, these engines typically have higher heat rates (less efficient) when compared to aeroderivative engines. The smaller frame units have simple cycle heat rates around 10,000 British thermal units per kilowatt hour ("Btu/kWh") on a high heating value ("HHV") or higher while the largest units exhibit heat rates approaching 9,250 Btu/kWh (HHV). However, frame units have higher exhaust temperatures (≈1,100°F) compared to aeroderivative units (≈850°F), making them more efficient in combined cycle operation because exhaust energy is further utilized. Frame units typically require fuel gas at lower pressures, around 500 psig, than aeroderivative units.

Traditionally, frame turbines exhibit slower startup times and ramp rates than aeroderivative models, but current market conditions are driving manufacturers to consistently improve these characteristics. Conventional start times are commonly 20 to 30 minutes for frame turbines, but fast start options allow 10 to 15-minute starts.

Frame engines are offered in a large range of sizes by multiple suppliers, including GE, Siemens, Mitsubishi, and Alstom. Commercially available frame units range in size from approximately 50 MW up to 350 MW. Continued development by gas turbine manufacturers has resulted in the separation of gas turbines into several classes, grouped by output and firing temperature. For the purposes of this Assessment, Burns & McDonnell selected the F-class turbine (nominal 200 MW to 240 MW) as the representative equipment for the frame technology. The cost and performance estimates for this Assessment are based on the GE 7F.05 turbine for a simple cycle alternative.

2.1.4 Environmental Regulations & Emissions Controls

Emissions levels and required nitrogen oxides ("NO_x") and carbon monoxide ("CO") controls vary by technology and site constraints. Historically, natural gas SCGT peaking plants in attainment areas have not required post-combustion emissions control systems because they operate at low capacity factors. However, permitting trends suggest post-combustion controls may be required depending on annual number of gas turbine operating hours, location in a non-attainment area, and current state regulations.

Regulations pertaining to simple cycle combustion turbines are typically straight forward. New Source Performance Standard ("NSPS") (40 CFR Part 60), Subpart KKKK apply to combustion turbines. Per NSPS Subpart KKKK, natural gas-fired units with heat inputs below 850 million Btu per hour ("MMBtu/hr") have a NO_x limit of 25 ppm, but units with heat inputs greater than 850 MMBtu/hr have a NO_x limit of 15 ppm. These limits are generally met by the OEMs with low-NO_x burners, with some exception such as in the case of the LMS100 (though not included within this assessment). In the rare case where a combustion turbine cannot meet the NSPS, an SCR is required to meet the NO_x emission limits per the NSPS. The NSPS also has limits for fuel oil combustion of 42 ppm and 96 ppm for units with heat inputs of 850 MMBtu/hr and above and those under 850 MMBtu/hr, respectively. Most OEMs can meet these thresholds for fuel oil combustion.

F-class gas turbines use dry-low-NO_x ("DLN") combustors to achieve NO_x emissions of 9 ppm at 15 percent oxygen ("O_2") while operating on natural gas fuel. Since these units emit less than 15 ppm NO_x, no SCR is assumed to be required. Further, traditional guarantees for fuel oil, if used as a back-up fuel, can meet the required limits in Subpart KKKK.

The LM6000 units utilize water injection to achieve NO_x emissions of 25 ppm at 15 percent O_2 while operating on natural gas fuel. Because the LM6000 has a heat input below 850 MMBtu/hr, it meets the appropriate NO_x limit and therefore it is assumed that an SCR is not required.

Within attainment areas, in the event the overall facility has the potential to emit greater than 250 tons per year of any pollutant and over 40 tons per year of NO_x emissions, selective catalytic reduction ("SCR") may be required to meet Prevention of Significant Deterioration Best Available Control Technology requirements or the units may opt to limit the number of operating hours available for the facility.[2] If the site is a greenfield site, it is rare for simple cycle peaking facilities to not be able to limit/adjust hours of operation to remain below the prevention of significant deterioration ("PSD") threshold of 250 tons per year avoiding the need for SCR.

The NSPS for greenhouse gases from electric utilities limits CO_2 emissions to 120 lb/MMBtu CO_2. Most simple cycle combustion turbines can easily meet this limit. Additionally, regulations limit the operation of simple cycle technologies greater than 25 MW per unit to a maximum capacity factor equal to the overall efficiency of the unit. For most combustion turbines, this is approximately a 33-percent annual capacity factor (or approximately 2,900 hours per year per turbine).

The federal requirements for combustion turbines also include National Emission Standards for Hazardous Air Pollutants ("NESHAP") at 40 CFR Part 63, Subpart YYYY. Subpart YYYY is stayed for lean pre-mix combustion turbines and therefore there are no requirements for the frame or aeroderivative combustion turbines that are included in this technology assessment. This regulation limits formaldehyde emissions at major sources of hazardous air pollutants ("HAP"). It is also not expected that a greenfield simple cycle combustion turbine site would be a major source of HAPs.

Most turbine manufacturers will guarantee emissions down to a specified minimum load, commonly 40 to 50 percent load. Below this minimum load, turbine emissions may spike. As such, emissions on a ppm basis may be significantly higher at low loads. For this reason, the turbines will have a defined start-up and shutdown period when emissions are allowed to spike, but timeframe for starts and stops may be limited and would need to be quantified in the air permit application.

[2] Recent greenhouse gas regulations limit the operation of simple cycle technologies greater than 25 MW per unit to a maximum capacity factor equal to the unit's overall efficiency.

During the permitting of simple cycle combustion turbines, if emissions exceed 40 tons per year of NO_x and/or 10 tons per year of particulate matter 2.5 microns and smaller (“$PM_{2.5}$”), the state of Missouri will require air dispersion modeling. Further, air dispersion modeling is recommended even if not required by the state agency to make sure that the stacks will be tall enough to result in modeled concentrations that are below the National Ambient Air Quality Standards (“NAAQS”).

Should facilities be required to install an SCR system, it is assumed that oxidation catalysts would also be included to control CO emissions to 2 ppm at 15 percent O_2 and to control volatile organic compound (“VOC”) emissions while operating on natural gas fuel. On plants without SCR systems, no post-combustion controls for CO are included.

Outside of good combustion practices, it is assumed that emissions control equipment is not required for carbon dioxide (“CO_2”) and particulate matter (“PM”). Sulfur dioxide emissions are not controlled and are therefore a function of the sulfur content of the fuel burned in the gas turbines. Sulfur dioxide emissions will be minimal and do not present an issue for operating simple cycle combustion turbines utilizing natural gas.

2.1.5 Operation & Maintenance Considerations

Electric utilities typically have several options to consider regarding operation and maintenance (“O&M”) of major equipment components, such as combustion turbines. In the power generation market, the purchase of a combustion turbine typically includes a long-term service agreement (“LTSA”) with the OEM to provide maintenance services and parts to maintain the turbine in accordance with the turbine manufacturer’s recommendations for optimal performance. Typical OEM LTSAs include the following coverage, but can vary dependent on the OEM and class of turbine:

- Covered maintenance of borescopes, combustion inspection (“CI”), hot gas path (“HGP”) inspection, major inspection (“MI”), and generator inspections
- Mandatory spare parts storage either on-site or as a part of a “parts pool”
- Discount on service and parts
- Warranty (short-term and long-term) on classified parts and services (covered parts are covered for the length of the LTSA contract)
- Guarantees on parts delivery, performance, and degradation after major inspections, and technical field advisor support during unplanned outages.

LTSAs are complex agreements that may not always be the preferred choice for O&M service for an Owner to execute with the OEM. Considerations must be made based on capacity factor (inspections points are based on equivalent operating hours), long-term pricing competitiveness, limitations of liability, and risk mitigation with the upkeep and performance of the equipment. Other options that Owner's may consider for O&M services is to self-perform maintenance, either with existing staff or contracting with a third-party specializing in turbine maintenance. For example, this has been done by numerous utilities for widely installed combustion turbines that have a large pool of qualified O&M providers.

Furthermore, with some technologies, OEMs offer turbine lease agreements during major overhauls of turbines. These lease agreements offer the utilities to operate a facility with a "spare" combustion turbine, while the original turbine 1) is physically removed from facility, 2) undergoes maintenance which is performed in an OEM shop located off-site, and 3) returned to service at the facility. This is typically only available to aeroderivative turbines, which are smaller combustion turbines and able to be removed and replaced more easily than larger frame-type combustion turbines.

The specific O&M plan for a combustion turbine will be driven on the specific OEM selected and the overall economics of the contract when the turbine is being selected for design and construction. For the purposes of this Assessment, Burns & McDonnell assumed an LTSA from the OEM to serve as the ongoing costs associated with maintenance of new turbine installations.

2.2 Reciprocating Internal Combustion Engine Technology

This Assessment includes a reciprocating internal combustion engine plant for comparison among the SCGT options, which are both used primarily for peaking purposes.

2.2.1 Technology Description

The internal combustion, reciprocating engine operates on the four-stroke Otto cycle to convert pressure into rotational energy. Fuel and air are injected into a combustion chamber prior to its compression by the piston assembly of the engine. A spark ignites the compressed fuel and air mixture causing a rapid pressure increase driving the piston downward. The piston is connected to an offset crankshaft, thereby converting the linear motion of the piston into rotational motion that is used to turn a generator for power production. By design, cooling systems are typically closed-loop, minimizing water consumption.

Reciprocating engines are generally more tolerant of altitude and ambient temperature than gas turbines. With site conditions below 6,000 feet and 100°F, altitude and ambient temperature have minimal impact on the electrical output of reciprocating engines, though the efficiency may be slightly affected. Above 100°F, the units will experience a slight reduction in output (approximately one percent per °F).

Reciprocating engines can start up and ramp load more quickly than most gas turbines, but it should be noted that the engine jacket temperature must be kept warm to accommodate start times under 10 minutes.[3] However, it is common to keep water jacket heaters energized during all hours that the engines may be expected to run, which increases the auxiliary load of the facility while it is idle (associated costs have been included within the fixed O&M costs).

Many vendors manufacture reciprocating engines including Wärtsilä, Fairbanks Morse, Caterpillar, Kawasaki, Mitsubishi, and GE's Jenbacher. Reciprocating engines have become popular as a means to follow wind turbine generation with their quick start times and operational flexibility. This flexibility could lead to increased market dispatch and increased revenue opportunities. There are slight differences between manufacturers in engine sizes and other characteristics, but all largely share the common characteristics of quick ramp rates and start-ups when compared to gas turbines.

The reciprocating engines are manufactured in varied sizes for bulk power generation, ranging from 2 MW to 18 MW. For this Assessment, two plant arrangements were considered. The plant arrangements evaluated in this Assessment includes a two (2) engine arrangement and six (6) engine arrangement, both utilizing the Wärtsilä 18V50SG (18 MW each) as the representative technology. These heavy duty, medium speed, four-stroke combustion engines are easily adaptable to grid-load variations. The evaluated engines are single fuel, gas-only units, although dual fuel engines are available.

2.2.2 Environmental Regulations & Emissions Controls

Reciprocating engines must comply with the NSPS Subpart JJJJ (NSPS for Spark Ignition Reciprocating Internal Combustion Engines). As such, most vendors have stated that they can meet the required NO_x, CO, and VOC emission limits in this regulation for the 8-MW to 20-MW sized engines. It is important to note that SCR and oxidation catalysts are typically included with reciprocating engines, but may not be required if emissions are below the major source threshold for PSD, as OEMs have stated that they will guarantee uncontrolled emissions to meet the NSPS limits. Further analysis would need to be performed for determination of NO_x and CO/VOC controls are warranted. NSPS Subpart TTTT (NSPS for greenhouse gases from power plants) is not applicable to the engines as units that are less than 25 MW are exempt from this regulation.

As is typical for reciprocating engines, especially if they exceed the PSD thresholds, it is assumed that SCR and CO catalysts are required to control NO_x and CO emissions. Operation on natural gas fuel with

[3] If the engine jacket temperature is 1) greater than185ºF, the engine can start in 7 minutes, 2) between 120ºF and 185ºF it will take 1 to 2 hours to get to full load, and 3) less 120ºF will require several hours for start-up. Auxiliary loads for jacket heating are approximately 300 to 400 kWh per engine. For this Assessment,

an SCR yields reduction of NO_x emissions to 5 ppm at 15 percent excess O_2, while a CO catalyst results in anticipated CO emissions of 15 ppm. It is assumed that emissions control equipment is not required for CO_2 and PM. Sulfur dioxide emissions are not controlled and are therefore a function of the sulfur content of the fuel. Sulfur dioxide emissions will be minimal and do not present an issue for operating reciprocating engines utilizing natural gas.

There is also a NESHAP regulation for engines that would be applicable to these large reciprocating engines. Subpart ZZZZ (40 CFR Part 63, Subpart ZZZZ) has requirements for all makes, models, years and fuels for reciprocating engines (spark-ignition as well as compression-ignition).

As with the combustion turbines, it is recommended that even if not required by the state agency, air dispersion modeling should be performed to optimize the stack heights for the engines. Typically, taller stacks are required for $PM_{2.5}$ emissions when a large number of reciprocating engines are installed in a long engine hall building to prevent downwash from the building.

2.2.3 Operation & Maintenance Considerations

Similar to combustion turbines, electric utilities typically have several options to consider regarding O&M of reciprocating engines (see Section 2.1.5). The OEMs have the ability to provide for long-term O&M services and spare parts. While lease programs are not as prevalent due to the design of reciprocating engines, their design does allow for the maintenance of individual engines while the other engines at the facility can remain operational. This allows for only a single engine to be out-of-service and the rest of the plant to be available for dispatch.

The specific O&M plan for a reciprocating engine will be driven on the specific OEM selected and the overall economics of the contract when the engine is being selected for design and construction. For the purposes of this Assessment, Burns & McDonnell assumed an LTSA from the OEM to serve as the ongoing costs associated with maintenance of new reciprocating engine installation.

2.3 Combined Cycle Gas Turbine Technologies

The basic principle of a CCGT plant is to utilize natural gas to produce mechanical power in a combustion turbine which can be converted to electric power by a coupled generator, while also using the hot exhaust gas from the combustion turbine to produce steam in a heat recovery steam generator (“HRSG”). This steam is then used to drive a steam turbine generator (“STG”) to produce electric power.

2.3.1 Technology Description

The use of both combustion and steam turbine cycles (Brayton and Rankine) in a single plant to produce electricity results in high energy conversion efficiencies and low emissions. Combined cycle facilities have efficiencies typically in the range of 52 percent to 58 percent on a lower heating value ("LHV") basis. Additionally, natural gas can be fired in the HRSG to produce additional steam and associated output for peaking load, a process commonly referred to as duct firing. The heat rate will increase during duct fired operation, though this incremental duct fired heat rate is generally less than the resultant heat rate from a similarly sized SCGT peaking plant.

While combined cycle resources have the lowest, most efficient heat rate of the natural gas-fired resources, combined cycle resources are not quite as flexible in regard to starts and shutdown compared to the simple cycle and reciprocating engines technologies. While the combustion turbine attributes are similar, the steam cycle requires a longer startup and shutdown period to bring the equipment to proper temperatures, such as the HRSG and STG. Combined cycle start durations are affected by temperature conditions of the equipment (i.e. cold, warm, or hot). The start duration is longer for the times when the temperature gradient is greater between the equipment temperature and the operating temperature (~1,000ºF). Additionally, the CCGT technology cannot move as quickly to changes in generation output due to the steam cycle compared to peaking resources. However, the new CCGT are much more flexible than traditional steam units such as coal-fired or natural gas-fired boilers (i.e. Blue Valley Generating Station).

As discussed in prior sections, continued development by gas turbine manufacturers has resulted in the separation of gas turbine technology into various classes. For the purposes of this Assessment, Burns & McDonnell evaluated greenfield configurations of 2x1 and 1x1 F-class, G/H-class, and J-class turbines. Ultimately, the J-class turbine was selected as the representative CCGT technology for comparison within this Assessment. While IPL's Blue Valley site has power generation infrastructure on-site, it is supporting approximately 100 MW of generation. It is assumed the Blue Valley site would be unsuitable for a large CCGT development due the overall size of 500 to 1,000 MW, which will require significantly more infrastructure regarding transmission, natural gas, and water than is currently available.

2.3.2 Environmental Regulations & Emissions Controls

Similar to simple cycle combustion turbines, combined cycle combustion turbines are subject to NSPS, Subpart KKKK. As such they have the same NO_x limits as the simple cycle turbines (see Section 2.1.4). The J-class gas turbines can achieve NO_x emissions at 25 ppm down to minimum emissions compliant load ("MECL"). An SCR will be required for the CCGT options to reduce NO_x emissions to 2 ppm at 15 percent excess O_2, as is required to not only meet the NSPS but will also be considered Best Available Control Technology ("BACT") due to the high capacity factor that is common with combined cycle units. Large combined cycle turbines will often exceed PSD thresholds (due, in most part because of high operating hours) and therefore will need to perform a BACT analysis. BACT will result in SCR and oxidation catalyst for control of NO_x and CO/VOC emissions, respectively. It is also important to note that new combined cycle combustion turbines must meet NSPS Subpart TTTT which has a limit of 1,000 lb CO_2/gross MWh. Most combined cycle combustion turbines can easily meet this limit, even while duct firing, because it is an annual average. It is unlikely that emissions of HAPs will result in the site being considered a major source for HAPs, as such NESHAP Subpart YYYY (for HAP emissions) should not be applicable. With an SCR, the estimated emissions rate for NO_x is 0.01 pounds per MMBtu ("lb/MMBtu"). It is anticipated that a CO catalyst will also be required to reduce CO emissions. This assessment assumes CO emissions will be controlled to 2 ppm CO at 15 percent O_2.

The use of an SCR and CO catalyst requires additional site infrastructure. An SCR system injects ammonia into the exhaust gas to absorb and react with NO_x molecules. This requires on-site ammonia storage and provisions for ammonia unloading and transfer. The costs associated with these requirements have been included in this assessment.

For all CCGT options, CO_2 emissions are estimated to be 120 lb/MMBtu.

Sulfur dioxide emissions are not controlled and are therefore a function of the sulfur content of the fuel burned in the gas turbines. Sulfur dioxide emissions of a CCGT plant are very low compared to coal technologies, and the emission rate of sulfur dioxide for a combined cycle unit is estimated to be less than 0.01 lb/MMBtu.

2.3.3 Operation & Maintenance Considerations

Similar to combustion turbines operating in simple cycle mode, combined cycle technologies utilize the same LTSA structure for long-term O&M with the addition of the STG as well (see Section 2.1.5).

2.4 Dual Fuel Operation

Due to a significant amount of coal-fired power plant retirements, there has been an increased interest in firm fuel supply for natural gas-fired resources. Coal-fired generation can stockpile a significant amount of fuel on-site, from 60 to 90 days in some cases. In the event of coal supply disruptions, the power plants would be able to effectively operate with minimal impact due to having sufficient fuel supply located on-site.

Very few natural gas-fired power plants have implemented on-site natural gas storage due to safety and economic factors. Rather, most natural gas power plants, especially peaking resources, operate on interruptible natural gas delivery service. Since peaking resources typically operate in the summer months when air conditioning load is high, natural gas supply is plentifully with few competing uses.

Conversely during the winter months, natural gas experiences higher demand due to residential and commercial heating in addition to more generation being provided by natural gas power plants year-round. Thus, natural gas power plants are experiencing increased competition securing natural gas supplies and deliveries, especially during extreme cold snaps when demand for both natural gas and electricity are high. Combined cycle units, which will likely operate both during summer and winter months, often will secure firm natural gas supplies and/or deliveries to ensure a minimum level of natural gas is supplied to the site. This requires reserving space within the pipeline, so delivery will not be interrupted during peak usages. This reservation can be a significant cost.

On-site fuel oil has been implemented across the U.S. in areas which have determined the need for robust on-site storage due to a variety of factors relating to reliability such as limited natural gas infrastructure in the area (i.e. the power plant is located at the end of the line) or the area is prone to hurricanes which can curtail natural gas availability.

All the technologies considered within this Assessment can utilize dual fuel operation, which is having the ability to operate using either natural gas or fuel oil (i.e. diesel fuel). Installing on-site fuel oil storage would provide firm fuel supply on-site. However, fuel oil operation comes at an increased cost. First, additional capital costs are required to 1) design the combustion turbines or reciprocating engines for dual fuel capability and 2) install additional infrastructure for unloading, storage, and handling of fuel oil. Secondly, the commodity cost of fuel oil is approximately four to five times that of natural gas.

Combustion turbine technologies can operate solely using natural gas or fuel oil. For reciprocating engines that are dual fuel capable, they require that a stream of fuel oil during all hours of operation (approximately one percent of the total heat input). This requires using some level of fuel oil for all operations.

The decision on fuel supply procurement is largely driven on a case-by-case basis for utilities depending on the resource utilization and surrounding infrastructure. Power plants which are located within a robust natural gas area, may elect to utilize interruptible service, especially if they project minimal hours of operation during the winter months. Large combined cycle units typically procure a minimum level of firm natural gas delivery. For most new power plants, fuel oil storage has typically been driven by the requirements for reliability issues and the need for firm on-site fuel supply.

For the Energy Master Plan, Burns & McDonnell and IPL intend to evaluate non-dual fuel, natural gas-fired only resources. If the Energy Master Plan indicates the installation of new natural gas-fired resources, an evaluation of natural gas procurement process and on-site storage would be conducted to determine the cost and benefits associated with firm fuel supplies.

2.5 Natural Gas-Fired Technologies Selected for Evaluation

Based on Burns & McDonnell's experience with planning and project execution, the following natural gas-fired resources were selected for further evaluation within this Assessment as the representative technologies in each class.

- Simple cycle gas turbine ("SCGT") technologies
  - 40-megawatt ("MW") LM6000 PF aeroderivative SCGT (brownfield installation at an IPL location)
  - 220-MW F-class frame SCGT (brownfield installation at an IPL location)
- Reciprocating internal combustion engine ("RICE" or "reciprocating engine") technology
  - 2 x 18-MW engine plant (brownfield installation at an IPL location)
  - 6 x 18-MW engine plant (brownfield installation at an IPL location)
- Combined cycle gas turbine ("CCGT") technologies
  - 1,000-MW 2x1 J-class with duct firing (greenfield installation, partial ownership considered)

3.0 RENEWABLE TECHNOLOGY OVERVIEW

The following section provides an overview and description of the renewable technologies considered within this Assessment including wind and solar generation resources.

3.1 Wind Energy General Description

Wind turbines convert the kinetic energy of wind into mechanical energy, and are typically used to pump water or generate electrical energy that is supplied to the grid. Wind turbine energy conversion is a mature technology and is generally grouped into two types of configurations:

- Vertical-axis wind turbines, with the axis of rotation perpendicular to the ground.
- Horizontal-axis wind turbines, with the axis of rotation parallel to the ground.

Over 95 percent of turbines over 100 kW are horizontal-axis. Subsystems for either configuration typically include blades or rotor to convert wind energy to rotational shaft energy; a drive train, usually including a gearbox and a generator; a tower that supports the rotor and drive train; and other equipment, including controls, electrical cables, ground support equipment and interconnection equipment.

Wind turbine capacity is directly related to wind speed and equipment size, particularly to the rotor/blade diameter. The power generated by a turbine is proportional to the cube of the prevailing wind speed, that is, if the wind speed doubles, the available power will increase by a factor of eight. Because of this relationship, proper siting of turbines at locations with the highest possible average wind speeds is vital. According to the Department of Energy's ("DOE") National Renewable Energy Laboratory ("NREL"), wind areas rated with a minimum average wind speed of 7 meters per second and above are generally considered to have suitable wind resources for wind generation development. Figure 3-1 presents the wind resources across the United States. As presented in Figure 3-1, the Midwest has excellent wind resources stretching from North Dakota through Texas. Much of the area that possess wind capable of justifying wind generation development is within the operation of the SPP, which is the integrated energy and transmission system IPL operates within. As such, IPL benefits from the wind generation in SPP.

Figure 3-1: U.S. Wind Resource Map

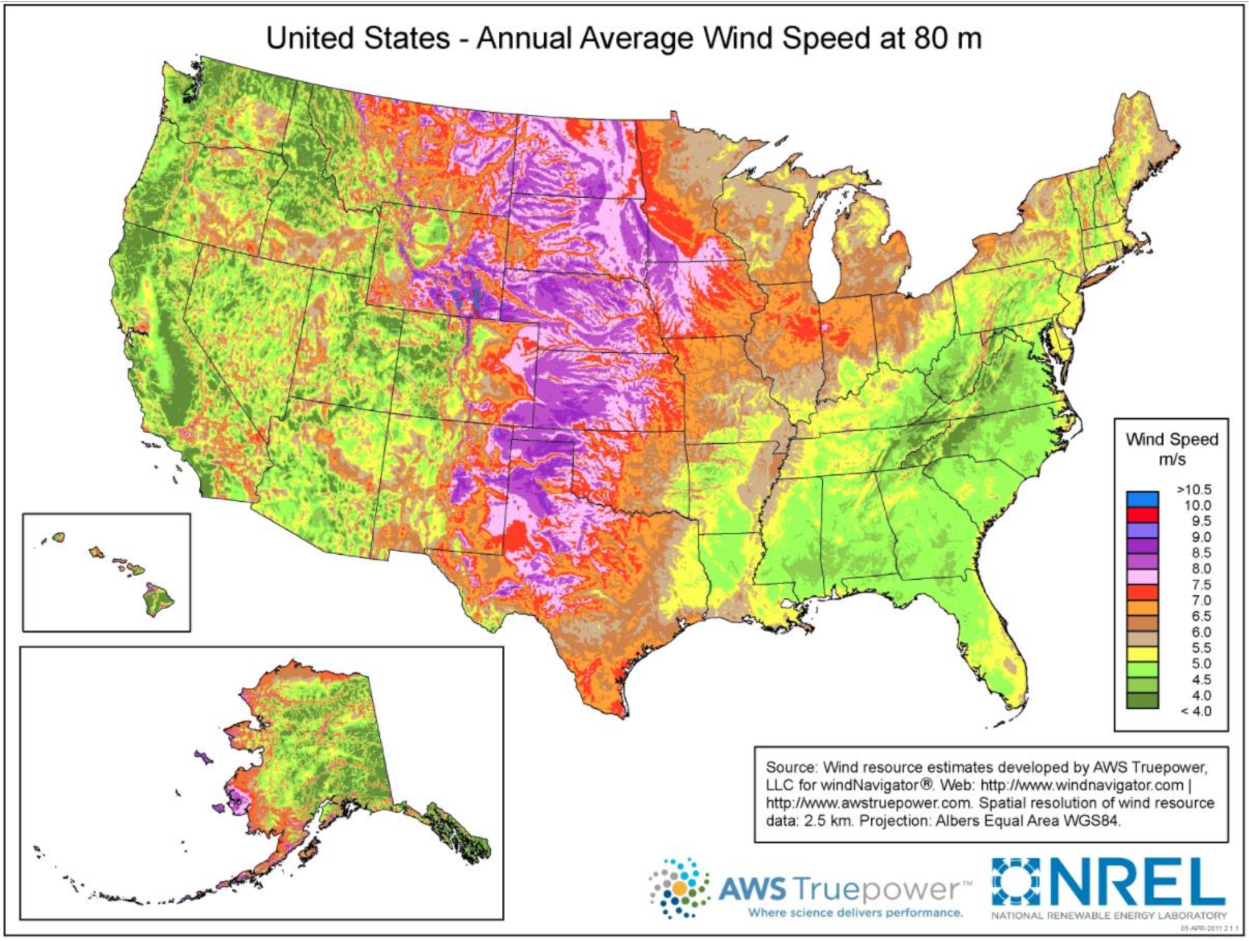
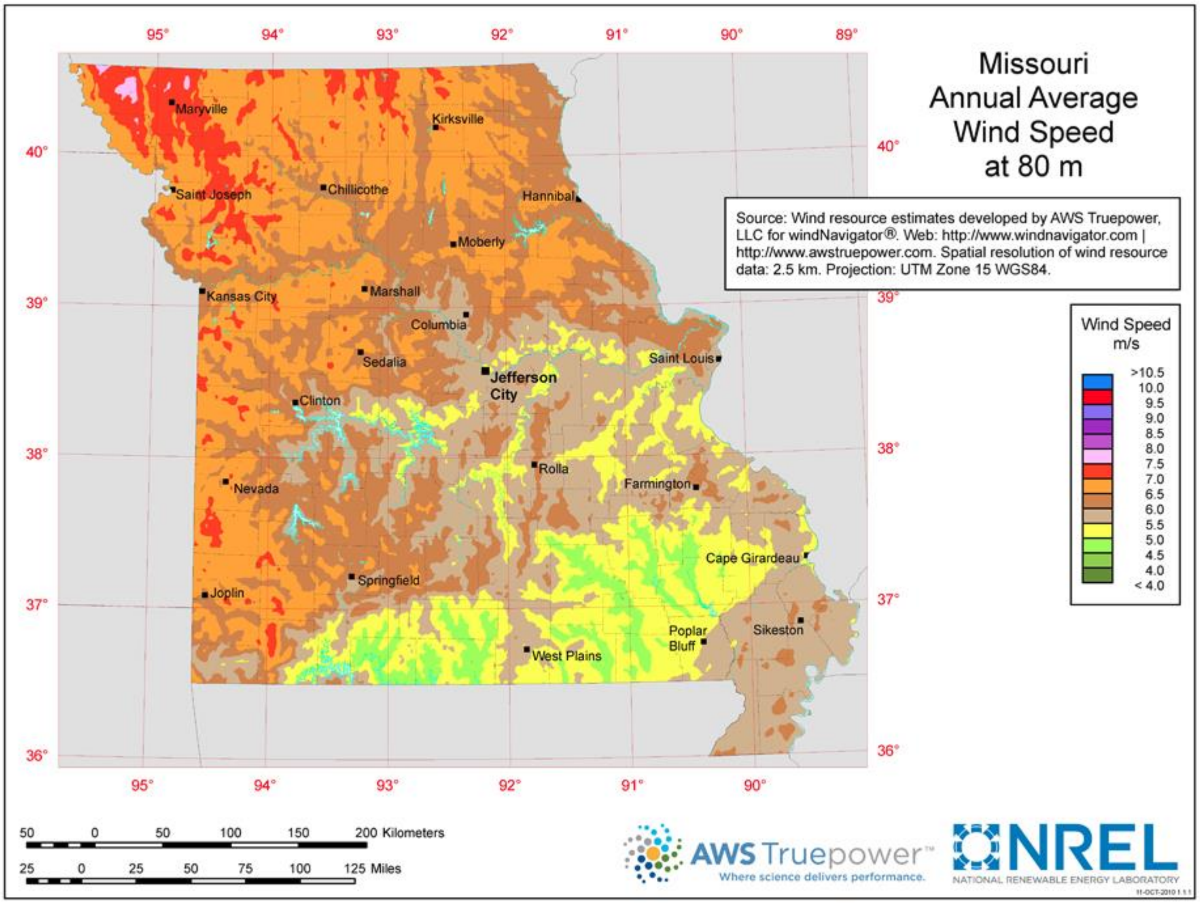


Figure 3-2 presents the wind resource map for the state of Missouri. As presented within Figure 3-2, the state of Missouri has limited wind resources when compared to other states in the Midwest. The best wind resources in the state of Missouri are in the northwestern part of the state. Jackson County, Missouri, and thus Independence, have limited wind resources for developing wind generation.

Figure 3-2: Missouri Wind Resource Map



The wind resources surrounding IPL do not have adequate average wind speeds to compete economically with other locations such as Kansas and Oklahoma. Furthermore, the economies of scale greatly reduce the overall energy cost from large wind farms (100 MW or greater for example) compared to smaller wind farms. A 100-MW wind farm will generally span across approximately 3,000 to 5,000 acres of land, which is typically located in rural areas. Currently, the industry has not co-located wind farms and residential, commercial, or industrial development due to a number of factors including safety, construction, and permitting. The wind development industry has several guidelines for the minimum distance in which other structures, such as homes, buildings, and roads, can be located within the proximity to wind turbines, for both safety reasons and aesthetics issues such as noise and flicker. Future development within the land inside of a wind farm for residential, commercial, or industrial development would be limited due to the typical setback guidelines. Lastly, tax incentives heavily incentivize a taxable entity to own the wind farm, with non-taxable entities (such as IPL) purchasing energy in the form of a power purchase agreement. Typically, municipal utilities, including IPL, have been able to more economically purchase wind energy from a remote, large wind farm located in regions with better average wind speeds compared to self-owning local wind generation.

IPL currently has contracts for wind generation. Due to 1) the tax incentives set forth by the Internal Revenue Service which incentivizes taxable entities to develop renewable generation and 2) the location of the more preferred wind resource areas outside of western Missouri, Burns & McDonnell eliminated local wind generation developed within or near IPL's footprint from further consideration in this Assessment. However, wind generation will be considered within the Energy Master Plan and economic evaluations through participation in power purchase agreements.

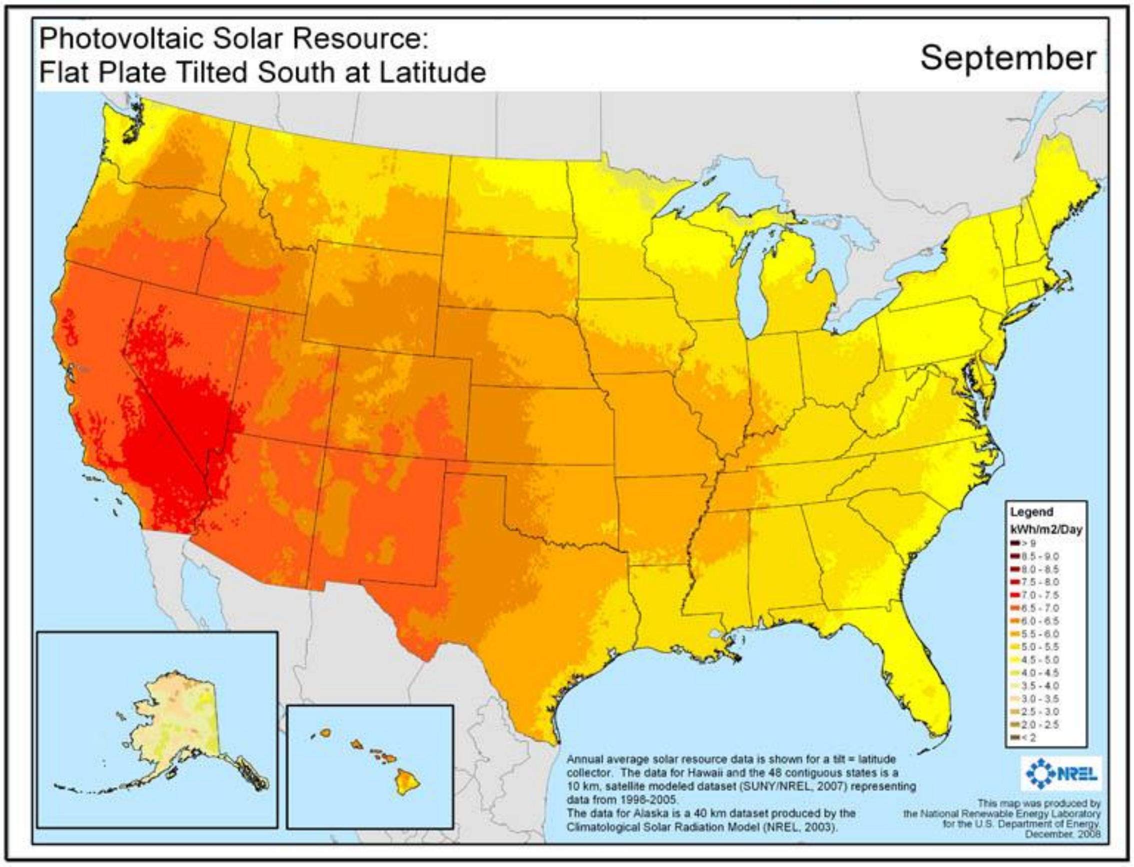
3.2 Solar Generation Technology General Description

The conversion of solar radiation to useful energy in the form of electricity is a mature concept with extensive commercial experience that is continually developing into a diverse mix of technological designs. One form of solar generation technology is solar thermal energy conversion. There are several subsets of solar thermal power systems, but the main types employ reflector systems to concentrate sunlight. These reflector systems focus the concentrated sunlight onto receivers that are often filled with fluid. In the receiver, the fluid temperature raises enough to be used in an energy-producing heat exchange process.

A more common form of solar generation technology is photovoltaic ("PV") electric generation. PV cells consist of a base material (most commonly silicon) which is manufactured into thin slices. The thin slices are layered with positively (i.e. Phosphorus) and negatively (i.e. Boron) charged materials. At the junction of these oppositely charged materials, a "depletion" layer forms. When sunlight strikes the cell, the separation of charged particles generates an electric field that forces current to flow from the negative material to the positive material. This flow of current is captured via wiring connected to an electrode array on one side of the cell and an aluminum back-plate on the other. Approximately 15 percent of the solar energy incident on the solar cell can be converted to electrical energy by a typical silicon solar cell. As the solar panels/cells age, the conversion efficiency, that is the amount of energy produced, degrades at a rate of 0.7 percent per year. At the end of a typical 30-year period, the conversion efficiency of the cell will still be approximately 80 percent of its initial efficiency.

Figure 3-3 presents the photovoltaic solar resources across the United States. As presented in Figure 3-3, the best solar resources are in the Southwest, where weather is less impacted by cloud cover.

Figure 3-3: Photovoltaic Solar Resources



Similar to wind resources, western Missouri does not possess the most abundant solar resources within the U.S., such as the southwestern region in California, Nevada, and Arizona. In general, wind generation is more economically than solar generation in the Midwest. IPL is currently completing construction on a community solar project which will bring IPL's total solar capacity to 11.5 MW, which will far exceed the Missouri requirements for solar energy. For these reasons, Burns & McDonnell eliminated local, IPL-owned solar generation from further consideration in this Assessment. However, solar generation will be considered within the Energy Master Plan and economic evaluations through participation in a power purchase agreement.

4.0 STORAGE TECHNOLOGY OVERVIEW

Energy storage systems are a form of generation that can be used to offset electrical peak loads through potential energy storage created during low (valley) energy usage times. Typical energy storage technologies available today that can provide large levels of capacity storage include pumped hydro and compressed air energy storage, and batteries. Thermal or ice storage systems can also be used on a smaller basis. For this Assessment, Burns & McDonnell evaluated several storage technologies that have been implemented within the utility industry including battery storage, pumped hydropower, and compressed air energy storage ("CAES"). The following provides a description of the storage technologies.

4.1 Battery Storage

The following section provides an overview and description of the battery storage technologies considered within this Assessment. This Assessment includes an option for a 15 MW / 60 MWh and 1 MW / 1 MWh battery storage solution, using lithium ion technology. When evaluating battery storage technologies, both capacity (i.e. MW) and energy (i.e. MWh) must be considered. For example, the 15 MW / 60 MWh battery can discharge no more than 15 MW at any instance. However, it is sized to provide 15 MW of output continuously for 4 hours. However, if it was discharged at 7.5 MW continuously, it could provide up to 8 hours of operation.

Appendix B provides the detailed cost and performance estimates for each of the technologies under consideration.

4.1.1 General Description

Electrochemical energy storage systems utilize chemical reactions within a battery cell to facilitate electron flow, converting electrical energy to chemical energy when charging and generating an electric current when discharged. Electrochemical technology is continually developing into one of the leading energy storage and load following technologies due to its modularity, ease of installation and operation, and relative design maturity. Development of electrochemical batteries has shifted into three categories, commonly termed "flow," "conventional," and "high temperature" battery designs. Each battery type has unique features yielding specific advantages compared to one another.

4.1.1.1 Flow Batteries

Flow batteries utilize an electrode cell stack with externally stored electrolyte material. The flow battery is comprised of positive and negative electrode cell stacks separated by a selectively permeable ion exchange membrane, in which the charge-inducing chemical reaction occurs, and liquid electrolyte storage tanks, which hold the stored energy until discharge is required. Various control and pumped circulation systems complete the flow battery system in which the cells can be stacked in series to achieve the desired voltage difference.

The battery is charged as the liquid electrolytes are pumped through the electrode cell stacks, which serve only as a catalyst and transport medium to the ion-inducing chemical reaction. The excess positive ions at the anode are allowed through the ion-selective membrane to maintain electroneutrality at the cathode, which experiences a buildup of negative ions. The charged electrolyte solution is circulated back to storage tanks until the process is allowed to repeat in reverse for discharge as necessary.

In addition to external electrolyte storage, flow batteries differ from traditional batteries in that energy conversion occurs as a direct result of the redox reactions occurring in the electrolyte solution itself. The electrode is not a component of the electrochemical fuel and does not participate in the chemical reaction. Therefore, the electrodes are not subject to the same deterioration that depletes electrical performance of traditional batteries, resulting in high cycling life of the flow battery. Continued research and design is being conducted to develop flow batteries that are scalable such that energy storage capacity is determined by the size of the electrolyte storage tanks, allowing the system to approach its theoretical energy density. However, this is not commercially viable currently. As development continues, many feel that flow batteries will be less capital intensive than some conventional batteries, but require additional installation and operation costs associated with balance of plant equipment.

4.1.1.2 Conventional Batteries

A conventional battery contains a cathodic and anodic electrode and an electrolyte sealed within a cell container than can be connected in series to increase overall facility storage and output. During charging, the electrolyte is ionized such that when discharged, a reduction-oxidation reaction occurs, which forces electrons to migrate from the anode to the cathode thereby generating electric current. Battery types are designated by the electrochemicals utilized within the cell, with the most popular conventional battery technologies being lead acid and lithium ion.

4.1.1.2.1 Lead Acid

Lead acid batteries are the most mature and commercially available battery technology, with approximately 35 MW installed worldwide. This design has undergone considerable development since conceptualized in the late 1800s. However, though lead acid batteries require relatively lower capital cost, the technology also has inherently high maintenance costs and handling issues associated with toxicity, as well as low energy density (meaning higher land and civil work is required for installation) and a short life cycle of between 5 and 10 years.

4.1.1.2.2 Lithium Ion

Lithium ion batteries contain graphite and metal-oxide electrodes and lithium ions dissolved within an organic electrolyte. The movement of lithium ions during cell charge and discharge generates current. Lithium ion technology has seen a resurgence of development interest due to its high energy density, low self-discharge, and cycling tolerance, but remains mostly developmental for utility generation applications. Life cycle is dependent on cycling (charging and discharging) and depth of charge (charged load depletion), ranging from 2,000 to 3,000 cycles at high discharge rates, and up to 7,000 cycles at very low discharge rates.

Lithium ion batteries are gaining traction in several markets, including the utility and automotive industries. For example, Tesla's Powerwall battery storage application utilizes the lithium ion battery technology. Lithium ion battery prices are trending downward, and continued development and investment by manufacturers are expected to further reduce production costs. While there is still a wide range of project cost expectations due to market uncertainty, lithium ion technologies are anticipated to expand their reach in the utility market sector.

4.1.1.3 High Temperature Batteries

High temperature batteries operate similarly to conventional batteries, but utilize molten salt electrodes. Salt electrodes also carry the added advantage that high temperature operation can yield heat for other applications simultaneously. The technology is considered mature with ongoing commercial development at the grid level, with the most popular and technically mature type being the Sodium Sulfur ("NaS") battery.

The NaS battery is typically a hermetically sealed cell consisting of a molten sulfur electrolyte at the cathode and molten sodium electrolyte at the anode, separated by a Beta-alumina ceramic membrane and enclosed in an aluminum casing. The membrane is selectively permeable only to positive sodium ions, which are created from the oxidation of sodium metal and pass through to combine with sulfur resulting in the formation of sodium polysulfides. As power is supplied to the battery in charging, the sodium ions are dissociated from the polysulfides and forced back through the membrane to re-form elemental sodium.

The melting points of sodium and sulfur are approximately 98^{o}C and 113^{o}C, respectively. To maintain the electrolytes as liquid and optimize performance, the NaS battery systems are typically operated and stored at around 300ºC, which results in a higher self-discharge rate of 14 percent to 18 percent. These systems are expected to have an operable life of around 15 years and are currently one of the most developed chemical energy storage systems. Japan-based NGK insulators, the largest NaS battery manufacturer, recently installed a 4 MW system in Presidio, Texas, in 2010 following operation of systems totaling more than 160 MW since the project's inception in the 1980s. Commercial development in utility level applications continues to progress, the costs of which have remained relatively stable in recent years compared to other technologies. However, these batteries have not gained significant traction within the industry due to their high cost resulting in poor economics compared to other alternatives.

4.1.1.4 Representative Battery Technology

While each of the battery technologies presented above has both advantages and disadvantages, the lithium ion battery was selected as the representative battery storage technology. Lithium ion systems can respond in seconds and exhibit excellent ramp rates and round-trip cycle efficiencies. Since the technology is still maturing, there is uncertainty regarding projections for cycle life, and these estimates vary greatly depending on the application and depth of discharge.

While all utility scale battery technologies are still developing, lithium ion batteries are the most mature of the battery storage alternatives. Both flow batteries and high temperature batteries are still under development to scale up to utility grade/size currently. If the Energy Master Plan indicates the installation of an energy storage system, further evaluation of the costs and benefits of the available technologies should be conducted as the technology is developing rapidly.

4.1.2 Battery Emissions Controls

No emission controls are required for a battery storage facility. Much of the battery equipment can be recycled at the end of the useful life of the facility, specifically for lithium ion batteries. However, currently recycling the batteries is more costly than new installations.

4.1.3 Battery Storage Performance

This Assessment includes performance of a 15 MW/60 MWh battery storage system and a 1 MW/1 MWh battery storage system, based on lithium ion batteries. The systems in this Assessment are assumed to perform one full cycle per day.

Generating Availability Data System ("GADS") performance statistics do not cover battery storage applications, so the availability was estimated based on Burns & McDonnell experience and research.

4.1.4 Battery Storage Cost Estimate

The estimated costs of the lithium ion battery systems are included in Appendix B, based on Burns & McDonnell experience and industry research. The key cost elements of a battery system are the inverter, battery cells, interconnection, and installation. It is assumed that the system will be co-located with an existing asset. It is also assumed that the system will operate at 480V and with a step-up transformer to connect at a distribution voltage.

Battery storage capital costs include current estimates for 2018 battery prices. Rapid development of battery technology should be considered when evaluating price impacts for future installations. Recent pricing indicates that lithium ion battery prices are dropping on average approximately three percent per year for the next several years.

4.1.5 Battery Storage O&M Cost Estimate

O&M estimates for the lithium ion battery system are shown in Appendix B, based on Burns & McDonnell experience and industry research. The battery storage system is assumed to be operated remotely. The fixed O&M costs assume that the end user enters into a full-service contract with the OEMs that covers routine and unplanned maintenance. It includes an allowance for routine maintenance costs and administrative costs such as computers and software licenses. The technical life of a battery project is expected to be 10 to 15 years, while battery cells may need to be replaced every 5 to 10 years. The system is over-designed by 10 percent to account for degradation and limited battery failures, but additional replacement costs for batteries are not included.

4.2 Compressed Air Energy Storage (CAES) System

The following section provides an overview and description of compressed air energy storage technologies considered within this Assessment.

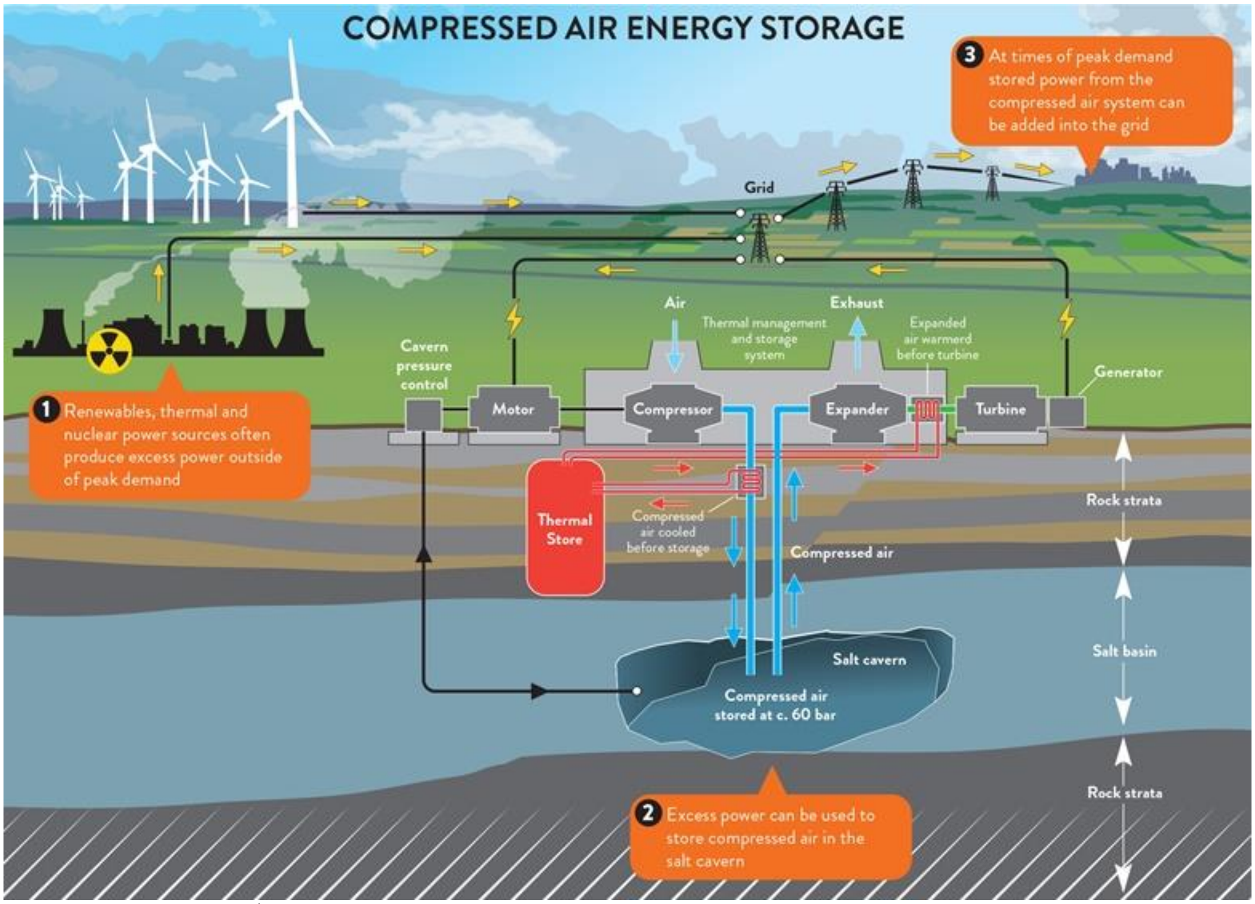
4.2.1 Technology Description

CAES systems are currently being evaluated by the electric industry as a means to provide power during on-peak hours, utilizing off-peak resources (such as wind energy) to compress air which is then stored in a reservoir for use later.

Several arrangements of CAES systems that have been studied, and even though CAES is considered a mature and developed technology, only two facilities have been built in the world. There are two primary reasons why only two systems have been constructed, geologic formations and economics. First, a suitable location must have adequate formations that meet the requirements for CAES applications. This significantly limits the viability of this technology based on location. Secondly, the high cost of the technology has limited its application since the price difference between daily on-peak and off-peak energy must be large enough to provide positive cash flow after paying for the installation and operation of the CAES unit.

Figure 4-1 presents on illustration of a compressed air energy storage system.

Figure 4-1: Illustration of Compressed Air Energy Storage



See footnote for reference[4]

Only two CAES units are operating worldwide which are located in McIntosh, Alabama (110 MW built in 1991), and the other located in Huntorf, Germany (290 MW built in 1978). Both facilities utilize the air in a diabatic process, replacing the compressor stage of a standard combustion turbine which consumes two-thirds (or 67 percent) of the turbine capacity. Essentially, this replacement of the compressor section both reduces natural gas consumption for compression and overall plant emissions

[4] Parker, D. (2018, June 6). *Going Underground: Compressed Air Energy Storage*, New Civil Engineer, Retrieved from https://www.newcivilengineer.com/

requiring a minimum compressed air pressure of approximately 500 psig. Burns & McDonnell developed the only CAES system in operation in the U.S. The storage cavern for the Alabama facility used a sluiced salt dome that is nearly one-half mile deep and at full charge has a pressure of 1,100 psig.[5]

The compressed air can be stored in several types of reservoirs including underground porous rock formations, depleted natural gas/oil fields, and caverns in salt or rock formations. Underground formations utilize a combination of the depth and shear strength of the overburden material to meet adequate pressure requirements. Compressed air can also be stored in above ground (or "near surface") high pressure pipelines, but previous studies have found these storage options to be up to five (5) times more expensive than underground systems, due to their limited capacity (typically 2 to 4 hours) and additional infrastructure required. There are ongoing studies being performed to develop viable man-made storage options, but these have not yet become economically viable.

The Kansas City metropolitan area where IPL is located includes an extensive network of limestone mines, seemingly offering a potential for underground storage.[6] But these mines are not suitable for compressed air storage due to several reasons including the following:

- Most limestone mines in the Kansas City area have less than 200 feet of overburden material. At 200 feet, the overburden stress potential is approximately 160 to 200 psig, meaning the local mines cannot safely maintain the required air pressure of 500 psig to serve a CAES application based on overburden alone.
- In addition to the depth, mines and caverns can provide shear strength to safely maintain the required air pressure. However, the local Kansas City mines are horizontal and do not present sufficient shear strength. Due to the size and horizontal configuration of the mines, the air pressure would likely be applied over a relatively large area, leading to the overburden material shear strength being less effective than a deep and narrow formation like the Alabama facility. Consider a pressure vessel – it is designed to withstand the internal pressure partly based on material strength and partly based on shape. At some point, the shear strength of the overlying soil and rock can be overcome by the applied pressure. The risk of overpressure is increased if the area over which it is applied is sufficiently large compared to the shear strength of the resisting materials. In the case of a horizonal mine, the mine "shape" (horizontal) is not advantageous for providing adequate shear strength.

[5] PowerSouth Energy Cooperative. *Compressed Air Energy Storage*. Retrieved from http://www.powersouth.com/wp-content/uploads/2017/07/CAES-Brochure-FINAL.pdf
[6] Montgomery, R. *KC should be known as the City of Caves, here's why*. Kansas City Star (2017, September 21). Retrieved from http://www.kansascity.com/

- The local Kanas City mines have not been designed to contain fluids (whether liquid or gaseous), particularly air under pressure.
- The local Kanas City mines have not been designed to accommodate cyclical (fluid) pressure changes, which would occur daily with a CAES system.

There are “deep” mines (approximately 800-feet deep of overburden) in the Kansas City area, but these mines are currently in use for active mining activities and thus are not available for storage.

Since storage of compressed air is not viable in the geological formations in the Kansas City area due to the geological deficiencies, the high cost of the technology, and the lack of working examples from which to draw upon, CAES has been eliminated from further consideration within this Assessment.

4.3 Pumped Hydropower Storage

Similar to CAES, the hydropower pumped storage system requires suitable geology before the system can be economically applied. Pumped hydropower storage systems require large upper reservoirs to provide potential energy that can be converted into kinetic energy as the water flows through a hydro-electric turbine generator. An equivalent lower reservoir is needed to receive the water for later pumping back to the upper reservoir.

According to the Department of Energy’s Energy Information Administration (“EIA”) there are 40 pumped storage plants operating in the United States.[7] Figure 4-2 presents a map developed by the EIA that illustrates the locations of the pumped hydroelectric storage facilities across the U.S. Figure 4-3 presents an illustration of a pumped hydropower storage system.

[7] *Pumped storage provides grid reliability even with net generation loss*. U.S. Energy Information Administration (2013, July 8). Retrieved from https://www.eia.gov/.

Figure 4-2: Map of Pumped Hydropower Storage Facilities

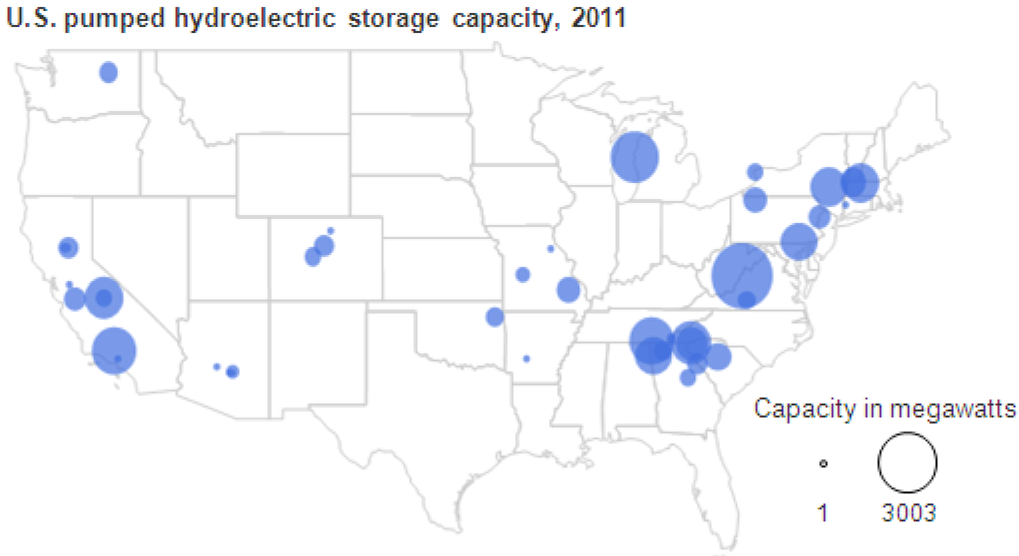
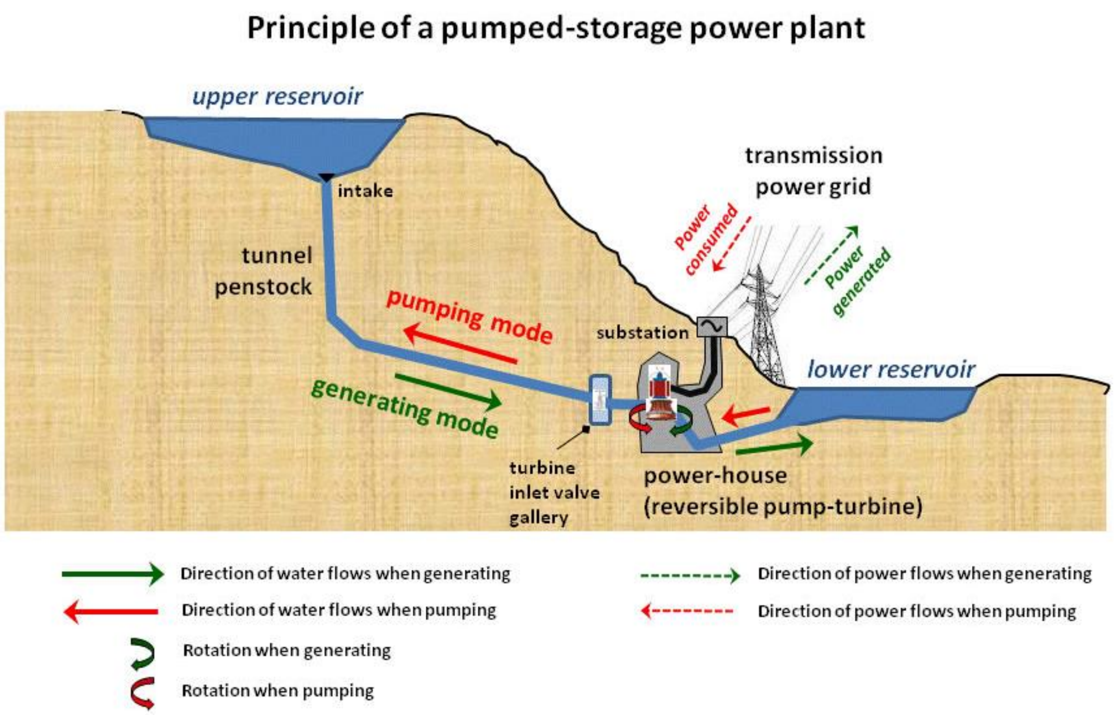


Figure 4-3: Illustration of Pumped Hydropower Storage System



See footnote for reference[8]

Hydropower pumped storage utilizes an upper and lower reservoir to store water used for generation during peak demand times. When the price for energy is low, a pumped storage facility stores energy by

[8] *What is pumped hydroelectric storage?* Our World of Energy (2018, April 23). Retrieved from https://www.ourworldofenergy.com/

pumping water from a lower reservoir to an upper reservoir. During times of peak demand or high market price, the stored water is released back into the lower reservoir to produce electricity. The DOE defines large hydropower facilities as those with capacity of greater than 30 MW. A large storage reservoir, would require significant amounts of space near a suitable water resource. Similar to CAES, pumped hydropower storage requires significant price differences between daily on-peak and off-peak energy prices in order to provide positive cash flows.

According to the EIA "pumped storage is a long-proven storage technology, however, the facilities are very expensive to build, may have controversial environmental impacts, have extensive permitting procedures, and require sites with specific topologic and/or geologic characteristics. As estimated in a report commissioned by EIA, the overnight cost to construct a pumped hydroelectric plant is about \$5,600/kW, higher than the \$3,100/kW for a conventional hydroelectric plant. A conventional natural gas combustion turbine, which might be used to supply the peak daytime power added by the pumped storage plant, is \$1,000/kW, though hydroelectric operating costs are much lower than those of a combustion turbine."[9]

Missouri has three pumped storage facilities consisting of Taum Sauk owned by AmerenUE, and Clarence Cannon and Harry S. Truman both owned by the U.S. Army Corps of Engineers. The largest of these facilities is the Taum Sauk Hydroelectric Power Station located in St. Francois Mountains, about 90 miles southwest of St. Louis. The plant is 450 MW and was reconstructed in 2007 after a catastrophic failure stemming from design and construction flaws.[10] Taum Sauk has an elevation difference of over 700 feet between the upper and lower reservoirs. Clarence Cannon, built in 1984, is in located in northeast Missouri (associated with the dam of Mark Twain Lake) and has an output of 31 MW. Harry S. Truman is part of the Harry S. Truman Reservoir located in mid-central Missouri and has a total of 6 units with a combined output of 184 MW which became operational from 1979 through 1982. Each of these installations in Missouri either have very large elevation differences or very large reservoirs in order to provide adequate capacity and energy.

The DOE has reported that the expansion of the United States hydropower fleet has slowed from previous years and retrofitting and additions at existing facilities is one of the few areas where growth is occurring. Since pumped hydropower storage can have massive environmental implications and risks, require large construction funds, and is heavily dependent on optimal geographical features such as large rivers and

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[9] *Electricity storage: Location, location, location … and cost*. U.S. Energy Information Administration (2012, June 29). Retrieved from https://www.eia.gov/

[10] Keller, R. *Taum Sauk levee breaks*. (2005, December 15). Southeast Missourian. Retrieved from https://www.semissourian.com/

topography with large elevation differences, it is not considered a viable energy storage technology for IPL and was eliminated from further consideration within this Assessment.

5.0 STUDY BASIS AND ASSUMPTIONS

5.1 Scope Basis and Assumptions Matrix

Scope and economic assumptions used in developing the Study are presented in Appendix A.

5.2 General Assumptions

The assumptions below were used in the overall approach of the Assessment:

- All estimates are screening-level in nature, do not reflect guaranteed costs, and are not intended for budgetary purposes. Estimates concentrate on differential values between options and not absolute value.
- All information is preliminary and should not be used for construction purposes.
- All capital cost and O&M estimates are stated in 2018 US dollars (USD). Escalation is excluded. [Note: escalation will be added within the power supply analysis efforts.]
- Estimates assume an Engineering-Procurement-Construction (“EPC”) Lump Sum philosophy for project execution.
- Greenfield options assume a generic site with no existing structures or underground utilities and with sufficient area to receive, assemble and temporarily store construction material. [Note: options under consideration at existing IPL facilities were adjusted accordingly.]
- The site is assumed to be flat, with minimal rock and with soils suitable for spread footings, with piling included under heavily loaded foundations.
- Technologies were evaluated based on TMY3 weather data at the following conditions:
    - Average annual conditions (58.4°F and 69.1 percent relative humidity (RH))
    - Summer average conditions (81.0°F and 65.8 percent RH)
    - Winter average conditions (38.2°F and 71.3 percent RH)
- Site elevation of 1,000 ft.
- For the purposes of this Assessment, all performance estimates assume new and clean equipment and do not include operating degradation. The economic modeling conducted later within the Energy Master Plan will assume degradation.
- All options assume single fuel units running on natural gas (unless otherwise noted).
- It is assumed that pipeline natural gas is available to the brownfield site. Natural gas pipeline costs outside the site boundary are not included for existing IPL sites (i.e. brownfield). For greenfield sites, an allowance has been included for five miles of natural gas pipeline to site.

- Fuel gas compression is not required for RICE (lower pressure requirements) and CCGT (would be located on high pressure pipelines) technologies. It is assumed to be required for brownfield SCGT options since IPL's existing sites do not have high pressure delivery capability.
- Fuel and power consumed during construction, startup, and/or testing are included.
- Water is assumed to be sourced from the city of Independence water supply.
- Wastewater is assumed to be delivered to site boundary. Wastewater treatment facilities are excluded.
- Demolition or removal of hazardous materials is not included.
- Emissions estimates are based on a preliminary review of BACT requirements and provide a basis for the assumed air pollution control equipment included in the capital and O&M costs.
- Emissions are estimated at base load operation at annual average conditions.
- As noted above, for alternatives that require demolition, those costs are excluded within this Assessment. An allowance for off-site support infrastructure has been included as appropriate.

6.0 CONCLUSIONS

This technology assessment provides information to support IPL's power supply planning efforts for further evaluation within the economic modeling efforts within the Energy Master Plan. Information provided in this assessment is preliminary in nature and is intended to highlight indicative, differential costs associated between each technology. Prior to final selection of technologies, design, and construction of any alternatives, IPL should pursue additional engineering studies to define project scope, budget, and timeline for specific technologies of interest.

These alternatives will be further evaluated within the Energy Master Plan for their ability to compliment or replace existing resources within IPL's power supply portfolio, both from a technical ability and economic evaluation. A brief highlight of the advantages and disadvantages of the technologies is presented in Table 6-1.

Table 6-1: Summary of Technologies

Technology	Advantages	Disadvantages
Gas-Fired Resources		
Aeroderivative	• Flexible operation (ability to quickly turn-on/off in response to market signals) • More efficient than large frame units • Ability for on-system installation	• High fuel gas pressure • Higher capital cost compared to other peaking resources on $/kW basis
F-Class	• Lowest cost peaking resource on a $/kW basis • Flexible compared to CCGT, but slightly less than Aeroderivative and reciprocating engines • Ability for on-system installation	• High fuel gas pressure • Large capacity on a single shaft • Less flexible compared to aeroderivatives and reciprocating engines • Higher heat rate compared to aeroderivative turbines
Reciprocating Engines	• Most flexible gas-fired resource (ability to quickly turn-on/off in response to market signals) • Low fuel gas pressure • Shaft diversification (9-18MW)[11] • Ability for on-system installation	• Higher capital cost compared to F-Class or CCGT technology on a $/kW basis
CCGT	• Most efficient gas-fired technology • Lower capital cost due to economies of scale on a $/kW basis	• Lacks flexibility compared to other gas-fired technologies • Must be one of potentially several pseudo-owners of a large unit • Most likely located off-system

[11] Shaft diversification provides a utility the opportunity for increased reliability since it would have the ability to utilize multiple engines providing the same level of capacity and generation, as opposed to having all of the energy sourced from a single engine.

Technology	Advantages	Disadvantages
Renewables		
Local Wind (Jackson County, Missouri)	• Reduced transmission congestion	• No Production Tax Credit or Interconnection Tax Credit (need taxable partner) • Uneconomical compared to resources available in nearby regions • Wind farms cannot be easily integrated into residential, commercial, or industrial areas
Regional Wind (Kansas, Oklahoma)	• Economically justifiable • Production Tax Credit through PPA • Large wind farms reduce the overall cost of the technology	• IPL is not the operator of the wind farms • Potential congestion costs
Local Solar	• Increased to renewable energy production for utility portfolio	• Lack of solar resource availability in Midwest • Higher cost of energy compared to regional wind
Storage		
Flow Battery	• Scalable technology in development • Higher cycling life compared to conventional batteries • Offsets electric peak loads	• Technology is not entirely mature currently • Required operation of ancillary equipment
Conventional Battery (Lead Acid and Lithium Ion)	• Low capital costs • Responsive to changes in grid demand • Offsets electric peak loads	• Life is dependent on cycling and discharge rates, potentially 5 to 10 years for high cycling utilization • High maintenance cost • Materials used are associated with being high toxicity
High Temperature	• High discharge rates • Life expected to be around 15 years • Offsets electric peak loads	• Energy requirement to maintain liquid electrolytes • Technology is still being developed for utility level applications • Uneconomically compared to other storage technologies
Pumped Hydro	• Large reservoir of storage energy • Offsets electric peak loads	• Geology required for water storage • Environmental impacts to surrounding areas • High capital costs
Compressed Air Energy Storage (“CAES”)	• Large reservoir of storage energy • Offsets electric peak loads	• Specific geology required for compressed air storage (not ideal for limestone mines) • High capital costs

APPENDIX A – SCOPE MATRIX

INDEPENDENCE POWER & LIGHT GENERIC UNIT ASSUMPTIONS

	Simple Cycle	Battery Storage	Reciprocating Engines	Combined Cycle
Project Description				
Plant Size(s):	1 x LM6000 PF (Without SCR)	Lithium Ion (15 MW / 60 MWh)	2 x 18MW Engines	2 x 1 7HA.02 with Duct Firing (SPP Build)
	1 x 7FA.05 (Without SCR)	Lithium Ion (1 MW / 1 MWh)	6 x 18MW Engines	1 x 1 7HA.02 with Duct Firing (SPP Build)
Fuel:	Natural Gas	N/A	Natural Gas	Natural Gas
Project Location:	Independence, Missouri			
Contract Philosophy:	EPC			
Project COD:	2018$			
Labor Type:	Union			
Labor Incentives:	50 hrs / week & $80 per day per diem			
Site Description:	Brownfield	Brownfield	Brownfield	Greenfield
Scope Basis / Assumptions:				
Redundancy:	Reflective of typical utility service. Redundant installed components (2 x 100%, 3 x 50%) where component failure could cause outage of the plant. No spare GSU. 2 x 50% boiler feed pumps and ID/FD/ PA fans			
Site Condition:	Flat, minimal rock, Deep foundations (auger cast piles) for major equipment and structures, shallow foundations for lighted loaded equipment and structures. No dewatering considered.			
Site Elevation:	1,000 ft above sea level			
Site Average Ambient Conditions:	58.4°F, 69.1%			
Site Summer Average Ambient Conditions:	81.0°F, 65.8%			
Site Winter Average Ambient Conditions:	38.2°F, 71.3%			
Water Supply:	Existing water supply on site is sufficient.			Water supply is available at site boundary from city water supply; pipeline/interconnect cost provided as $/mile.
Waste Water Disposal:	Existing, not included			Discharge offsite, piping beyond site boundary provided as $/mile.
Performance Basis				
Steam Design Pressure:	N/A	N/A	N/A	2400 Psia (Subcritical)
Steam Design Temperature:	N/A	N/A	N/A	1050 F/ 1050F
Inlet cooling	Evaporative cooler	N/A	N/A	Evaporative Cooler
Heat Rejection Design:	Fin Fan Heat Exchanger	N/A	Fin Fan Heat Exchanger	Air Cooled Condenser
Availability Metrics	GADS data for EFOR, EPOR, EAF, as applicable.			
Fuel, Sorbent, and Ash Landfill				
Design Fuel:	Natural Gas	N/A	Natural Gas	Natural Gas
Back-up Fuel:	N/A	N/A	N/A	N/A
Start-up Fuel:	Natural Gas	N/A	Natural Gas	Natural Gas
Fuel for Duct Burners:	N/A	N/A	N/A	N/A
Fuel Oil Delivery and unloading:	N/A	N/A	N/A	N/A
Fuel Oil Storage:	N/A	N/A	N/A	N/A
Ammonia:	N/A	N/A	Urea delivered by truck	19% Aqueous Ammonia delivered by truck
Gas Compression	Included	N/A	Existing supply sufficient	Interstate pipeline pressure sufficient
Enclosures:				
Gas Turbine or Engine:	Indoor	Batteries installed/shipped in conditioned containers	Indoor in common engine hall	Indoor
Steam Turbine:	N/A	N/A	N/A	Indoor
Boiler or HRSG:	N/A	N/A	N/A	Indoor
Buildings:				
Administration Building	Existing	N/A	Existing	Included
Warehouse	Existing	N/A	Existing	Included
Maintenance	Existing	N/A	Existing	Included
Misc. Equipment Enclosures	Minimal included for electrical, CEMS, etc.			
Emissions and Emissions Controls*				
NOx Control:	LM6000 PF: DLN without SCR 7FA.05: 15 ppm machine, DLN without SCR	N/A	SCR	SCR
CO Control:	LM6000 PF: Good Combustion Practice 7FA.05: Good Combustion Practice	N/A	CO Catalyst	CO Catalyst
SO_2 Control:	Low Sulfur Fuel (US gas pipeline quality)	N/A	Low Sulfur Fuel (US gas pipeline quality)	Low Sulfur Fuel (US gas pipeline quality)

INDEPENDENCE POWER & LIGHT GENERIC UNIT ASSUMPTIONS

	Simple Cycle	Battery Storage	Reciprocating Engines	Combined Cycle
PM10 Control (filterable & condensable particulate):	N/A	N/A	N/A	N/A
VOC Control:	LM6000 PF: Good Combustion Practice 7FA.05: Good Combustion Practice	N/A	CO Catalyst	CO Catalyst
Transmission/Interconnection:				
Switchyard:	Allowance for Switchyard modification			Included with position for generators & 2 outgoing lines.
Transmission:	Existing			Provided as a $/mile cost.
Transmission Interconnect:	Existing			Allowance included
Interconnection Voltage:	69 kV	69 kV	69 kV	345 kV
Coal Receipt:				
Receiving System:	N/A			
Rail Siding to Site:	N/A			
Miscellaneous Equipment:				
Fire protection:	New Fire Pump and Emergency Diesel Backup for dedicated onsite storage	N/A	New Fire Pump and Emergency Diesel Backup for dedicated onsite storage	New Fire Pump and Emergency Diesel Backup for dedicated onsite storage
Emergency Generator:	New Diesel Generator	N/A	New Diesel Generator	New Diesel Generator
Auxiliary Boiler:	N/A			Included
Black Start:	Excluded	N/A	Excluded	Excluded
Bypass Dampers	N/A	N/A	N/A	Excluded
Miscellaneous Contract Costs:				
Startup Spare Parts:	Allowance Included			
Construction Indirects:	Construction Mgmt, Engineering, Performance testing and start-up, initial fills and consumables, startup, surveys, and site security Included			
Performance Bonds:	Included			
Indirect / Owner's Indirect Costs:				
Project Development	Allowance Included			
Owner Operations Personnel Prior to COD	Allowance Included			
Owner's Project Management	Allowance Included			
Owner Engineering	N/A			
Owner Legal Council	Allowance Included			
Operator Training	Allowance Included			
Permitting & License Fees	Allowance Included			
Land	Excluded			Allowance included
Water Supply to Site	Excluded			$/mile provided
Natural Gas Supply to Site	Excluded			$/mile provided
Onsite Switchyard	Existing, not included			345 kV Breaker and Half Included
Transmission Interconnection	Excluded			$/mile provided
Labor Camp	Assumed to not be required. Plant has local towns/ housing			
Construction Power	Allowance Included			
Fuel Consumed during Commissioning	Allowance Included, as applicable			
Power generated & sold during commissioning	Allowance Included			
Initial Fuel Inventory	Allowance Included, as applicable			
Builder's Risk Insurance	Allowance Included			
Operating Spare Parts	Allowance Included for critical equipment only & minor parts, as applicable. No spare GSU included.			
Workshop Tools & Test Equipment	Existing, not included			Allowance Included, as applicable
Warehouse Shelves	Existing, not included			Allowance Included, as applicable
Mobile Equipment, Vehicles	Existing, not included			Allowance Included, as applicable
Laboratory Equipment & Furniture	Existing, not included			Allowance Included, as applicable
Kitchen Furniture	Existing, not included			Allowance Included, as applicable
Locker Room Furniture	Existing, not included			Allowance Included, as applicable
Building Furniture	Existing, not included			Allowance Included, as applicable
Owner's Contingency:	Included @ 5% of Total Project Cost and 5% of Owner's Costs to reflect anticipated spent contingency for screening purposes. Additional contingency is recommended for budgetary estimate.			
Financing Fees	Excluded (Included in Economic Model)			
Interest During Construction	Excluded (Included in Economic Model)			
Sales Tax:	Excluded			

INDEPENDENCE POWER & LIGHT COST ASSUMPTIONS

	Simple Cycle - Aero	Simple Cycle - Frame	Reciprocating Engines	Combined Cycle	Battery Storage
General					
Staffing:					
Number of Personnel (1st Unit):	Existing Staff	Existing Staff	Existing Staff	1x1 or 2x1: 25	0
Number of Personnel (Incremental Units):	Existing Staff	Existing Staff	Existing Staff	5	N/A
Labor Cost:	$120,000 per person per year (all in including burdens, benefits, bonuses, and overtime.)				
Operating Hours Considered:	10%	10%	10%	40%	N/A
Start-up / Standby Power Demand Costs:	Excluded.				
Standby Power:	Included For Non-Operating Hours				
Standby Power Cost:	$30/MWh				
Property Insurance:	Excluded				
Property Tax:	Excluded				
Maintenance Considerations					
Gas Turbine / Engine Maintenance Basis	LTSA w/ OEM (no lease agreement)	LTSA w/ OEM	LTSA w/ OEM	LTSA w/ OEM	N/A
Service Director Included:	No	Yes	No	Yes	N/A
Engine Lease Agreement Included (Engine Swap)	No	N/A	N/A	N/A	N/A
SCR Replacements:	N/A	N/A	Allowance Included for 5 year life.	Allowance Included for 5 year life.	N/A
Maintenance Mobile Equipment:	Annual Allowance Included Based Upon Partial Ownership / Partial Rental	Annual Allowance Included Based Upon Partial Ownership / Partial Rental	Per LTSA	Annual Allowance Included Based Upon Partial Ownership / Partial Rental	N/A
Fuel / Ash Handling Mobile Equipment:	N/A	N/A	N/A	N/A	N/A
Scope Basis / Assumptions					
Water Supply Demand Cost:	Excluded				
Water Supply Cost:	$2.14 / kgal				
Water Quality Assumptions:	Suitable for use in evaporative coolers / cooling towers with 4 cycles and without any pretreatment. Standard chemical treatment for corrosion / biological growth only.				
Demineralizer System	Rental Portable Demin Trailers	Rental Portable Demin Trailers	N/A	Permanent On-Site RO w/ Mixed Bed Polisher	N/A
Water Discharge Treatment:	Neutralize Only for Off-Site Discharge, as applicable				
Water Discharge Demand Cost:	None				
Water Discharge Cost:	None				
Fuel, Sorbent, and Ash Landfill					
SO2 Control:	N/A	N/A	N/A	N/A	N/A
Limestone Costs:	N/A	N/A	N/A	N/A	N/A
Lime Costs:	N/A	N/A	N/A	N/A	N/A
NOx Control:	DLN for Natural Gas	DLN for Natural Gas	SCR	DLN and SCR	N/A
Ammonia Type:	N/A	N/A	Urea	Aqueous	N/A
Ammonia Costs:	N/A	N/A	Usage Factor Provided	Usage Factor Provided	N/A
Mercury Sorbent Type:	N/A	N/A	N/A	N/A	N/A
Mercury Sorbent Cost:	N/A	N/A	N/A	N/A	N/A
CO2 Control	N/A	N/A	N/A	N/A	N/A
Fly Ash Disposal:	N/A	N/A	N/A	N/A	N/A
Bottom Ash / Slag Disposal:	N/A	N/A	N/A	N/A	N/A
Scrubber Sludge / Sulfur Byproduct Disposal:	N/A	N/A	N/A	N/A	N/A
Fly Ash Disposal:	N/A	N/A	N/A	N/A	N/A
On-Site Landfill Cost:	N/A	N/A	N/A	N/A	N/A
Emissions and Emissions Controls					
NOx Emissions Allowance Costs:	Not Included				
SOx Emissions Allowance Costs:	Not Included				
Mercury Emissions Allowance Costs:	Not Included				
Carbon Dioxide Emissions Allowance Costs / Tax:	Not Included				

APPENDIX B – COST & PERFORMANCE TABLES

INDEPENDENCE POWER & LIGHT 2018 GENERATION TECHNOLOGY ASSESSMENT SUMMARY TABLE
SIMPLE CYCLE/RECIPROCATING ENGINE TECHNOLOGY ASSESSMENT PROJECT OPTIONS
NOT FOR CONSTRUCTION

PROJECT TYPE	Aeroderivative SCGT - Natural Gas	1x F Class SCGT - Natural Gas	Reciprocating Engine (18MW Engines)	
BASE PLANT DESCRIPTION				
Number of Gas Turbines/Engines/Units	1	1	2	6
Representative Class Gas Turbine	GE LM6000 PF	GE 7F.05	Wartsila 18V50SG	
Capacity Factor (%)	Peaking (10%)	Peaking (10%)	Peaking (10%)	
Startup Time to Maximum Load (Notes 1, 2)	10 min	11 min (fast start) / 21 min (conventional)	7 min	
Startup Time to MECL (Note 3)	8 min	8 min (fast start) / 14 min (conventional)	4 min	
Minimum Turndown Load	50%	43%	25% (of a single unit)	
Maximum Ramp Rate	50 MW/min	40 MW/min	~10 MW/min	
Forced Outage Factor (%) (Notes 4, 12)	3.8%	0.7%	1.6%	
Equivalent Forced Outage Rate (%) (Notes 4, 12)	25.9%	5.8%	5.4%	
Availability Factor (%) (Notes 4, 12)	90.6%	93.8%	95.3%	
Fuel Design	Natural Gas	Natural Gas	Natural Gas	
Heat Rejection	Fin Fan Heat Exchanger	Fin Fan Heat Exchanger	Fin Fan Heat Exchanger	
NO_x Control	DLN Combustors	DLN Combustors	SCR	
CO Control	Good Combustion Practice	Good Combustion Practice	Oxidation Catalyst	
Particulate Control	Good Combustion Practice	Good Combustion Practice	Good Combustion Practice	
Technology Rating	Mature	Mature	Mature	
Fuel Gas Pressure Requirement (psig)	785	435 - 500	80 - 145	
ESTIMATED PERFORMANCE (See note 8)				
WINTER AVERAGE AMBIENT				
Base Load Performance @ 38.2°F / 71.3% RH				
Inlet Air Conditioning	Evap Off	Evap Off	N/A	N/A
Net Plant Output, kW	44,800	224,300	36,700	110,100
Net Plant Heat Rate, Btu/kWh (HHV)	9,120	9,810	8,320	8,320
Heat Input, MMBtu/hr (HHV)	410	2,200	310	310
Part Load (50%) Performance @ 38.2°F / 71.3% RH				
Inlet Air Conditioning	Evap Off	Evap Off	N/A	N/A
Net Plant Output, kW	22,400	112,100	9,000	9,000
Net Plant Heat Rate, Btu/kWh (HHV)	11,680	12,030	9,330	9,330
Heat Input, MMBtu/hr (HHV)	260	1,350	80	80
ANNUAL AVERAGE AMBIENT				
Base Load Performance @ 58.4°F / 69.1% RH				
Inlet Air Conditioning	Evap ON	Evap ON	N/A	N/A
Net Plant Output, kW	41,700	222,400	36,700	110,100
Net Plant Heat Rate, Btu/kWh (HHV)	9,260	9,870	8,320	8,320
Heat Input, MMBtu/hr (HHV)	390	2,190	310	310
Part Load (50%) Performance @ 58.4°F / 69.1% RH				
Inlet Air Conditioning	Evap Off	Evap Off	N/A	N/A
Net Plant Output, kW	20,100	110,900	9,000	9,000
Net Plant Heat Rate, Btu/kWh (HHV)	12,160	12,030	9,330	9,330
Heat Input, MMBtu/hr (HHV)	240	1,330	80	80
SUMMER PEAK AMBIENT				
Base Load Performance @ 81.0°F / 65.8% RH				
Inlet Air Conditioning	Evap ON	Evap ON	N/A	N/A
Net Plant Output, kW	36,200	216,400	36,700	110,100
Net Plant Heat Rate, Btu/kWh (HHV)	9,570	10,020	8,320	8,320
Heat Input, MMBtu/hr (HHV)	350	2,170	310	310
Part Load (50%) Performance @ 81.0°F / 65.8% RH				
Inlet Air Conditioning	Evap Off	Evap Off	N/A	N/A
Net Plant Output, kW	17,000	106,200	9,000	9,000
Net Plant Heat Rate, Btu/kWh (HHV)	13,260	12,320	9,330	9,330
Heat Input, MMBtu/hr (HHV)	230	1,310	80	80
ESTIMATED CAPITAL AND O&M COSTS				
Project Capital Costs, 2018 MM$ (w/o Owner's Costs)	**$56**	**$110**	**$53**	**$122**
Owner's Costs, 2018 MM$	**$8**	**$16**	**$7**	**$12**
Owner's Project Development	$0.3	$0.3	$0.3	$0.3
Owner's Operational Personnel Prior to COD	$0.3	$0.3	$0.3	$0.3
Owner's Engineer	N/A	N/A	N/A	N/A
Owner's Project Management	$0.8	$0.8	$0.8	$0.8
Owner's Legal Costs	$0.5	$0.5	$0.5	$0.5
Owner's Start-up Engineering	$0.1	$0.2	$0.1	$0.1
Operator Training	$0.1	$0.1	$0.1	$0.1
Temporary Utilities	$0.5	$0.5	$0.5	$0.5
Permitting and Licensing Fees	$0.5	$0.5	$0.5	$0.5
Land	Excluded	Excluded	Excluded	Excluded
Water Rights	Excluded	Excluded	Excluded	Excluded
Site Water Supply and Discharge (Notes 15, 16)	Excluded	Excluded	Excluded	Excluded
Natural Gas Infrastructure	Excluded	Excluded	Excluded	Excluded
Switchyard (Upgrades)	$0.8	$0.8	$1.1	$2.2
Transmission Interconnection	Excluded	Excluded	Excluded	Excluded
Political Concessions & Area Development Fees	Excluded	Excluded	Excluded	Excluded
Startup/Testing (Fuel & Consumables)	$0.2	$0.7	$0.2	$0.2
Initial Fuel Inventory (Fuel Oil)	N/A	N/A	N/A	N/A
Site Security	Included in EPC Cost	Included in EPC Cost	Included in EPC Cost	Included in EPC Cost
Operating Spare Parts	$1.3	$5.5	$0.2	$0.5
Permanent Plant Equipment and Furnishings	Existing Site	Existing Site	Existing Site	Existing Site
Builders Risk Insurance (0.45% of Construction Costs)	Included in EPC Cost	Included in EPC Cost	Included in EPC Cost	Included in EPC Cost
Labor Camp	N/A	N/A	N/A	N/A
Sales Tax	N/A	N/A	N/A	N/A
Owner's Contingency	$3.1	$6.0	$2.9	$6.4
Financing Fees	Included in Economic Model	Included in Economic Model	Included in Economic Model	Included in Economic Model
Interest During Construction	Included in Economic Model	Included in Economic Model	Included in Economic Model	Included in Economic Model
Total Project Costs, 2018 MM$	**$65**	**$126**	**$61**	**$134**
EPC Cost per kW, $2018/kW (Average Ambient)	**$1,350**	**$490**	**$1,460**	**$1,100**
Total Cost per kW, $2018/kW (Average Ambient)	**$1,550**	**$560**	**$1,660**	**$1,220**
BASE PLANT O&M COSTS				
Fixed O&M Cost, 2018$MM/Yr	$0.6	$0.6	$0.6	$0.8
Major Maintenance Cost, 2018$/GT-hr (see note 5,7)	$230	$400	$27	$27
Major Maintenance Cost, 2018$/GT-Start	N/A	$10,800	N/A	N/A
Major Maintenance Cost, 2018$/MWh	$5.47	$1.78	$1.58	$1.58
Variable O&M Cost, 2018$MM/Yr (Excludes GT major maintenance)	$0.30	$1.80	$1.80	$5.40
Variable O&M Cost, 2018$/MWh (Excludes GT major maintenance)	$0.90	$0.90	$5.60	$5.60

INDEPENDENCE POWER & LIGHT 2018 GENERATION TECHNOLOGY ASSESSMENT SUMMARY TABLE
SIMPLE CYCLE/RECIPROCATING ENGINE TECHNOLOGY ASSESSMENT PROJECT OPTIONS
NOT FOR CONSTRUCTION

PROJECT TYPE	Aeroderivative SCGT - Natural Gas	1x F Class SCGT - Natural Gas	Reciprocating Engine (18MW Engines)	
BASE PLANT DESCRIPTION				
ESTIMATED BASE LOAD OPERATING EMISSIONS, lb/MMBtu (Annual Average Ambient)				
Turbine Only (lb/MMBtu, HHV)				
NO_X	0.05	0.03	0.02	0.02
SO_2	< 0.001	< 0.001	< 0.001	< 0.001
CO	0.06	0.02	0.03	0.03
CO_2	120	120	120	120

Notes

Note 1: Simple cycle starts are not affected by hot, warm or cold conditions. Simple cycle starts assume purge credits are available.
Note 2: Fast start packages for frame turbines allow for 10-15 minute start, however the GT major maintenance $/start cost may increase.
Note 3: For Wärtsilä engines, if the engine jacket temperature is >185 F, the engine can start in 7 mins. Between 120 F and 185 F, it will take 1-2 hours to get to full load. For jacket temperatures < 120 F, jacket heaters can be used heat engine to 120 F.
Note 4: Outage and availability statistics are collected using the NERC Generating Availability Data System. Simple cycle data is based on North American units that came online in 2007 or later. Reporting period is 2011-2017.
Note 5: Major maintenance $/hr applies for all aero gas turbines. Major maintenance $/hr applies for frame gas turbines where hours per start is >27. Where hours per start is <27 on frame units, use the $/start value.
Note 6: For the reciprocating engine scenario, it is assumed that six (6) Wartsila engines tie to one GSU.
Note 7: Wärtsilä engine major maintenance is shown per engine, regardless of plant configuration.
Note 8: New and clean performance assumed for all scenarios.
Note 9: GT pricing and performance includes evaporative coolers for inlet air conditioning as noted. For full load ratings at 59°F and up, evaporative coolers are running. For colder ambient and part load conditions, evaporative coolers are turned off.
Note 10: All FOM costs assume units will be operate with existing personnel. Costs have not been included for the FTEs. FOM costs do not include engine lease fees that may be available with LTSA, depending on OEM.
Note 11: VOM assumes the use of temporarily trailers for demineralized water treatment.
Note 12: EFOR data from GADS may not accurately represent the benefits of a reciprocating plant, depending on how events are recorded. Typically, a maintenance event will not impact all engines simultaneously, so the plant would not be completely offline as it may be during an event at a single shaft gas turbine plant.
Note 13: Emissions estimates shown for steady state operation at annual average conditions. Estimates account for the impacts of SCR and CO catalysts for reciprocating engine plants.
Note 14: Performance ratings are based on elevation of 1,000 ft above msl.
Note 15: Simple cycle gas turbine plants include a potable water supply only. GT plant costs include demineralized water tanks for evaporative cooling and NOx control, as applicable. Water is assumed to be sourced from temporary trailers.
Note 16: Reciprocating engine plants include potable water supply only. The engines require minimal water for normal operation (approximately 1 gallon per engine per week for cooling loop makeup).
Note 17: Owner's costs include start-up fuel costs.

INDEPENDENCE POWER & LIGHT 2018 GENERATION TECHNOLOGY ASSESSMENT SUMMARY TABLE
COMBINED CYCLE TECHNOLOGY ASSESSMENT PROJECT OPTIONS
NOT FOR CONSTRUCTION

PROJECT TYPE	2x1 J Class CCGT - Fired	1x1 J Class CCGT - Fired
BASE PLANT DESCRIPTION		
Number of Gas Turbines	2	1
Number of Steam Turbines	1	1
Representative Class Gas Turbine	GE 7HA.02	GE 7HA.02
Steam Conditions (Main Steam / Reheat)	1,050°F / 1,050°F	1,050°F / 1,050°F
Main Steam Pressure	2,330	2,330
Steam Cycle Type	Subcritical	Subcritical
Capacity Factor (%)	Intermediate (40%)	Intermediate (40%)
Startup Time (Cold Start to Unfired Base Load) (Note 3, 4)	180 Minutes	180 Minutes
Startup Time (Warm Start to Unfired Base Load) (Note 3, 4)	120 Minutes	120 Minutes
Startup Time (Hot Start to Unfired Base Load) (Note 3, 4)	80 Minutes	80 Minutes
Startup Time (Cold Start to Stack Emissions Compliance) (See note 7)	60 Minutes	60 Minutes
Startup Time (Warm / Hot Start to Stack Emissions Compliance) (See note 7)	30 Minutes	30 Minutes
Estimated Fuel Consumed to Stack Emissions Compliance, MMBtu	2,300	1,550
Estimated Fuel Consumed to Base Load, MMBtu	11,600	5,580
Maximum Ramp Rate (Online)	10% per minute	10% per minute
Forced Outage Factor (%) (Note 5)	2.2%	2.2%
Equivalent Forced Outage Rate (%) (Note 5)	3.6%	3.6%
Availability Factor (%) (Note 5)	87.8%	87.8%
Fuel Design	Natural Gas	Natural Gas
Heat Rejection	Air Cooled Condenser	Air Cooled Condenser
NO_x Control	DLN/SCR	DLN/SCR
CO Control	Oxidation Catlyst	Oxidation Catlyst
SO_2 Control	N/A	N/A
CO_2 Control	N/A	N/A
Ash Disposal	N/A	N/A
Particulate Control	Good Combustion Practice	Good Combustion Practice
ESTIMATED PERFORMANCE (See note 2)		
WINTER AMBIENT @ 38.2°F / 71.3% RH (Winter Average)		
Base Load Performance	Evap Off	Evap Off
Net Plant Output, kW	1,075,600	537,800
Net Plant Heat Rate, Btu/kWh (HHV)	6,280	6,320
Heat Input, MMBtu/hr (HHV)	6,760	3,400
Incremental Duct Fired Performance		
Incremental Duct Fired Output, kW	220,200	110,100
Incremental Heat Rate, Btu/kWh (HHV)	8,760	8,810
Incremental Heat Input, MMBtu/hr (HHV)	1,930	970
Fully Fired Performance	Evap Off	Evap Off
Net Plant Output, kW	1,295,800	647,900
Net Plant Heat Rate, Btu/kWh (HHV)	6,710	6,740
Heat Input, MMBtu/hr (HHV)	8,690	4,370
Min Load Performance (Single GT at Minium Load (30%))	Evap Off	Evap Off
Net Plant Output, kW	162,900	175,900
Net Plant Heat Rate, Btu/kWh (HHV)	9,100	8,410
Heat Input, MMBtu/hr (HHV)	1,480	1,480
ANNUAL AVERAGE AMBIENT @ 58.4°F / 69.1% RH		
Base Load Performance	Evap On	Evap On
Net Plant Output, kW	1,059,700	529,900
Net Plant Heat Rate, Btu/kWh (HHV)	6,270	6,300
Heat Input, MMBtu/hr (HHV)	6,650	3,340
Incremental Duct Fired Performance		
Incremental Duct Fired Output, kW	208,800	104,400
Incremental Heat Rate, Btu/kWh (HHV)	8,860	8,910
Incremental Heat Input, MMBtu/hr (HHV)	1,850	930
Fully Fired Performance	Evap On	Evap On
Incremental Duct Fired Output, kW	1,268,500	634,300
Incremental Heat Rate, Btu/kWh (HHV)	6,700	6,730
Incremental Heat Input, MMBtu/hr (HHV)	8,500	4,270
Min Load Performance (Single GT at Minium Load (30%))	Evap Off	Evap Off
Net Plant Output, kW	172,900	186,700
Net Plant Heat Rate, Btu/kWh (HHV)	8,380	7,770
Heat Input, MMBtu/hr (HHV)	1,450	1,450
SUMMER PEAK AMBIENT @ 81.0°F / 65.8% RH		
Base Load Performance	Evap On	Evap On
Net Plant Output, kW	1,030,400	515,200
Net Plant Heat Rate, Btu/kWh (HHV)	6,320	6,370
Heat Input, MMBtu/hr (HHV)	6,520	3,280
Incremental Duct Fired Performance		
Incremental Duct Fired Output, kW	214,300	107,200
Incremental Heat Rate, Btu/kWh (HHV)	8,450	8,490
Incremental Heat Input, MMBtu/hr (HHV)	1,810	910
Fully Fired Performance	Evap On	Evap On
Net Plant Output, kW	1,244,700	622,400
Net Plant Heat Rate, Btu/kWh (HHV)	6,690	6,730
Heat Input, MMBtu/hr (HHV)	8,330	4,190
Minimum Load Performance	Evap Off	Evap Off
Net Plant Output, kW	172,600	186,400
Net Plant Heat Rate, Btu/kWh (HHV)	8,180	7,560

INDEPENDENCE POWER & LIGHT 2018 GENERATION TECHNOLOGY ASSESSMENT SUMMARY TABLE
COMBINED CYCLE TECHNOLOGY ASSESSMENT PROJECT OPTIONS
NOT FOR CONSTRUCTION

PROJECT TYPE	**2x1 J Class CCGT - Fired**	**1x1 J Class CCGT - Fired**
BASE PLANT DESCRIPTION		
Heat Input, MMBtu/hr (HHV)	1,410	1,410
ESTIMATED CAPITAL AND O&M COSTS (See note 9)		
Project Capital Cost, 2018 MM$ (w/o Owner's Costs)	**$737**	**$467**
Owner's Costs, 2018 MM$	**$154**	**$127**
Owner's Project Development	$0.9	$0.9
Owner's Operational Personnel Prior to COD	$2.0	$1.8
Owner's Engineer	N/A	N/A
Owner's Project Management	$5.3	$4.8
Owner's Legal Costs	$1.0	$1.0
Owner's Start-up Engineering	$0.3	$0.3
Operator Training	$0.3	$0.3
Temporary Utilities	$1.9	$1.8
Permitting and Licensing Fees	$0.5	$0.5
Land	$0.8	$0.5
Water Rights	Excluded	Excluded
Site Water Supply and Discharge Allowance	$18.4	$16.0
Natural Gas Infrastructure Allowance	$19.0	$16.5
Switchyard Allowance	$18.3	$14.0
Transmission Interconnection Allowance	$30.0	$30.0
Political Concessions & Area Development Fees	$0.5	$0.5
Startup/Testing (Fuel & Consumables)	$2.0	$1.2
Initial Fuel Inventory (Fuel Oil)	N/A	N/A
Site Security	Included in EPC Cost	Included in EPC Cost
Operating Spare Parts	$9.0	$7.5
Permanent Plant Equipment and Furnishings	$1.3	$1.3
Builders Risk Insurance (0.45% of Construction Costs)	Included in EPC Cost	Included in EPC Cost
Labor Camp	Excluded	Excluded
Sales Tax	N/A	N/A
Owner's Contingency	$42.4	$28.3
Financing Fees	Included in Economic Model	Included in Economic Model
Interest During Construction	Included in Economic Model	Included in Economic Model
Total Project Cost, 2018 MM$	**$891**	**$594**
EPC Cost Per UNFIRED kW, $2018/kW	**$696**	**$880**
EPC Cost Per FIRED kW, $2018/kW	**$581**	**$736**
Total Cost Per UNFIRED kW, $2018/kW	**$841**	**$1,120**
Total Cost Per FIRED kW, $2018/kW	**$702**	**$936**
O&M COSTS		
Fixed O&M Cost, 2018$MM-Yr	$5.35	$4.74
Total Non-Fuel Variable O&M Cost, 2018$/MWh (excluding GT Major Maint)	$1.67	$1.81
Incremental Duct Fired Non-Fuel Variable O&M, 2018$/MWh	$1.41	$1.39
MAJOR MAINTENANCE COSTS (See Note 6)		
Major Maintenance Cost, 2018$/GT-hr	$680	$680
Major Maintenance Cost, 2018$/MWh	$1.28	$1.37
Major Maintenance Cost, 2018$/GT-Start (per GT)	$18,500	$18,500
ESTIMATED BASE LOAD OPERATING EMISSIONS, lb/MMBtu (Unfired, Annual Average Ambient)		
NO_X	0.007	0.007
SO_2	< 0.001	< 0.001
CO	0.004	0.004
CO_2	120	120

Notes
Note 1: New and clean performance is assumed. No performance degradation is included.
Note 2: Performance ratings based on elevation of 1,000 ft above msl.
Note 3: Startup times reflect unrestricted, conventional starts for all gas turbines.
Note 4: Cold start is >72 hours after shutdown. Hot start is <8 hours after shutdown.
Note 5: Outage and availability statistics are collected using the NERC Generating Availability Data System (GADS). Combined cycle data is based on North American units that came online in 2007 or later. Reporting period is 2011-2017.
Note 6: Major maintenance $/hr applies for frame gas turbines where hours per start is >27. Where hours per start is <27 on frame units, use the $/start value.
Note 7: The time to achieve stack emissions compliance is assumed to be driven by the temperature of the CO catalyst in addition to the time for the turbine to achieve MECL.
Note 8: GT pricing and performance includes evaporative coolers for inlet air conditioning. For full load ratings at 59°F and up, evaporative coolers are running. For colder ambients and part load conditions, evaporative coolers are turned off.
Note 9: Fixed O&M costs assume 25 full time equivalent (FTE) personnel for 2x1 CCGT plants.
Note 10: Emissions estimates shown for steady state operation at annual average conditions. Estimates account for the impacts of SCR and CO catalysts, as applicable.
Note 11: O&M costs assumes 418 hours (5% of annual hours) of fired capacity.

INDEPENDENCE POWER & LIGHT 2018 GENERATION TECHNOLOGY ASSESSMENT SUMMARY TABLE
BATTERY STORAGE TECHNOLOGY ASSESSMENT PROJECT OPTIONS
NOT FOR CONSTRUCTION

PROJECT TYPE	**Battery Storage**	
BASE PLANT DESCRIPTION	Lithium Ion	Lithium Ion
Nominal Output, MW	15 MW / 60 MWh	1 MW / 1 MWh
Representative Technology	Lithium Ion	Lithium Ion
Capacity Factor (%) (See note 1)	15%	5%
Startup Time (Cold Start) (See note 6)	N/A	N/A
Equivalent Availability Factor (%) (See note 9)	97%	97%
Fuel Design	N/A	N/A
Heat Rejection	N/A	N/A
NO_x Control	N/A	N/A
CO Control	N/A	N/A
SO_2 Control	N/A	N/A
Particulate Control	N/A	N/A
ESTIMATED PERFORMANCE		
Base Load Performance @ (Annual Average)		
Net Plant Output, kW	15,000	1,000
Net Plant Heat Rate, Btu/kWh (HHV)	N/A	N/A
Heat Input, MMBtu/hr (HHV)	N/A	N/A
ESTIMATED CAPITAL AND O&M COSTS		
Project Capital Costs, 2018 MM$ (w/o Owner's Costs)	**$29.7**	**$0.7**
Owner's Costs, 2018 MM$	**$3.7**	**$0.4**
Owner's Project Development	Included	Included
Owner's Engineer	N/A	N/A
Startup / Testing / Warranties	Included in Project Cost	Included in Project Cost
Land	Excluded	Excluded
Permitting and Licensing Fees	Included	Included
GSU, Switchyard, and/or Infrastructure	N/A (MV Interconnection)	N/A (MV Interconnection)
Builder's Risk Insurance	Included	Included
Owner's Contingency	Included	Included
Total Project Costs, 2018 MM$	**$33**	**$1.1**
Total Cost Per kW, 2018 $/kW	**$2,230**	**$1,120**
Total Cost Per kW, 2018 $/kWh	**$560**	**$1,120**
Fixed O&M Cost, 2018$/kW-Yr (See note 2)	$13.34	$34.35
Major Maintenance Cost, 2018$/MWh (See note 3)	Included in FOM	Included in FOM
Variable O&M Cost, 2018$/MWh (excl. major maint.)	$3.74	$3.74
ESTIMATED BASE LOAD OPERATING EMISSIONS, lb/MMBtu (HHV)		
NO_X	N/A	N/A
SO_2	N/A	N/A
CO	N/A	N/A
CO_2	N/A	N/A
ESTIMATED BASE LOAD OPERATING EMISSIONS, lb/hr (HHV)		
NO_X	N/A	N/A
SO_2	N/A	N/A
CO	N/A	N/A
CO_2	N/A	N/A

Notes

1. Not Used
2. Not Used
3. Battery storage capital costs include current estimates for 2018$ battery prices. Rapid development of battery technology should be considered when evaluating price impacts for future installations.
4. Battery storage capital cost assumes the system is oversized to accommodate normal degradation, so no battery replacement fund is included. Fixed O&M accounts for capacity guarantees for 15 year life.
5. Battery storage VOM accounts for the parasitic power draw of the system and efficiency losses.

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APPENDIX F – ASSUMPTIONS AND FORECASTS

Information for this appendix has been provided in electric format.

APPENDIX G – ECONOMIC RESULTS

	Independence Power & Light - 2018 Energy Master Plan												
		SPP 2017 ITP10 Future 3						**SPP 2017 ITP10 Future 1**					
		Path 3	**Path 4**	**Path 5**	**Path 7**	**Path 8**	**Path 11**	**Path 3**	**Path 4**	**Path 5**	**Path 7**	**Path 8**	**Path 11**
	Path	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV & CTGs**	**Retire BV & CTGs**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV**	**Retire BV & CTGs**	**Retire BV & CTGs**
	Labor	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*	*CTG Only Staff*
	2019	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**	**Retire 98 MW BV**
	2020	60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	60 MW Capacity	**25 MW Dogwood** 35 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity	**50 MW Dogwood** 10 MW Capacity
	2021	60 MW Capacity	35 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity	60 MW Capacity	35 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity	10 MW Capacity
	2022	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity	15 MW Capacity
	2023	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity **Retire One CTG Plant**	15 MW Capacity **Retire 94 MW CTGs**	15 MW Capacity **Retire 94 MW CTGs**	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity **Retire One CTG Plant**	15 MW Capacity **Retire 94 MW CTGs**	15 MW Capacity **Retire 94 MW CTGs**
	2024	65 MW Capacity	40 MW Capacity	15 MW Capacity	**37 MW 2xRecips** 10 MW Capacity	110 MW Capacity	**37 MW 2xRecips** 70 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	**37 MW 2xRecips** 10 MW Capacity	110 MW Capacity	**37 MW 2xRecips** 70 MW Capacity
	2025	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity	65 MW Capacity	40 MW Capacity	15 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity
	2026	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	110 MW Capacity	75 MW Capacity
	2027	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity
	2028	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	15 MW Capacity	115 MW Capacity	75 MW Capacity
	2029	70 MW Capacity	45 MW Capacity	20 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity	70 MW Capacity	45 MW Capacity	20 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity
	2030	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	115 MW Capacity	80 MW Capacity
	2031	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity
	2032	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	20 MW Capacity	120 MW Capacity	80 MW Capacity
	2033	75 MW Capacity	50 MW Capacity	25 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity	75 MW Capacity	50 MW Capacity	25 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity
	2034	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	120 MW Capacity	85 MW Capacity
	2035	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity
	2036	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	25 MW Capacity	125 MW Capacity	85 MW Capacity
	2037	80 MW Capacity	55 MW Capacity	30 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity	80 MW Capacity	55 MW Capacity	30 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity
	2038	85 MW Capacity	60 MW Capacity	35 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity	85 MW Capacity	60 MW Capacity	35 MW Capacity	30 MW Capacity	125 MW Capacity	90 MW Capacity
NPV	**Low Gas Low Load**	**$ 666,891,211**	**$ 650,909,222**	**$ 634,945,451**	**$ 684,715,679**	**$ 677,846,232**	**$ 709,218,075**						
	Delta $	**$ 31,945,760**	**$ 15,963,770**	**$ -**	**$ 49,770,228**	**$ 42,900,780**	**$ 74,272,624**						
	Delta %	*5.0%*	*2.5%*	*0.0%*	*7.8%*	*6.8%*	*11.7%*						
	Low Gas	**$ 683,564,138**	**$ 667,617,447**	**$ 651,688,888**	**$ 701,299,028**	**$ 694,316,767**	**$ 725,689,991**	**$ 709,941,795**	**$ 697,795,969**	**$ 685,658,936**	**$ 733,896,176**	**$ 729,698,568**	**$ 759,690,348**
	Delta $	**$ 31,875,250**	**$ 15,928,559**	**$ -**	**$ 49,610,139**	**$ 42,627,879**	**$ 74,001,102**	**$ 24,282,859**	**$ 12,137,033**	**$ -**	**$ 48,237,240**	**$ 44,039,632**	**$ 74,031,413**
	Delta %	*4.9%*	*2.4%*	*0.0%*	*7.6%*	*6.5%*	*11.4%*	*3.5%*	*1.8%*	*0.0%*	*7.0%*	*6.4%*	*10.8%*
	High Gas	**$ 748,050,802**	**$ 744,801,360**	**$ 741,538,852**	**$ 791,445,021**	**$ 784,533,324**	**$ 816,202,905**	**$ 767,089,299**	**$ 764,679,628**	**$ 762,254,827**	**$ 811,401,508**	**$ 806,899,194**	**$ 837,809,169**
	Delta $	**$ 6,511,950**	**$ 3,262,508**	**$ -**	**$ 49,906,169**	**$ 42,994,471**	**$ 74,664,053**	**$ 4,834,472**	**$ 2,424,801**	**$ -**	**$ 49,146,681**	**$ 44,644,367**	**$ 75,554,342**
	Delta %	*0.9%*	*0.4%*	*0.0%*	*6.7%*	*5.8%*	*10.1%*	*0.6%*	*0.3%*	*0.0%*	*6.4%*	*5.9%*	*9.9%*
NPV w/ Transmission	Transmission Cost ($)	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 36,500,000**	**$ 5,000,000**	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 800,000**	**$ 36,500,000**	**$ 5,000,000**
	Low Gas Low Load	**$ 667,691,211**	**$ 651,709,222**	**$ 635,745,451**	**$ 685,515,679**	**$ 714,346,232**	**$ 714,218,075**						
	Delta $	**$ 31,945,760**	**$ 15,963,770**	**$ -**	**$ 49,770,228**	**$ 78,600,780**	**$ 78,472,624**						
	Delta %	*5.0%*	*2.5%*	*0.0%*	*7.8%*	*12.4%*	*12.4%*						
	Low Gas	**$ 684,364,138**	**$ 668,417,447**	**$ 652,488,888**	**$ 702,099,028**	**$ 730,816,767**	**$ 730,689,991**	**$ 710,741,795**	**$ 698,595,969**	**$ 686,458,936**	**$ 734,696,176**	**$ 766,198,568**	**$ 764,690,348**
	Delta $	**$ 31,875,250**	**$ 15,928,559**	**$ -**	**$ 49,610,139**	**$ 78,327,879**	**$ 78,201,102**	**$ 24,282,859**	**$ 12,137,033**	**$ -**	**$ 48,237,240**	**$ 79,739,632**	**$ 78,231,413**
	Delta %	*5.0%*	*2.5%*	*0.0%*	*7.8%*	*12.3%*	*12.3%*	*3.8%*	*1.9%*	*0.0%*	*7.6%*	*12.6%*	*12.3%*
	High Gas	**$ 748,850,802**	**$ 745,601,360**	**$ 742,338,852**	**$ 792,245,021**	**$ 821,033,324**	**$ 821,202,905**	**$ 767,889,299**	**$ 765,479,628**	**$ 763,054,827**	**$ 812,201,508**	**$ 843,399,194**	**$ 842,809,169**
	Delta $	**$ 6,511,950**	**$ 3,262,508**	**$ -**	**$ 49,906,169**	**$ 78,694,471**	**$ 78,864,053**	**$ 4,834,472**	**$ 2,424,801**	**$ -**	**$ 49,146,681**	**$ 80,344,367**	**$ 79,754,342**
	Delta %	*1.0%*	*0.5%*	*0.0%*	*7.9%*	*12.4%*	*12.4%*	*0.8%*	*0.4%*	*0.0%*	*7.7%*	*12.7%*	*12.6%*

Independence Power & Light

Path 1 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			60.0	60.0	65.0	65.0	65.0	65.0	70.0	70.0	70.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 3,782,280	$ 3,876,780	$ 4,304,885	$ 4,412,460	$ 4,522,830	$ 4,635,865	$ 5,117,280	$ 5,245,240	$ 5,376,350	$ 5,510,750	$ 6,051,975	$ 6,203,325	$ 6,358,350	$ 6,517,350	$ 7,125,600	$ 7,303,760	$ 7,486,400	$ 7,673,520	$ 8,356,945
IPL OWNERSHIP	%	Dogwood	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	393,572	555,553	555,275	556,457	558,810	561,576	551,906	545,074	541,867	546,138	542,761	542,646	545,153	543,191	539,008	541,388	542,289	546,620	545,198	542,475
GENERATION	MWh	Blue Valley 1b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	9,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	393,212	405,923	404,069	404,960	404,200	405,148	401,464	400,389	400,475	401,610	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	412,135	454,371	452,968	453,253	453,122	452,113	443,256	440,236	440,572	440,866	439,492	439,222	438,587	441,701	439,044	437,599	436,867	441,140	439,823	441,854
GENERATION	MWh	H-5	6,748	2,486	2,112	1,958	2,156	2,288	4,455	4,191	4,125	4,169	4,103	4,081	4,257	4,147	4,213	4,125	4,147	3,839	4,301	4,081
GENERATION	MWh	H-6	7,561	2,921	2,231	2,116	2,484	2,530	5,027	4,497	4,451	4,681	4,566	4,612	4,520	4,451	4,497	4,635	4,612	4,335	4,543	4,451
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	59	84	84	84	84	85	83	82	82	82	82	82	82	82	81	82	82	82	82	82
CAPACITY FACTOR	%	Blue Valley 1b	2	0																		
CAPACITY FACTOR	%	Blue Valley 2b	2	0																		
CAPACITY FACTOR	%	Blue Valley 3b	2	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	85	87	87	87	87	87	86	86	86	86	86	86	86	86	86	86	86	86	86	86
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	90	90	89	88	87	87	87	87	87	87	87	87	87	87	87	87	88
CAPACITY FACTOR	%	H-5	3	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,031,425	$ 2,141,493	$ 2,378,630	$ 2,182,817	$ 2,237,387	$ 2,293,322	$ 2,350,655	$ 2,409,421	$ 2,469,657	$ 2,531,398	$ 2,594,683	$ 2,659,550	$ 2,726,039	$ 2,794,190	$ 2,864,045	$ 2,935,646	$ 3,009,037	$ 3,084,263	$ 3,161,370
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,410,048	$ 1,871,748	$ 1,916,947	$ 1,957,270	$ 2,028,134	$ 2,077,285	$ 2,096,209	$ 2,127,739	$ 2,171,550	$ 2,235,283	$ 2,282,716	$ 2,347,165	$ 2,414,513	$ 2,475,223	$ 2,513,044	$ 2,584,778	$ 2,651,242	$ 2,693,111	$ 2,769,276	$ 2,807,390
VARIABLE O&M COST	$	Blue Valley 1b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 22,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,469,228	$ 1,556,849	$ 1,585,210	$ 1,626,739	$ 1,664,583	$ 1,713,845	$ 1,738,941	$ 1,775,792	$ 1,816,948	$ 1,872,239	$ 1,910,495	$ 1,957,391	$ 2,005,882	$ 2,059,606	$ 2,106,314	$ 2,159,470	$ 2,210,638	$ 2,251,456	$ 2,300,987	$ 2,366,063
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,537,585	$ 1,740,392	$ 1,778,331	$ 1,823,826	$ 1,864,487	$ 1,912,000	$ 1,916,274	$ 1,960,250	$ 1,998,891	$ 2,053,519	$ 2,099,959	$ 2,149,415	$ 2,204,132	$ 2,273,570	$ 2,314,699	$ 2,365,171	$ 2,423,356	$ 2,474,366	$ 2,531,754	$ 2,605,035
VARIABLE O&M COST	$	H-5	$ 13,833	$ 5,221	$ 4,541	$ 4,327	$ 4,873	$ 5,308	$ 10,604	$ 10,225	$ 10,311	$ 10,672	$ 10,751	$ 10,977	$ 11,751	$ 11,735	$ 12,219	$ 12,250	$ 12,608	$ 11,976	$ 13,765	$ 13,384
VARIABLE O&M COST	$	H-6	$ 15,499	$ 6,134	$ 4,797	$ 4,676	$ 5,614	$ 5,870	$ 11,964	$ 10,973	$ 11,127	$ 11,983	$ 11,963	$ 12,406	$ 12,475	$ 12,596	$ 13,041	$ 13,766	$ 14,020	$ 13,525	$ 14,537	$ 14,599
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.37	$ 3.45	$ 3.52	$ 3.63	$ 3.70	$ 3.80	$ 3.90	$ 4.01	$ 4.09	$ 4.21	$ 4.33	$ 4.43	$ 4.56	$ 4.66	$ 4.77	$ 4.89	$ 4.93	$ 5.08	$ 5.18
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.39																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.44	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 1 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	3.73	3.83	3.93	4.02	4.11	4.23	4.32	4.45	4.54	4.66
VARIABLE O&M COST	$/MWh	H-5	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56
VARIABLE O&M COST	$/MWh	H-6	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	6,524,458	10,204,683	10,450,895	10,854,091	11,214,500	11,530,344	11,557,391	11,761,917	11,994,550	12,377,022
FUEL COST	$	Blue Valley 1b	115,184	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	115,184	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	355,360	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	`	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.									
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.									
FUEL COST	$	H-5	256,887	104,936	91,761	89,348	100,745	108,969	221,219	213,829	215,967	223,351
FUEL COST	$	H-6	285,171	122,110	95,967	95,494	114,946	119,343	247,027	227,257	230,763	248,526
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	-	-	-	-	-	-	-
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.6									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.5	15.5	15.5	15.5
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.									
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	24.75	27.68	27.79	28.57	29.74	30.48	32.36	32.45	33.29	34.11
INDEPENDENCE MARKET SALES	MWh	Independence Market	48,954	24,208	23,097	22,828	23,394	23,619	28,236	27,441	27,329	27,650
INDEPENDENCE MARKET SALES	$	Independence Market	1,905,857	822,264	774,536	786,370	850,285	880,304	1,213,469	1,173,534	1,199,573	1,245,255
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	38.93	33.97	33.53	34.45	36.35	37.27	42.98	42.77	43.89	45.04
DOGWOOD MARKET SALES	MWh	Dogwood Market	393,572	555,553	555,275	556,457	558,810	561,576	551,906	545,074	541,867	546,138
DOGWOOD MARKET SALES	$	Dogwood Market	10,789,199	14,676,677	15,068,862	15,645,342	16,162,415	16,611,908	16,908,933	17,202,754	17,566,326	18,146,060
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	27.41	26.42	27.14	28.12	28.92	29.58	30.64	31.56	32.42	33.23
IATAN MARKET SALES	MWh	Iatan Market	393,212	405,923	404,069	404,960	404,200	405,148	401,465	400,389	400,475	401,611
IATAN MARKET SALES	$	Iatan Market	9,499,959	10,206,965	10,344,394	10,683,749	10,917,880	11,202,817	11,418,970	11,604,441	11,826,003	12,099,295
IATAN MARKET SALES	$/MWh	Iatan Market	24.16	25.15	25.60	26.38	27.01	27.65	28.44	28.98	29.53	30.13
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
MARSHALL MARKET SALES	$	Marshall Market	1,722,559	1,886,008	1,929,296	1,955,275	2,003,237	1,959,549	2,091,260	2,124,049	2,147,442	2,174,204
MARSHALL MARKET SALES	$/MWh	Marshall Market	20.68	22.58	23.16	23.47	24.05	23.46	25.11	25.50	25.78	26.03
NEBRASKA MARKET SALES	MWh	Nebraska City Market	412,135	454,371	452,968	453,253	453,122	452,114	443,256	440,236	440,572	440,867
NEBRASKA MARKET SALES	$	Nebraska City Market	9,865,161	10,993,176	11,182,142	11,468,713	11,677,599	11,837,150	11,904,866	12,037,339	12,242,754	12,541,538
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	23.94	24.19	24.69	25.30	25.77	26.18	26.86	27.34	27.79	28.45
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
SMOKY MARKET SALES	$	Smoky Hills Market	1,314,020	1,383,653	1,400,426	1,409,375	1,463,410	1,313,000	1,576,905	1,570,467	1,571,831	1,586,971
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	21.23	22.25	22.63	22.77	23.65	21.11	25.48	25.38	25.40	25.52
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		32,676,624	31,705,887	28,567,678	30,472,938	33,302,448	30,111,178	30,874,576	29,404,784	31,268,713	30,575,585
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		4,487,510	5,180,344	5,289,825	5,416,839	5,567,691	5,714,308	5,773,992	5,884,979	6,008,827	6,183,696
TOTAL FUEL COSTS	$		19,592,493	23,413,816	23,910,782	24,602,284	25,385,887	26,333,105	26,778,973	27,243,343	27,712,941	28,669,695
TOTAL ENERGY MARKET PURCHASES	$		26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088
TOTAL ENERGY MARKET SALES	$		35,096,755	39,968,743	40,699,657	41,948,824	43,074,825	43,804,728	45,114,403	45,712,584	46,553,929	47,793,322
TOTAL COSTS	$		48,567,624	50,527,257	47,502,950	49,918,070	53,957,119	52,067,664	54,234,357	52,970,469	55,659,995	55,910,742

Data Item	Units	Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	4.78	4.89	5.03	5.15	5.27	5.40	5.55	5.61	5.76	5.90
VARIABLE O&M COST	$/MWh	H-5	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	H-6	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	12,668,519	13,039,545	13,356,407	13,709,126	13,903,525	14,316,968	14,631,171	15,600,834	15,878,668	16,433,639
FUEL COST	$	Blue Valley 1b	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2										
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2										
FUEL COST	$	H-5	226,267	230,857	246,909	247,017	256,579	257,902	265,823	257,309	295,260	290,745
FUEL COST	$	H-6	249,023	258,376	259,451	262,562	270,795	286,970	292,153	287,369	308,664	314,058
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	-	-	-	-	-	-	-
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost										
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	34.93	35.86	36.87	37.84	38.88	39.61	40.66	41.61	43.63	44.76
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,423	27,446	27,531	27,398	27,464	27,513	27,513	26,974	27,598	27,285
INDEPENDENCE MARKET SALES	$	Independence Market	1,264,634	1,299,715	1,341,478	1,366,398	1,410,024	1,438,899	1,479,054	1,474,319	1,591,089	1,611,232
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	46.12	47.35	48.73	49.87	51.34	52.30	53.76	54.66	57.65	59.05
DOGWOOD MARKET SALES	MWh	Dogwood Market	542,761	542,646	545,153	543,191	539,008	541,388	542,289	546,620	545,198	542,475
DOGWOOD MARKET SALES	$	Dogwood Market	18,541,561	19,007,894	19,556,521	20,092,939	20,342,646	20,935,391	21,473,206	22,582,732	23,153,565	23,881,691
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	34.16	35.03	35.87	36.99	37.74	38.67	39.60	41.31	42.47	44.02
IATAN MARKET SALES	MWh	Iatan Market	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
IATAN MARKET SALES	$	Iatan Market	12,331,028	12,631,559	12,889,843	13,249,551	13,505,458	13,834,402	14,074,045	14,781,140	15,110,720	15,759,205
IATAN MARKET SALES	$/MWh	Iatan Market	30.81	31.56	32.20	33.02	33.78	34.59	35.25	36.84	37.76	39.30
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	2,123,529	2,193,506	2,367,507	2,411,664	2,452,143	2,487,915	2,427,201	2,679,360	2,767,675	2,848,483
MARSHALL MARKET SALES	$/MWh	Marshall Market	25.49	26.33	28.42	28.87	29.44	29.87	29.14	32.07	33.23	34.20
NEBRASKA MARKET SALES	MWh	Nebraska City Market	439,492	439,222	438,588	441,701	439,044	437,600	436,868	441,140	439,823	441,854
NEBRASKA MARKET SALES	$	Nebraska City Market	12,805,169	13,115,509	13,365,162	13,812,119	14,004,638	14,260,253	14,544,303	15,346,464	15,678,429	16,340,542
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	29.14	29.86	30.47	31.27	31.90	32.59	33.29	34.79	35.65	36.98
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	1,412,705	1,677,044	1,784,808	1,767,086	1,806,525	1,803,926	1,614,933	2,034,524	2,046,060	2,084,851
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	22.83	27.10	28.84	28.41	29.19	29.15	26.10	32.71	33.06	33.69
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		31,143,832	33,555,617	33,619,456	33,752,699	37,066,899	35,540,121	39,000,745	36,778,702	37,409,580	38,671,108
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		6,315,883	6,477,354	6,648,753	6,832,730	6,959,316	7,135,435	7,311,864	7,444,435	7,630,318	7,806,471
TOTAL FUEL COSTS	$		29,248,866	30,017,189	30,700,870	31,486,218	32,174,400	33,093,745	33,965,211	35,505,923	36,324,862	37,667,499
TOTAL ENERGY MARKET PURCHASES	$		39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
TOTAL ENERGY MARKET SALES	$		48,478,625	49,925,227	51,305,320	52,699,757	53,521,434	54,760,785	55,612,741	58,898,539	60,347,539	62,526,005
TOTAL COSTS	$		57,561,368	60,642,124	61,478,178	62,436,939	67,045,979	66,365,933	71,378,547	68,847,997	71,540,769	73,628,566

$709,941,795

Independence Power & Light

Path 2 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			35.0	35.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	50.0	50.0	50.0	50.0	55.0	55.0	55.0	55.0	60.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 2,206,330	$ 2,261,455	$ 2,649,160	$ 2,715,360	$ 2,783,280	$ 2,852,840	$ 3,289,680	$ 3,371,940	$ 3,456,225	$ 3,542,625	$ 4,034,650	$ 4,135,550	$ 4,238,900	$ 4,344,900	$ 4,898,850	$ 5,021,335	$ 5,146,900	$ 5,275,545	$ 5,899,020
IPL OWNERSHIP	%	Dogwood	12.3%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	393,572	739,382	739,012	740,586	743,717	747,399	734,528	725,436	721,167	726,852	722,358	722,204	725,541	722,929	717,363	720,531	721,730	727,494	725,601	721,977
GENERATION	MWh	Blue Valley 1b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	9,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	393,212	405,923	404,069	404,960	404,200	405,148	401,464	400,389	400,475	401,610	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	412,135	454,371	452,968	453,253	453,122	452,113	443,256	440,236	440,572	440,866	439,492	439,222	438,587	441,701	439,044	437,599	436,867	441,140	439,823	441,854
GENERATION	MWh	H-5	6,748	2,486	2,112	1,958	2,156	2,288	4,455	4,191	4,125	4,169	4,103	4,081	4,257	4,147	4,213	4,125	4,147	3,839	4,301	4,081
GENERATION	MWh	H-6	7,561	2,921	2,231	2,116	2,484	2,530	5,027	4,497	4,451	4,681	4,566	4,612	4,520	4,451	4,497	4,635	4,612	4,335	4,543	4,451
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	59	84	84	84	84	85	83	82	82	82	82	82	82	82	81	82	82	82	82	82
CAPACITY FACTOR	%	Blue Valley 1b	2	0																		
CAPACITY FACTOR	%	Blue Valley 2b	2	0																		
CAPACITY FACTOR	%	Blue Valley 3b	2	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	85	87	87	87	87	87	86	86	86	86	86	86	86	86	86	86	86	86	86	86
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	90	90	89	88	87	87	87	87	87	87	87	87	87	87	87	87	88
CAPACITY FACTOR	%	H-5	3	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,703,612	$ 2,850,100	$ 3,165,705	$ 2,905,098	$ 2,977,726	$ 3,052,169	$ 3,128,473	$ 3,206,685	$ 3,286,852	$ 3,369,024	$ 3,453,249	$ 3,539,580	$ 3,628,070	$ 3,718,772	$ 3,811,741	$ 3,907,034	$ 4,004,710	$ 4,104,828	$ 4,207,449
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,410,048	$ 2,491,099	$ 2,551,254	$ 2,604,919	$ 2,699,232	$ 2,764,647	$ 2,789,833	$ 2,831,796	$ 2,890,103	$ 2,974,926	$ 3,038,054	$ 3,123,829	$ 3,213,462	$ 3,294,261	$ 3,344,595	$ 3,440,066	$ 3,528,523	$ 3,584,246	$ 3,685,613	$ 3,736,340
VARIABLE O&M COST	$	Blue Valley 1b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 22,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,469,228	$ 1,556,849	$ 1,585,210	$ 1,626,739	$ 1,664,583	$ 1,713,845	$ 1,738,941	$ 1,775,792	$ 1,816,948	$ 1,872,239	$ 1,910,495	$ 1,957,391	$ 2,005,882	$ 2,059,606	$ 2,106,314	$ 2,159,470	$ 2,210,638	$ 2,251,456	$ 2,300,987	$ 2,366,063
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,537,585	$ 1,740,392	$ 1,778,331	$ 1,823,826	$ 1,864,487	$ 1,912,000	$ 1,916,274	$ 1,960,250	$ 1,998,891	$ 2,053,519	$ 2,099,959	$ 2,149,415	$ 2,204,132	$ 2,273,570	$ 2,314,699	$ 2,365,171	$ 2,423,356	$ 2,474,366	$ 2,531,754	$ 2,605,035
VARIABLE O&M COST	$	H-5	$ 13,833	$ 5,221	$ 4,541	$ 4,327	$ 4,873	$ 5,308	$ 10,604	$ 10,225	$ 10,311	$ 10,672	$ 10,751	$ 10,977	$ 11,751	$ 11,735	$ 12,219	$ 12,250	$ 12,608	$ 11,976	$ 13,765	$ 13,384
VARIABLE O&M COST	$	H-6	$ 15,499	$ 6,134	$ 4,797	$ 4,676	$ 5,614	$ 5,870	$ 11,964	$ 10,973	$ 11,127	$ 11,983	$ 11,963	$ 12,406	$ 12,475	$ 12,596	$ 13,041	$ 13,766	$ 14,020	$ 13,525	$ 14,537	$ 14,599
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.37	$ 3.45	$ 3.52	$ 3.63	$ 3.70	$ 3.80	$ 3.90	$ 4.01	$ 4.09	$ 4.21	$ 4.33	$ 4.43	$ 4.56	$ 4.66	$ 4.77	$ 4.89	$ 4.93	$ 5.08	$ 5.18
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.39																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.44	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	3.73	3.83	3.93	4.02	4.11	4.23	4.32	4.45	4.54	4.66	4.78	4.89	5.03	5.15	5.27	5.40	5.55	5.61	5.76	5.90
VARIABLE O&M COST	$/MWh	H-5	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	H-6	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	6,524,458	13,581,355	13,909,037	14,445,648	14,925,314	15,345,669	15,381,666	15,653,869	15,963,478	16,472,508	16,860,460	17,354,256	17,775,967	18,245,398	18,504,123	19,054,371	19,472,542	20,763,062	21,132,829	21,871,437
FUEL COST	$	Blue Valley 1b	115,184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	115,184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	355,360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	`	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.																			
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.																			
FUEL COST	$	H-5	256,887	104,936	91,761	89,348	100,745	108,969	221,219	213,829	215,967	223,351	226,267	230,857	246,909	247,017	256,579	257,902	265,823	257,309	295,260	290,745
FUEL COST	$	H-6	285,171	122,110	95,967	95,494	114,946	119,343	247,027	227,257	230,763	248,526	249,023	258,376	259,451	262,562	270,795	286,970	292,153	287,369	308,664	314,058
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.6																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.6	9.6	9.7	9.6	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	24.75	27.68	27.79	28.57	29.74	30.48	32.36	32.45	33.29	34.11	34.93	35.86	36.87	37.84	38.88	39.61	40.66	41.61	43.63	44.76
INDEPENDENCE MARKET SALES	MWh	Independence Market	48,954	24,208	23,097	22,828	23,394	23,619	28,236	27,441	27,329	27,650	27,423	27,446	27,531	27,398	27,464	27,513	27,513	26,974	27,598	27,285
INDEPENDENCE MARKET SALES	$	Independence Market	1,905,857	822,264	774,536	786,370	850,285	880,304	1,213,469	1,173,534	1,199,573	1,245,255	1,264,634	1,299,715	1,341,478	1,366,398	1,410,024	1,438,899	1,479,054	1,474,319	1,591,089	1,611,232
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	38.93	33.97	33.53	34.45	36.35	37.27	42.98	42.77	43.89	45.04	46.12	47.35	48.73	49.87	51.34	52.30	53.76	54.66	57.65	59.05
DOGWOOD MARKET SALES	MWh	Dogwood Market	393,572	739,382	739,012	740,586	743,717	747,399	734,528	725,436	721,167	726,852	722,357	722,204	725,541	722,929	717,363	720,531	721,730	727,494	725,600	721,977
DOGWOOD MARKET SALES	$	Dogwood Market	10,789,199	19,533,105	20,055,063	20,822,297	21,510,466	22,108,693	22,504,003	22,895,047	23,378,924	24,150,488	24,676,859	25,297,499	26,027,662	26,741,578	27,073,911	27,862,793	28,578,567	30,055,230	30,814,948	31,784,006
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	27.41	26.42	27.14	28.12	28.92	29.58	30.64	31.56	32.42	33.23	34.16	35.03	35.87	36.99	37.74	38.67	39.60	41.31	42.47	44.02
IATAN MARKET SALES	MWh	Iatan Market	393,212	405,923	404,069	404,960	404,200	405,148	401,465	400,389	400,475	401,611	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
IATAN MARKET SALES	$	Iatan Market	9,499,959	10,206,965	10,344,394	10,683,749	10,917,880	11,202,817	11,418,970	11,604,441	11,826,003	12,099,295	12,331,028	12,631,559	12,889,843	13,249,551	13,505,458	13,834,402	14,074,045	14,781,140	15,110,720	15,759,205
IATAN MARKET SALES	$/MWh	Iatan Market	24.16	25.15	25.60	26.38	27.01	27.65	28.44	28.98	29.53	30.13	30.81	31.56	32.20	33.02	33.78	34.59	35.25	36.84	37.76	39.30
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	1,722,559	1,886,008	1,929,296	1,955,275	2,003,237	1,959,549	2,091,260	2,124,049	2,147,442	2,174,204	2,123,529	2,193,506	2,367,507	2,411,664	2,452,143	2,487,915	2,427,201	2,679,360	2,767,675	2,848,483
MARSHALL MARKET SALES	$/MWh	Marshall Market	20.68	22.58	23.16	23.47	24.05	23.46	25.11	25.50	25.78	26.03	25.49	26.33	28.42	28.87	29.44	29.87	29.14	32.07	33.23	34.20
NEBRASKA MARKET SALES	MWh	Nebraska City Market	412,135	454,371	452,968	453,253	453,122	452,114	443,256	440,236	440,572	440,867	439,492	439,222	438,588	441,701	439,044	437,600	436,868	441,140	439,823	441,854
NEBRASKA MARKET SALES	$	Nebraska City Market	9,865,161	10,993,176	11,182,142	11,468,713	11,677,599	11,837,150	11,904,866	12,037,339	12,242,754	12,541,538	12,805,169	13,115,509	13,365,162	13,812,119	14,004,638	14,260,253	14,544,303	15,346,464	15,678,429	16,340,542
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	23.94	24.19	24.69	25.30	25.77	26.18	26.86	27.34	27.79	28.45	29.14	29.86	30.47	31.27	31.90	32.59	33.29	34.79	35.65	36.98
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	1,314,020	1,383,653	1,400,426	1,409,375	1,463,410	1,313,000	1,576,905	1,570,467	1,571,831	1,586,971	1,412,705	1,677,044	1,784,808	1,767,086	1,806,525	1,803,926	1,614,933	2,034,524	2,046,060	2,084,851
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	21.23	22.25	22.63	22.77	23.65	21.11	25.48	25.38	25.40	25.52	22.83	27.10	28.84	28.41	29.19	29.15	26.10	32.71	33.06	33.69
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		32,676,624	31,973,961	28,832,799	30,776,126	33,499,467	30,283,804	31,022,236	29,526,840	31,364,515	30,644,493	31,185,170	33,568,696	33,603,549	33,707,117	36,990,868	35,432,904	38,861,546	36,606,713	37,204,008	38,431,100
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		4,487,510	5,799,695	5,924,132	6,064,488	6,238,789	6,401,670	6,467,616	6,589,036	6,727,381	6,923,338	7,071,221	7,254,018	7,447,701	7,651,767	7,790,868	7,990,723	8,189,145	8,335,570	8,546,655	8,735,420
TOTAL FUEL COSTS	$		19,592,493	26,790,488	27,368,924	28,193,841	29,096,701	30,148,430	30,603,248	31,135,294	31,681,869	32,765,181	33,440,807	34,331,901	35,120,430	36,022,489	36,774,997	37,831,148	38,806,582	40,668,151	41,579,023	43,105,296
TOTAL ENERGY MARKET PURCHASES	$		26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
TOTAL ENERGY MARKET SALES	$		35,096,755	44,825,172	45,685,857	47,125,778	48,422,876	49,301,514	50,709,473	51,404,877	52,366,527	53,797,750	54,613,922	56,214,831	57,776,461	59,348,396	60,252,700	61,688,186	62,718,103	66,371,036	68,008,922	70,428,320
TOTAL COSTS	$		48,567,624	49,934,925	46,874,318	49,283,510	53,187,999	51,246,192	53,304,846	51,996,240	54,630,681	54,810,351	56,414,688	59,456,974	60,209,638	61,098,027	65,670,832	64,924,006	69,852,639	67,256,873	69,844,312	71,852,989

$697,795,969

Independence Power & Light

Path 2 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0	35.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 1,043,730	$ 1,069,815	$ 1,462,080	$ 1,498,640	$ 1,536,100	$ 1,574,500	$ 2,017,325	$ 2,067,775	$ 2,119,450	$ 2,172,450	$ 2,672,100	$ 2,738,910	$ 2,807,400	$ 2,877,570	$ 3,441,095
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	393,572	922,760	922,298	924,262	928,169	932,764	916,702	905,354	900,027	907,123	901,513	901,321	905,485	902,226	895,279	899,233	900,729	907,923	905,560	901,038
GENERATION	MWh	Blue Valley 1b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	9,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	393,212	405,923	404,069	404,960	404,200	405,148	401,464	400,389	400,475	401,610	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	412,135	454,371	452,968	453,253	453,122	452,113	443,256	440,236	440,572	440,866	439,492	439,222	438,587	441,701	439,044	437,599	436,867	441,140	439,823	441,854
GENERATION	MWh	H-5	6,748	2,486	2,112	1,958	2,156	2,288	4,455	4,191	4,125	4,169	4,103	4,081	4,257	4,147	4,213	4,125	4,147	3,839	4,301	4,081
GENERATION	MWh	H-6	7,561	2,921	2,231	2,116	2,484	2,530	5,027	4,497	4,451	4,681	4,566	4,612	4,520	4,451	4,497	4,635	4,612	4,335	4,543	4,451
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	59	84	84	84	84	85	83	82	82	82	82	82	82	82	81	82	82	82	82	82
CAPACITY FACTOR	%	Blue Valley 1b	2	0																		
CAPACITY FACTOR	%	Blue Valley 2b	2	0																		
CAPACITY FACTOR	%	Blue Valley 3b	2	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	85	87	87	87	87	87	86	86	86	86	86	86	86	86	86	86	86	86	86	86
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	90	90	89	88	87	87	87	87	87	87	87	87	87	87	87	87	88
CAPACITY FACTOR	%	H-5	3	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,410,048	$ 3,108,928	$ 3,184,002	$ 3,250,978	$ 3,368,681	$ 3,450,320	$ 3,481,752	$ 3,534,123	$ 3,606,891	$ 3,712,751	$ 3,791,535	$ 3,898,584	$ 4,010,448	$ 4,111,286	$ 4,174,104	$ 4,293,252	$ 4,403,648	$ 4,473,192	$ 4,599,699	$ 4,663,007
VARIABLE O&M COST	$	Blue Valley 1b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 22,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,469,228	$ 1,556,849	$ 1,585,210	$ 1,626,739	$ 1,664,583	$ 1,713,845	$ 1,738,941	$ 1,775,792	$ 1,816,948	$ 1,872,239	$ 1,910,495	$ 1,957,391	$ 2,005,882	$ 2,059,606	$ 2,106,314	$ 2,159,470	$ 2,210,638	$ 2,251,456	$ 2,300,987	$ 2,366,063
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,537,585	$ 1,740,392	$ 1,778,331	$ 1,823,826	$ 1,864,487	$ 1,912,000	$ 1,916,274	$ 1,960,250	$ 1,998,891	$ 2,053,519	$ 2,099,959	$ 2,149,415	$ 2,204,132	$ 2,273,570	$ 2,314,699	$ 2,365,171	$ 2,423,356	$ 2,474,366	$ 2,531,754	$ 2,605,035
VARIABLE O&M COST	$	H-5	$ 13,833	$ 5,221	$ 4,541	$ 4,327	$ 4,873	$ 5,308	$ 10,604	$ 10,225	$ 10,311	$ 10,672	$ 10,751	$ 10,977	$ 11,751	$ 11,735	$ 12,219	$ 12,250	$ 12,608	$ 11,976	$ 13,765	$ 13,384
VARIABLE O&M COST	$	H-6	$ 15,499	$ 6,134	$ 4,797	$ 4,676	$ 5,614	$ 5,870	$ 11,964	$ 10,973	$ 11,127	$ 11,983	$ 11,963	$ 12,406	$ 12,475	$ 12,596	$ 13,041	$ 13,766	$ 14,020	$ 13,525	$ 14,537	$ 14,599
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.37	$ 3.45	$ 3.52	$ 3.63	$ 3.70	$ 3.80	$ 3.90	$ 4.01	$ 4.09	$ 4.21	$ 4.33	$ 4.43	$ 4.56	$ 4.66	$ 4.77	$ 4.89	$ 4.93	$ 5.08	$ 5.18
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.39																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.44	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.03	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,524,458	$ 16,949,730	$ 17,358,682	$ 18,028,381	$ 18,627,011	$ 19,151,620	$ 19,196,544	$ 19,536,258	$ 19,922,655	$ 20,557,931	$ 21,042,101	$ 21,658,366	$ 22,184,667	$ 22,770,524	$ 23,093,417	$ 23,780,134	$ 24,302,018	$ 25,912,605	$ 26,374,081	$ 27,295,874
FUEL COST	$	Blue Valley 1b	$ 115,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	Blue Valley 2b	$ 115,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	Blue Valley 3b	$ 355,360	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 256,887	$ 104,936	$ 91,761	$ 89,348	$ 100,745	$ 108,969	$ 221,219	$ 213,829	$ 215,967	$ 223,351	$ 226,267	$ 230,857	$ 246,909	$ 247,017	$ 256,579	$ 257,902	$ 265,823	$ 257,309	$ 295,260	$ 290,745
FUEL COST	$	H-6	$ 285,171	$ 122,110	$ 95,967	$ 95,494	$ 114,946	$ 119,343	$ 247,027	$ 227,257	$ 230,763	$ 248,526	$ 249,023	$ 258,376	$ 259,451	$ 262,562	$ 270,795	$ 286,970	$ 292,153	$ 287,369	$ 308,664	$ 314,058
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.6																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.6	9.6	9.7	9.6	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 26,907,752	$ 30,195,953	$ 30,434,321	$ 31,374,834	$ 32,775,919	$ 33,713,802	$ 35,921,219	$ 36,149,946	$ 37,223,444	$ 38,275,088	$ 39,331,412	$ 40,517,191	$ 41,814,419	$ 43,065,050	$ 44,366,799	$ 45,357,417	$ 46,713,469	$ 48,017,476	$ 50,523,548	$ 52,009,493
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 24.75	$ 27.68	$ 27.79	$ 28.57	$ 29.74	$ 30.48	$ 32.36	$ 32.45	$ 33.29	$ 34.11	$ 34.93	$ 35.86	$ 36.87	$ 37.84	$ 38.88	$ 39.61	$ 40.66	$ 41.61	$ 43.63	$ 44.76
INDEPENDENCE MARKET SALES	MWh	Independence Market	48,954	24,208	23,097	22,828	23,394	23,619	28,236	27,441	27,329	27,650	27,423	27,446	27,531	27,398	27,464	27,513	27,513	26,974	27,598	27,285
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,905,857	$ 822,264	$ 774,536	$ 786,370	$ 850,285	$ 880,304	$ 1,213,469	$ 1,173,534	$ 1,199,573	$ 1,245,255	$ 1,264,634	$ 1,299,715	$ 1,341,478	$ 1,366,398	$ 1,410,024	$ 1,438,899	$ 1,479,054	$ 1,474,319	$ 1,591,089	$ 1,611,232
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 38.93	$ 33.97	$ 33.53	$ 34.45	$ 36.35	$ 37.27	$ 42.98	$ 42.77	$ 43.89	$ 45.04	$ 46.12	$ 47.35	$ 48.73	$ 49.87	$ 51.34	$ 52.30	$ 53.76	$ 54.66	$ 57.65	$ 59.05
DOGWOOD MARKET SALES	MWh	Dogwood Market	393,572	922,759	922,298	924,262	928,169	932,764	916,702	905,354	900,027	907,122	901,513	901,321	905,485	902,226	895,279	899,233	900,729	907,923	905,560	901,038
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,789,199	$ 24,377,602	$ 25,029,013	$ 25,986,532	$ 26,845,378	$ 27,591,973	$ 28,085,326	$ 28,573,355	$ 29,177,240	$ 30,140,163	$ 30,797,081	$ 31,571,649	$ 32,482,904	$ 33,373,881	$ 33,788,638	$ 34,773,174	$ 35,666,471	$ 37,509,367	$ 38,457,507	$ 39,666,906
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.41	$ 26.42	$ 27.14	$ 28.12	$ 28.92	$ 29.58	$ 30.64	$ 31.56	$ 32.42	$ 33.23	$ 34.16	$ 35.03	$ 35.87	$ 36.99	$ 37.74	$ 38.67	$ 39.60	$ 41.31	$ 42.47	$ 44.02
IATAN MARKET SALES	MWh	Iatan Market	393,212	405,923	404,069	404,960	404,200	405,148	401,465	400,389	400,475	401,611	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
IATAN MARKET SALES	$	Iatan Market	$ 9,499,959	$ 10,206,965	$ 10,344,394	$ 10,683,749	$ 10,917,880	$ 11,202,817	$ 11,418,970	$ 11,604,441	$ 11,826,003	$ 12,099,295	$ 12,331,028	$ 12,631,559	$ 12,889,843	$ 13,249,551	$ 13,505,458	$ 13,834,402	$ 14,074,045	$ 14,781,140	$ 15,110,720	$ 15,759,205
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.16	$ 25.15	$ 25.60	$ 26.38	$ 27.01	$ 27.65	$ 28.44	$ 28.98	$ 29.53	$ 30.13	$ 30.81	$ 31.56	$ 32.20	$ 33.02	$ 33.78	$ 34.59	$ 35.25	$ 36.84	$ 37.76	$ 39.30
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,722,559	$ 1,886,008	$ 1,929,296	$ 1,955,275	$ 2,003,237	$ 1,959,549	$ 2,091,260	$ 2,124,049	$ 2,147,442	$ 2,174,204	$ 2,123,529	$ 2,193,506	$ 2,367,507	$ 2,411,664	$ 2,452,143	$ 2,487,915	$ 2,427,201	$ 2,679,360	$ 2,767,675	$ 2,848,483
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 20.68	$ 22.58	$ 23.16	$ 23.47	$ 24.05	$ 23.46	$ 25.11	$ 25.50	$ 25.78	$ 26.03	$ 25.49	$ 26.33	$ 28.42	$ 28.87	$ 29.44	$ 29.87	$ 29.14	$ 32.07	$ 33.23	$ 34.20
NEBRASKA MARKET SALES	MWh	Nebraska City Market	412,135	454,371	452,968	453,253	453,122	452,114	443,256	440,236	440,572	440,867	439,492	439,222	438,588	441,701	439,044	437,600	436,868	441,140	439,823	441,854
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 9,865,161	$ 10,993,176	$ 11,182,142	$ 11,468,713	$ 11,677,599	$ 11,837,150	$ 11,904,866	$ 12,037,339	$ 12,242,754	$ 12,541,538	$ 12,805,169	$ 13,115,509	$ 13,365,162	$ 13,812,119	$ 14,004,638	$ 14,260,253	$ 14,544,303	$ 15,346,464	$ 15,678,429	$ 16,340,542
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 23.94	$ 24.19	$ 24.69	$ 25.30	$ 25.77	$ 26.18	$ 26.86	$ 27.34	$ 27.79	$ 28.45	$ 29.14	$ 29.86	$ 30.47	$ 31.27	$ 31.90	$ 32.59	$ 33.29	$ 34.79	$ 35.65	$ 36.98
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,314,020	$ 1,383,653	$ 1,400,426	$ 1,409,375	$ 1,463,410	$ 1,313,000	$ 1,576,905	$ 1,570,467	$ 1,571,831	$ 1,586,971	$ 1,412,705	$ 1,677,044	$ 1,784,808	$ 1,767,086	$ 1,806,525	$ 1,803,926	$ 1,614,933	$ 2,034,524	$ 2,046,060	$ 2,084,851
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 21.23	$ 22.25	$ 22.63	$ 22.77	$ 23.65	$ 21.11	$ 25.48	$ 25.38	$ 25.40	$ 25.52	$ 22.83	$ 27.10	$ 28.84	$ 28.41	$ 29.19	$ 29.15	$ 26.10	$ 32.71	$ 33.06	$ 33.69
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 32,240,384	$ 29,096,178	$ 31,077,380	$ 33,694,712	$ 30,454,611	$ 31,168,032	$ 29,646,985	$ 31,458,357	$ 30,711,393	$ 31,224,450	$ 33,579,665	$ 33,585,479	$ 33,659,320	$ 36,912,565	$ 35,323,360	$ 38,719,960	$ 36,432,277	$ 36,995,928	$ 38,188,521
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,487,510	$ 6,417,524	$ 6,556,880	$ 6,710,546	$ 6,908,238	$ 7,087,342	$ 7,159,535	$ 7,291,363	$ 7,444,169	$ 7,661,164	$ 7,824,703	$ 8,028,773	$ 8,244,687	$ 8,468,792	$ 8,620,377	$ 8,843,910	$ 9,064,271	$ 9,224,516	$ 9,460,741	$ 9,662,087
TOTAL FUEL COSTS	$		$ 19,592,493	$ 30,158,863	$ 30,818,569	$ 31,776,573	$ 32,798,398	$ 33,954,381	$ 34,418,127	$ 35,017,683	$ 35,641,046	$ 36,850,605	$ 37,622,448	$ 38,636,011	$ 39,529,130	$ 40,547,616	$ 41,364,291	$ 42,556,911	$ 43,636,058	$ 45,817,694	$ 46,820,274	$ 48,529,733
TOTAL ENERGY MARKET PURCHASES	$		$ 26,907,752	$ 30,195,953	$ 30,434,321	$ 31,374,834	$ 32,775,919	$ 33,713,802	$ 35,921,219	$ 36,149,946	$ 37,223,444	$ 38,275,088	$ 39,331,412	$ 40,517,191	$ 41,814,419	$ 43,065,050	$ 44,366,799	$ 45,357,417	$ 46,713,469	$ 48,017,476	$ 50,523,548	$ 52,009,493
TOTAL ENERGY MARKET SALES	$		$ 35,096,755	$ 49,669,668	$ 50,659,807	$ 52,290,013	$ 53,757,788	$ 54,784,794	$ 56,290,796	$ 57,083,185	$ 58,164,843	$ 59,787,425	$ 60,734,145	$ 62,488,982	$ 64,231,703	$ 65,980,700	$ 66,967,427	$ 68,598,567	$ 69,806,006	$ 73,825,174	$ 75,651,481	$ 78,311,220
TOTAL COSTS	$		$ 48,567,624	$ 49,343,056	$ 46,246,141	$ 48,649,319	$ 52,419,479	$ 50,425,343	$ 52,376,117	$ 51,022,793	$ 53,602,172	$ 53,710,825	$ 55,268,868	$ 58,272,658	$ 58,942,012	$ 59,760,077	$ 64,296,605	$ 63,483,030	$ 68,327,751	$ 65,666,789	$ 68,149,011	$ 70,078,615

$685,658,936

Independence Power & Light

Path 3 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 695,820	$ 1,069,815	$ 1,096,560	$ 1,123,980	$ 1,152,075	$ 1,574,500	$ 1,613,860	$ 1,654,220	$ 1,695,560	$ 2,172,450	$ 2,226,750	$ 2,282,425	$ 2,339,500	$ 2,877,570	$ 2,949,510
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	393,572	922,760	922,298	924,262	928,169	932,764	916,702	905,354	900,027	907,123	901,513	901,321	905,485	901,931	895,279	899,233	900,729	907,923	905,265	901,038
GENERATION	MWh	Blue Valley 1b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	9,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	393,212	405,923	404,069	404,960	404,200	405,148	401,464	400,389	400,475	401,610	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	412,135	454,371	452,968	453,253	453,122	452,113	443,256	440,236	440,572	440,866	439,492	439,222	438,587	441,701	439,044	437,599	436,867	441,140	439,823	441,854
GENERATION	MWh	H-5	6,748	2,486	2,112	1,958	2,156	2,288	4,455	4,191	4,125	4,169	4,103	4,081	4,257	4,147	4,213	4,125	4,147	3,839	4,301	4,081
GENERATION	MWh	H-6	7,561	2,921	2,231	2,116	2,484	2,530	5,027	4,497	4,451	4,681	4,566	4,612	4,520	4,451	4,497	4,635	4,612	4,335	4,543	4,451
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	34,168	38,205	38,645	51,343	44,664	45,875	45,765	45,985	44,737	45,471	46,536	47,343	46,242	46,866	42,389	47,783	44,994
CAPACITY FACTOR	%	Dogwood	59	84	84	84	84	85	83	82	82	82	82	82	82	82	81	82	82	82	82	82
CAPACITY FACTOR	%	Blue Valley 1b	2	0																		
CAPACITY FACTOR	%	Blue Valley 2b	2	0																		
CAPACITY FACTOR	%	Blue Valley 3b	2	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	85	87	87	87	87	87	86	86	86	86	86	86	86	86	86	86	86	86	86	86
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	90	90	89	88	87	87	87	87	87	87	87	87	87	87	87	87	88
CAPACITY FACTOR	%	H-5	3	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	11	12	12	16	14	14	14	14	14	14	14	15	14	15	13	15	14
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,410,048	$ 3,108,928	$ 3,184,002	$ 3,250,978	$ 3,368,681	$ 3,450,320	$ 3,481,752	$ 3,534,123	$ 3,606,891	$ 3,712,751	$ 3,791,535	$ 3,898,584	$ 4,010,448	$ 4,112,013	$ 4,174,104	$ 4,293,252	$ 4,403,648	$ 4,473,192	$ 4,600,254	$ 4,663,007
VARIABLE O&M COST	$	Blue Valley 1b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 22,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,469,228	$ 1,556,849	$ 1,585,210	$ 1,626,739	$ 1,664,583	$ 1,713,845	$ 1,738,941	$ 1,775,792	$ 1,816,948	$ 1,872,239	$ 1,910,495	$ 1,957,391	$ 2,005,882	$ 2,059,606	$ 2,106,314	$ 2,159,470	$ 2,210,638	$ 2,251,456	$ 2,300,987	$ 2,366,063
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,537,585	$ 1,740,392	$ 1,778,331	$ 1,823,826	$ 1,864,487	$ 1,912,000	$ 1,916,274	$ 1,960,250	$ 1,998,891	$ 2,053,519	$ 2,099,959	$ 2,149,415	$ 2,204,132	$ 2,273,570	$ 2,314,699	$ 2,365,171	$ 2,423,356	$ 2,474,366	$ 2,531,754	$ 2,605,035
VARIABLE O&M COST	$	H-5	$ 13,833	$ 5,221	$ 4,541	$ 4,327	$ 4,873	$ 5,308	$ 10,604	$ 10,225	$ 10,311	$ 10,672	$ 10,751	$ 10,977	$ 11,751	$ 11,735	$ 12,219	$ 12,250	$ 12,608	$ 11,976	$ 13,765	$ 13,384
VARIABLE O&M COST	$	H-6	$ 15,499	$ 6,134	$ 4,797	$ 4,676	$ 5,614	$ 5,870	$ 11,964	$ 10,973	$ 11,127	$ 11,983	$ 11,963	$ 12,406	$ 12,475	$ 12,596	$ 13,041	$ 13,766	$ 14,020	$ 13,525	$ 14,537	$ 14,599
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 270,608	$ 310,222	$ 321,527	$ 437,966	$ 390,387	$ 411,091	$ 420,579	$ 433,180	$ 431,715	$ 449,720	$ 471,917	$ 491,970	$ 492,477	$ 511,776	$ 474,338	$ 548,108	$ 529,137
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.37	$ 3.45	$ 3.52	$ 3.63	$ 3.70	$ 3.80	$ 3.90	$ 4.01	$ 4.09	$ 4.21	$ 4.33	$ 4.43	$ 4.56	$ 4.66	$ 4.77	$ 4.89	$ 4.93	$ 5.08	$ 5.18
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.39																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.44	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 3 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	3.73	3.83	3.93	4.02	4.11	4.23	4.32	4.45	4.54	4.66
VARIABLE O&M COST	$/MWh	H-5	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56
VARIABLE O&M COST	$/MWh	H-6	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				7.92	8.12	8.32	8.53	8.74	8.96	9.19
FUEL COST	$	Dogwood	6,524,458	16,949,730	17,358,682	18,028,381	18,627,011	19,151,620	19,196,544	19,536,258	19,922,655	20,557,931
FUEL COST	$	Blue Valley 1b	115,184	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	115,184	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	355,360	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	`	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.									
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.									
FUEL COST	$	H-5	256,887	104,936	91,761	89,348	100,745	108,969	221,219	213,829	215,967	223,351
FUEL COST	$	H-6	285,171	122,110	95,967	95,494	114,946	119,343	247,027	227,257	230,763	248,526
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	841,826	966,649	1,002,916	1,387,623	1,237,277	1,298,369	1,333,637
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.6									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.5	15.5	15.5	15.5
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.									
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	24.75	27.68	27.79	28.57	29.74	30.48	32.36	32.45	33.29	34.11
INDEPENDENCE MARKET SALES	MWh	Independence Market	48,954	24,208	23,097	56,996	61,599	62,264	79,580	72,105	73,204	73,415
INDEPENDENCE MARKET SALES	$	Independence Market	1,905,857	822,264	774,536	2,144,705	2,411,361	2,502,520	3,512,855	3,205,456	3,344,120	3,442,931
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	38.93	33.97	33.53	37.63	39.15	40.19	44.14	44.46	45.68	46.90
DOGWOOD MARKET SALES	MWh	Dogwood Market	393,572	922,759	922,298	924,262	928,169	932,764	916,702	905,354	900,027	907,122
DOGWOOD MARKET SALES	$	Dogwood Market	10,789,199	24,377,602	25,029,013	25,986,532	26,845,378	27,591,973	28,085,326	28,573,355	29,177,240	30,140,163
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	27.41	26.42	27.14	28.12	28.92	29.58	30.64	31.56	32.42	33.23
IATAN MARKET SALES	MWh	Iatan Market	393,212	405,923	404,069	404,960	404,200	405,148	401,465	400,389	400,475	401,611
IATAN MARKET SALES	$	Iatan Market	9,499,959	10,206,965	10,344,394	10,683,749	10,917,880	11,202,817	11,418,970	11,604,441	11,826,003	12,099,295
IATAN MARKET SALES	$/MWh	Iatan Market	24.16	25.15	25.60	26.38	27.01	27.65	28.44	28.98	29.53	30.13
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
MARSHALL MARKET SALES	$	Marshall Market	1,722,559	1,886,008	1,929,296	1,955,275	2,003,237	1,959,549	2,091,260	2,124,049	2,147,442	2,174,204
MARSHALL MARKET SALES	$/MWh	Marshall Market	20.68	22.58	23.16	23.47	24.05	23.46	25.11	25.50	25.78	26.03
NEBRASKA MARKET SALES	MWh	Nebraska City Market	412,135	454,371	452,968	453,253	453,122	452,114	443,256	440,236	440,572	440,867
NEBRASKA MARKET SALES	$	Nebraska City Market	9,865,161	10,993,176	11,182,142	11,468,713	11,677,599	11,837,150	11,904,866	12,037,339	12,242,754	12,541,538
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	23.94	24.19	24.69	25.30	25.77	26.18	26.86	27.34	27.79	28.45
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
SMOKY MARKET SALES	$	Smoky Hills Market	1,314,020	1,383,653	1,400,426	1,409,375	1,463,410	1,313,000	1,576,905	1,570,467	1,571,831	1,586,971
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	21.23	22.25	22.63	22.77	23.65	21.11	25.48	25.38	25.40	25.52
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		31,651,624	32,187,853	34,499,377	36,518,550	37,945,650	35,247,969	36,578,783	34,706,868	36,499,079	35,782,994
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		4,487,510	6,417,524	6,556,880	6,981,154	7,218,460	7,408,870	7,597,501	7,681,750	7,855,259	8,081,743
TOTAL FUEL COSTS	$		19,592,493	30,158,863	30,818,569	32,618,400	33,765,047	34,957,298	35,805,750	36,254,960	36,939,415	38,184,242
TOTAL ENERGY MARKET PURCHASES	$		26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088
TOTAL ENERGY MARKET SALES	$		35,096,755	49,669,668	50,659,807	53,648,348	55,318,863	56,407,010	58,590,182	59,115,107	60,309,390	61,985,101
TOTAL COSTS	$		47,542,624	49,290,524	51,649,340	53,844,589	56,386,212	54,920,929	57,313,071	55,678,417	58,207,807	58,338,966

Data Item	Units	Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	4.78	4.89	5.03	5.15	5.27	5.40	5.55	5.61	5.76	5.90
VARIABLE O&M COST	$/MWh	H-5	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	H-6	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)	9.42	9.65	9.89	10.14	10.39	10.65	10.92	11.19	11.47	11.76
FUEL COST	$	Dogwood	21,042,101	21,658,366	22,184,667	22,762,883	23,093,417	23,780,134	24,302,018	25,912,605	26,365,388	27,295,874
FUEL COST	$	Blue Valley 1b	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2										
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2										
FUEL COST	$	H-5	226,267	230,857	246,909	247,017	256,579	257,902	265,823	257,309	295,260	290,745
FUEL COST	$	H-6	249,023	258,376	259,451	262,562	270,795	286,970	292,153	287,369	308,664	314,058
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	1,371,753	1,373,041	1,429,084	1,498,328	1,562,877	1,572,872	1,612,773	1,530,647	1,779,754	1,733,517
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost										
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	34.93	35.86	36.87	37.84	38.88	39.61	40.66	41.61	43.63	44.76
INDEPENDENCE MARKET SALES	MWh	Independence Market	73,408	72,184	73,003	73,934	74,807	73,755	74,379	69,363	75,382	72,280
INDEPENDENCE MARKET SALES	$	Independence Market	3,521,436	3,559,453	3,692,875	3,843,865	3,991,765	4,024,594	4,138,324	3,993,885	4,509,837	4,447,644
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	47.97	49.31	50.59	51.99	53.36	54.57	55.64	57.58	59.83	61.53
DOGWOOD MARKET SALES	MWh	Dogwood Market	901,513	901,321	905,485	901,931	895,279	899,233	900,729	907,923	905,265	901,038
DOGWOOD MARKET SALES	$	Dogwood Market	30,797,081	31,571,649	32,482,904	33,366,316	33,788,638	34,773,174	35,666,471	37,509,367	38,449,480	39,666,906
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	34.16	35.03	35.87	36.99	37.74	38.67	39.60	41.31	42.47	44.02
IATAN MARKET SALES	MWh	Iatan Market	400,204	400,204	400,301	401,224	399,816	399,899	399,309	401,243	400,222	401,024
IATAN MARKET SALES	$	Iatan Market	12,331,028	12,631,559	12,889,843	13,249,551	13,505,458	13,834,402	14,074,045	14,781,140	15,110,720	15,759,205
IATAN MARKET SALES	$/MWh	Iatan Market	30.81	31.56	32.20	33.02	33.78	34.59	35.25	36.84	37.76	39.30
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	2,123,529	2,193,506	2,367,507	2,411,664	2,452,143	2,487,915	2,427,201	2,679,360	2,767,675	2,848,483
MARSHALL MARKET SALES	$/MWh	Marshall Market	25.49	26.33	28.42	28.87	29.44	29.87	29.14	32.07	33.23	34.20
NEBRASKA MARKET SALES	MWh	Nebraska City Market	439,492	439,222	438,588	441,701	439,044	437,600	436,868	441,140	439,823	441,854
NEBRASKA MARKET SALES	$	Nebraska City Market	12,805,169	13,115,509	13,365,162	13,812,119	14,004,638	14,260,253	14,544,303	15,346,464	15,678,429	16,340,542
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	29.14	29.86	30.47	31.27	31.90	32.59	33.29	34.79	35.65	36.98
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	1,412,705	1,677,044	1,784,808	1,767,086	1,806,525	1,803,926	1,614,933	2,034,524	2,046,060	2,084,851
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	22.83	27.10	28.84	28.41	29.19	29.15	26.10	32.71	33.06	33.69
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		36,695,658	38,636,414	38,399,563	38,755,330	40,972,098	40,135,143	43,835,092	41,522,736	42,603,770	43,323,431
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		8,257,883	8,460,488	8,694,408	8,941,437	9,112,347	9,336,387	9,576,046	9,698,853	10,009,404	10,191,225
TOTAL FUEL COSTS	$		38,994,201	40,009,052	40,958,214	42,038,302	42,927,168	44,129,783	45,248,830	47,348,341	48,591,335	50,263,250
TOTAL ENERGY MARKET PURCHASES	$		39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
TOTAL ENERGY MARKET SALES	$		62,990,947	64,748,720	66,583,099	68,450,602	69,549,168	71,184,262	72,465,276	76,344,740	78,562,202	81,147,632
TOTAL COSTS	$		60,288,206	62,874,425	63,283,503	64,349,516	67,829,244	67,774,467	72,908,162	70,242,666	73,165,855	74,639,767

$733,896,176

Independence Power & Light

Path 4 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	110.0	110.0	110.0	115.0	115.0	115.0	115.0	120.0	120.0	120.0	120.0	125.0	125.0	125.0	125.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 7,654,020	$ 7,845,310	$ 8,041,440	$ 8,617,180	$ 8,832,575	$ 9,053,375	$ 9,279,695	$ 9,925,320	$ 10,173,360	$ 10,427,760	$ 10,688,400	$ 11,412,125	$ 11,697,500	$ 11,989,875	$ 12,289,625
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	393,572	922,760	922,298	924,262	928,169	932,408	911,684	905,650	902,128	907,123	905,362	902,357	908,258	902,226	897,235	898,925	900,642	906,410	905,265	901,756
GENERATION	MWh	Blue Valley 1b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	9,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	393,212	405,923	404,069	404,960	404,200	405,148	409,514	403,066	400,359	401,610	400,353	401,912	408,483	401,224	399,997	400,829	401,119	401,243	400,386	401,922
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	412,135	454,371	452,968	453,253	453,122	452,113	443,256	439,339	439,820	440,866	440,482	439,861	439,407	441,701	438,391	438,365	437,652	445,605	446,098	441,156
GENERATION	MWh	H-5	6,748	2,486	2,112	1,958	2,156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	7,561	2,921	2,231	2,116	2,484	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	59	84	84	84	84	85	83	82	82	82	82	82	82	82	82	82	82	82	82	82
CAPACITY FACTOR	%	Blue Valley 1b	2	0																		
CAPACITY FACTOR	%	Blue Valley 2b	2	0																		
CAPACITY FACTOR	%	Blue Valley 3b	2	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	85	87	87	87	87	87	88	87	86	86	86	87	88	86	86	87	87	86	86	87
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	90	90	89	88	87	87	87	87	87	87	87	87	87	87	88	88	88
CAPACITY FACTOR	%	H-5	3	1	1	1	1															
CAPACITY FACTOR	%	H-6	4	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,410,048	$ 3,108,928	$ 3,184,002	$ 3,250,978	$ 3,368,681	$ 3,451,058	$ 3,460,898	$ 3,533,214	$ 3,611,079	$ 3,712,751	$ 3,803,375	$ 3,900,933	$ 4,020,456	$ 4,111,286	$ 4,178,951	$ 4,289,769	$ 4,403,231	$ 4,466,274	$ 4,600,254	$ 4,669,546
VARIABLE O&M COST	$	Blue Valley 1b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 22,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,469,228	$ 1,556,849	$ 1,585,210	$ 1,626,739	$ 1,664,583	$ 1,713,845	$ 1,772,430	$ 1,787,020	$ 1,817,024	$ 1,872,239	$ 1,911,206	$ 1,965,117	$ 2,045,575	$ 2,059,606	$ 2,106,666	$ 2,163,874	$ 2,220,022	$ 2,251,456	$ 2,300,908	$ 2,369,583
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,537,585	$ 1,740,392	$ 1,778,331	$ 1,823,826	$ 1,864,487	$ 1,912,000	$ 1,916,274	$ 1,955,455	$ 1,995,488	$ 2,053,519	$ 2,103,838	$ 2,153,367	$ 2,208,228	$ 2,273,570	$ 2,311,271	$ 2,369,292	$ 2,427,683	$ 2,498,197	$ 2,565,997	$ 2,600,735
VARIABLE O&M COST	$	H-5	$ 13,833	$ 5,221	$ 4,541	$ 4,327	$ 4,873	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 15,499	$ 6,134	$ 4,797	$ 4,676	$ 5,614	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.37	$ 3.45	$ 3.52	$ 3.63	$ 3.70	$ 3.80	$ 3.90	$ 4.00	$ 4.09	$ 4.20	$ 4.32	$ 4.43	$ 4.56	$ 4.66	$ 4.77	$ 4.89	$ 4.93	$ 5.08	$ 5.18
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.39																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 4 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	3.73	3.83	3.93	4.02	4.11	4.23	4.32	4.45	4.54	4.66	4.78	4.90	5.03	5.15	5.27	5.40	5.55	5.61	5.75	5.90
VARIABLE O&M COST	$/MWh	H-5	2.05	2.10	2.15	2.21	2.26															
VARIABLE O&M COST	$/MWh	H-6	2.05	2.10	2.15	2.21	2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	6,524,458	16,949,730	17,358,682	18,028,381	18,627,011	19,144,030	19,017,508	19,541,736	19,799,498	20,557,931	20,971,035	21,514,888	22,085,774	22,770,524	22,941,663	23,590,054	24,115,580	25,764,427	26,365,388	27,091,347
FUEL COST	$	Blue Valley 1b	115,184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	115,184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	355,360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	`	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.																			
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.																			
FUEL COST	$	H-5	256,887	104,936	91,761	89,348	100,745	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	H-6	285,171	122,110	95,967	95,494	114,946	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.6																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	24.75	27.68	27.79	28.57	29.74	30.48	32.36	32.45	33.29	34.11	34.93	35.86	36.87	37.84	38.88	39.61	40.66	41.61	43.63	44.76
INDEPENDENCE MARKET SALES	MWh	Independence Market	48,954	24,208	23,097	22,828	23,394	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
INDEPENDENCE MARKET SALES	$	Independence Market	1,905,857	822,264	774,536	786,370	850,285	575,345	601,338	602,632	619,342	636,444	651,110	668,016	685,068	705,396	722,575	736,874	758,192	775,046	810,679	833,082
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	38.93	33.97	33.53	34.45	36.35	30.60	32.06	32.13	33.02	33.85	34.72	35.62	36.53	37.52	38.53	39.29	40.43	41.22	43.23	44.42
DOGWOOD MARKET SALES	MWh	Dogwood Market	393,572	922,759	922,298	924,262	928,169	932,407	911,684	905,649	902,128	907,122	905,362	902,357	908,258	902,226	897,235	898,925	900,642	906,410	905,265	901,756
DOGWOOD MARKET SALES	$	Dogwood Market	10,789,199	24,377,602	25,029,013	25,986,532	26,845,378	27,585,295	27,973,568	28,577,585	29,155,981	30,140,163	30,862,536	31,550,762	32,524,834	33,373,881	33,770,064	34,706,226	35,610,500	37,316,734	38,449,480	39,598,276
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	27.41	26.42	27.14	28.12	28.92	29.59	30.68	31.55	32.32	33.23	34.09	34.96	35.81	36.99	37.64	38.61	39.54	41.17	42.47	43.91
IATAN MARKET SALES	MWh	Iatan Market	393,212	405,923	404,069	404,960	404,200	405,148	409,514	403,066	400,359	401,611	400,353	401,912	408,483	401,224	399,998	400,829	401,119	401,243	400,386	401,922
IATAN MARKET SALES	$	Iatan Market	9,499,959	10,206,965	10,344,394	10,683,749	10,917,880	11,202,817	11,613,300	11,642,617	11,786,260	12,099,295	12,313,475	12,635,044	13,116,850	13,249,551	13,469,841	13,840,773	14,110,523	14,781,140	15,075,809	15,746,180
IATAN MARKET SALES	$/MWh	Iatan Market	24.16	25.15	25.60	26.38	27.01	27.65	28.36	28.89	29.44	30.13	30.76	31.44	32.11	33.02	33.67	34.53	35.18	36.84	37.65	39.18
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	1,722,559	1,886,008	1,929,296	1,955,275	2,003,237	1,959,549	2,091,260	2,124,049	2,147,442	2,174,204	2,123,529	2,193,506	2,367,507	2,411,664	2,452,143	2,487,915	2,427,201	2,679,360	2,767,675	2,848,483
MARSHALL MARKET SALES	$/MWh	Marshall Market	20.68	22.58	23.16	23.47	24.05	23.46	25.11	25.50	25.78	26.03	25.49	26.33	28.42	28.87	29.44	29.87	29.14	32.07	33.23	34.20
NEBRASKA MARKET SALES	MWh	Nebraska City Market	412,135	454,371	452,968	453,253	453,122	452,114	443,256	439,339	439,821	440,867	440,482	439,862	439,407	441,701	438,391	438,365	437,652	445,605	446,098	441,156
NEBRASKA MARKET SALES	$	Nebraska City Market	9,865,161	10,993,176	11,182,142	11,468,713	11,677,599	11,837,150	11,904,866	12,008,573	12,218,381	12,541,538	12,881,787	13,186,461	13,441,903	13,812,119	13,982,813	14,335,890	14,624,637	15,555,945	15,891,550	16,310,494
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	23.94	24.19	24.69	25.30	25.77	26.18	26.86	27.33	27.78	28.45	29.24	29.98	30.59	31.27	31.90	32.70	33.42	34.91	35.62	36.97
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	1,314,020	1,383,653	1,400,426	1,409,375	1,463,410	1,313,000	1,576,905	1,570,467	1,571,831	1,586,971	1,412,705	1,677,044	1,784,808	1,767,086	1,806,525	1,803,926	1,614,933	2,034,524	2,046,060	2,084,851
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	21.23	22.25	22.63	22.77	23.65	21.11	25.48	25.38	25.40	25.52	22.83	27.10	28.84	28.41	29.19	29.15	26.10	32.71	33.06	33.69
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		29,601,624	31,032,166	29,053,102	30,834,541	30,995,017	36,331,556	35,092,236	35,732,735	36,763,953	37,472,364	38,145,548	38,862,368	40,010,755	40,800,279	41,556,740	42,358,800	43,637,481	44,517,837	45,367,110	46,264,486
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		4,487,510	6,417,524	6,556,880	6,710,546	6,908,238	7,076,903	7,149,602	7,275,690	7,423,590	7,638,509	7,818,418	8,019,417	8,274,258	8,444,461	8,596,888	8,822,935	9,050,937	9,215,927	9,467,159	9,639,864
TOTAL FUEL COSTS	$		19,592,493	30,158,863	30,818,569	31,776,573	32,798,398	33,718,479	33,879,900	34,597,615	35,076,200	36,378,728	37,092,930	38,030,661	39,065,289	40,038,037	40,654,522	41,833,163	42,923,866	45,216,648	46,320,317	47,674,815
TOTAL ENERGY MARKET PURCHASES	$		26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
TOTAL ENERGY MARKET SALES	$		35,096,755	49,669,668	50,659,807	52,290,013	53,757,788	54,473,157	55,761,238	56,525,923	57,499,237	59,178,614	60,245,142	61,910,833	63,920,970	65,319,698	66,203,962	67,911,604	69,145,985	73,142,749	75,041,254	77,421,366
TOTAL COSTS	$		45,492,624	48,134,837	46,203,066	48,406,481	49,719,784	56,367,583	56,281,720	57,230,063	58,987,949	60,586,075	62,143,165	63,518,804	65,243,752	67,028,128	68,970,988	70,460,712	73,179,767	73,825,139	76,636,879	78,167,292

$729,698,568

Independence Power & Light

Path 5 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0	85.0	85.0	85.0	90.0	90.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 4,870,740	$ 5,349,075	$ 5,482,800	$ 5,619,900	$ 5,760,375	$ 6,298,000	$ 6,455,440	$ 6,616,880	$ 6,782,240	$ 7,386,330	$ 7,570,950	$ 7,760,245	$ 7,954,300	$ 8,632,710	$ 8,848,530
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	393,572	922,760	922,298	924,262	928,169	932,408	911,684	905,650	902,128	907,123	905,362	902,357	908,258	902,226	897,235	898,925	900,642	906,410	905,265	901,756
GENERATION	MWh	Blue Valley 1b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	3,163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	9,585	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	393,212	405,923	404,069	404,960	404,200	405,148	409,514	403,066	400,359	401,610	400,353	401,912	408,483	401,224	399,997	400,829	401,119	401,243	400,386	401,922
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	412,135	454,371	452,968	453,253	453,122	452,113	443,256	439,339	439,820	440,866	440,482	439,861	439,407	441,701	438,391	438,365	437,652	445,605	446,098	441,156
GENERATION	MWh	H-5	6,748	2,486	2,112	1,958	2,156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	7,561	2,921	2,231	2,116	2,484	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	34,168	38,205	38,645	51,820	44,664	46,499	45,765	46,132	45,178	45,948	46,536	47,930	46,279	46,939	42,389	47,783	45,618
CAPACITY FACTOR	%	Dogwood	59	84	84	84	84	85	83	82	82	82	82	82	82	82	82	82	82	82	82	82
CAPACITY FACTOR	%	Blue Valley 1b	2	0																		
CAPACITY FACTOR	%	Blue Valley 2b	2	0																		
CAPACITY FACTOR	%	Blue Valley 3b	2	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	85	87	87	87	87	87	88	87	86	86	86	87	88	86	86	87	87	86	86	87
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	90	90	89	88	87	87	87	87	87	87	87	87	87	87	88	88	88
CAPACITY FACTOR	%	H-5	3	1	1	1	1															
CAPACITY FACTOR	%	H-6	4	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	11	12	12	16	14	14	14	14	14	14	14	15	14	15	13	15	14
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,410,048	$ 3,108,928	$ 3,184,002	$ 3,250,978	$ 3,368,681	$ 3,451,058	$ 3,460,898	$ 3,533,214	$ 3,611,079	$ 3,712,751	$ 3,803,375	$ 3,900,933	$ 4,020,456	$ 4,111,286	$ 4,178,951	$ 4,289,769	$ 4,403,231	$ 4,466,274	$ 4,600,254	$ 4,669,546
VARIABLE O&M COST	$	Blue Valley 1b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 9,184	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 22,949	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,469,228	$ 1,556,849	$ 1,585,210	$ 1,626,739	$ 1,664,583	$ 1,713,845	$ 1,772,430	$ 1,787,020	$ 1,817,024	$ 1,872,239	$ 1,911,206	$ 1,965,117	$ 2,045,575	$ 2,059,606	$ 2,106,666	$ 2,163,874	$ 2,220,022	$ 2,251,456	$ 2,300,908	$ 2,369,583
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,537,585	$ 1,740,392	$ 1,778,331	$ 1,823,826	$ 1,864,487	$ 1,912,000	$ 1,916,274	$ 1,955,455	$ 1,995,488	$ 2,053,519	$ 2,103,838	$ 2,153,367	$ 2,208,228	$ 2,273,570	$ 2,311,271	$ 2,369,292	$ 2,427,683	$ 2,498,197	$ 2,565,997	$ 2,600,735
VARIABLE O&M COST	$	H-5	$ 13,833	$ 5,221	$ 4,541	$ 4,327	$ 4,873	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 15,499	$ 6,134	$ 4,797	$ 4,676	$ 5,614	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 270,608	$ 310,222	$ 321,527	$ 442,036	$ 390,387	$ 416,681	$ 420,579	$ 434,563	$ 435,965	$ 454,439	$ 471,917	$ 498,071	$ 492,868	$ 512,577	$ 474,338	$ 548,108	$ 536,474
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.37	$ 3.45	$ 3.52	$ 3.63	$ 3.70	$ 3.80	$ 3.90	$ 4.00	$ 4.09	$ 4.20	$ 4.32	$ 4.43	$ 4.56	$ 4.66	$ 4.77	$ 4.89	$ 4.93	$ 5.08	$ 5.18
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.90																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.39																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 5 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	3.73	3.83	3.93	4.02	4.11	4.23	4.32	4.45	4.54	4.66	4.78	4.90	5.03	5.15	5.27	5.40	5.55	5.61	5.75	5.90
VARIABLE O&M COST	$/MWh	H-5	2.05	2.10	2.15	2.21	2.26															
VARIABLE O&M COST	$/MWh	H-6	2.05	2.10	2.15	2.21	2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				7.92	8.12	8.32	8.53	8.74	8.96	9.19	9.42	9.65	9.89	10.14	10.39	10.65	10.92	11.19	11.47	11.76
FUEL COST	$	Dogwood	6,524,458	16,949,730	17,358,682	18,028,381	18,627,011	19,144,030	19,017,508	19,541,736	19,799,498	20,557,931	20,971,035	21,514,888	22,085,774	22,770,524	22,941,663	23,590,054	24,115,580	25,764,427	26,365,388	27,091,347
FUEL COST	$	Blue Valley 1b	115,184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	115,184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	355,360	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	`	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.																			
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.																			
FUEL COST	$	H-5	256,887	104,936	91,761	89,348	100,745	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	H-6	285,171	122,110	95,967	95,494	114,946	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	841,826	966,649	1,002,916	1,402,010	1,237,277	1,319,065	1,333,637	1,376,584	1,388,406	1,446,145	1,498,328	1,585,498	1,573,722	1,615,225	1,530,647	1,779,754	1,761,663
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.6																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	24.75	27.68	27.79	28.57	29.74	30.48	32.36	32.45	33.29	34.11	34.93	35.86	36.87	37.84	38.88	39.61	40.66	41.61	43.63	44.76
INDEPENDENCE MARKET SALES	MWh	Independence Market	48,954	24,208	23,097	56,996	61,599	57,446	70,574	63,418	65,253	64,566	64,886	63,932	64,702	65,336	66,684	65,033	65,693	61,189	66,537	64,372
INDEPENDENCE MARKET SALES	$	Independence Market	1,905,857	822,264	774,536	2,144,705	2,411,361	2,197,561	2,920,797	2,634,555	2,793,292	2,834,120	2,914,557	2,948,614	3,059,545	3,182,863	3,336,639	3,323,812	3,421,604	3,294,613	3,729,428	3,709,100
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	38.93	33.97	33.53	37.63	39.15	38.25	41.39	41.54	42.81	43.90	44.92	46.12	47.29	48.72	50.04	51.11	52.08	53.84	56.05	57.62
DOGWOOD MARKET SALES	MWh	Dogwood Market	393,572	922,759	922,298	924,262	928,169	932,407	911,684	905,649	902,128	907,122	905,362	902,357	908,258	902,226	897,235	898,925	900,642	906,410	905,265	901,756
DOGWOOD MARKET SALES	$	Dogwood Market	10,789,199	24,377,602	25,029,013	25,986,532	26,845,378	27,585,295	27,973,568	28,577,585	29,155,981	30,140,163	30,862,536	31,550,762	32,524,834	33,373,881	33,770,064	34,706,226	35,610,500	37,316,734	38,449,480	39,598,276
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	27.41	26.42	27.14	28.12	28.92	29.59	30.68	31.55	32.32	33.23	34.09	34.96	35.81	36.99	37.64	38.61	39.54	41.17	42.47	43.91
IATAN MARKET SALES	MWh	Iatan Market	393,212	405,923	404,069	404,960	404,200	405,148	409,514	403,066	400,359	401,611	400,353	401,912	408,483	401,224	399,998	400,829	401,119	401,243	400,386	401,922
IATAN MARKET SALES	$	Iatan Market	9,499,959	10,206,965	10,344,394	10,683,749	10,917,880	11,202,817	11,613,300	11,642,617	11,786,260	12,099,295	12,313,475	12,635,044	13,116,850	13,249,551	13,469,841	13,840,773	14,110,523	14,781,140	15,075,809	15,746,180
IATAN MARKET SALES	$/MWh	Iatan Market	24.16	25.15	25.60	26.38	27.01	27.65	28.36	28.89	29.44	30.13	30.76	31.44	32.11	33.02	33.67	34.53	35.18	36.84	37.65	39.18
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	1,722,559	1,886,008	1,929,296	1,955,275	2,003,237	1,959,549	2,091,260	2,124,049	2,147,442	2,174,204	2,123,529	2,193,506	2,367,507	2,411,664	2,452,143	2,487,915	2,427,201	2,679,360	2,767,675	2,848,483
MARSHALL MARKET SALES	$/MWh	Marshall Market	20.68	22.58	23.16	23.47	24.05	23.46	25.11	25.50	25.78	26.03	25.49	26.33	28.42	28.87	29.44	29.87	29.14	32.07	33.23	34.20
NEBRASKA MARKET SALES	MWh	Nebraska City Market	412,135	454,371	452,968	453,253	453,122	452,114	443,256	439,339	439,821	440,867	440,482	439,862	439,407	441,701	438,391	438,365	437,652	445,605	446,098	441,156
NEBRASKA MARKET SALES	$	Nebraska City Market	9,865,161	10,993,176	11,182,142	11,468,713	11,677,599	11,837,150	11,904,866	12,008,573	12,218,381	12,541,538	12,881,787	13,186,461	13,441,903	13,812,119	13,982,813	14,335,890	14,624,637	15,555,945	15,891,550	16,310,494
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	23.94	24.19	24.69	25.30	25.77	26.18	26.86	27.33	27.78	28.45	29.24	29.98	30.59	31.27	31.90	32.70	33.42	34.91	35.62	36.97
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	1,314,020	1,383,653	1,400,426	1,409,375	1,463,410	1,313,000	1,576,905	1,570,467	1,571,831	1,586,971	1,412,705	1,677,044	1,784,808	1,767,086	1,806,525	1,803,926	1,614,933	2,034,524	2,046,060	2,084,851
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	21.23	22.25	22.63	22.77	23.65	21.11	25.48	25.38	25.40	25.52	22.83	27.10	28.84	28.41	29.19	29.15	26.10	32.71	33.06	33.69
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		29,601,624	31,032,166	34,477,839	36,275,711	36,453,031	39,023,555	38,088,978	38,685,210	39,296,381	39,948,930	40,958,474	41,626,435	42,311,161	43,039,040	44,166,754	44,914,895	45,681,799	46,494,055	47,753,163	48,591,005
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		4,487,510	6,417,524	6,556,880	6,981,154	7,218,460	7,398,430	7,591,638	7,666,077	7,840,271	8,059,088	8,252,980	8,455,382	8,728,697	8,916,378	9,094,959	9,315,803	9,563,514	9,690,264	10,015,266	10,176,338
TOTAL FUEL COSTS	$		19,592,493	30,158,863	30,818,569	32,618,400	33,765,047	34,721,396	35,281,910	35,834,892	36,395,265	37,712,366	38,469,514	39,419,067	40,511,434	41,536,364	42,240,020	43,406,885	44,539,091	46,747,295	48,100,071	49,436,478
TOTAL ENERGY MARKET PURCHASES	$		26,907,752	30,195,953	30,434,321	31,374,834	32,775,919	33,713,802	35,921,219	36,149,946	37,223,444	38,275,088	39,331,412	40,517,191	41,814,419	43,065,050	44,366,799	45,357,417	46,713,469	48,017,476	50,523,548	52,009,493
TOTAL ENERGY MARKET SALES	$		35,096,755	49,669,668	50,659,807	53,648,348	55,318,863	56,095,372	58,080,697	58,557,845	59,673,187	61,376,290	62,508,590	64,191,430	66,295,446	67,797,165	68,818,026	70,498,542	71,809,397	75,662,315	77,960,003	80,297,385
TOTAL COSTS	$		45,492,624	48,134,837	51,627,802	53,601,750	54,893,594	58,761,811	58,803,048	59,778,280	61,082,173	62,619,182	64,503,789	65,826,645	67,070,265	68,759,667	71,050,506	72,496,458	74,688,476	75,286,775	78,432,046	79,915,929

$759,690,348

Independence Power & Light

Path 1 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			60.0	60.0	65.0	65.0	65.0	65.0	70.0	70.0	70.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 3,782,280	$ 3,876,780	$ 4,304,885	$ 4,412,460	$ 4,522,830	$ 4,635,865	$ 5,117,280	$ 5,245,240	$ 5,376,350	$ 5,510,750	$ 6,051,975	$ 6,203,325	$ 6,358,350	$ 6,517,350	$ 7,125,600	$ 7,303,760	$ 7,486,400	$ 7,673,520	$ 8,356,945
IPL OWNERSHIP	%	Dogwood	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	267,979	137,662	130,568	121,734	117,552	106,770	106,826	105,766	115,002	120,067	117,740	106,826	111,821	116,560	110,545	116,264	121,462	107,744	116,247	115,954
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,082	458,818	456,892	457,012	458,025	458,805	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,569	450,946	450,326	454,265	452,790	453,499
GENERATION	MWh	H-5	2,244	1,896	1,588	1,302	1,324	1,170	1,848	1,606	1,584	1,782	1,716	1,760	1,672	1,606	1,672	1,782	1,782	1,606	1,650	1,606
GENERATION	MWh	H-6	2,415	2,074	1,867	1,453	1,384	1,407	1,978	1,725	1,748	1,863	1,863	1,863	1,886	1,748	1,771	1,863	1,863	1,725	1,840	1,748
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	40	21	20	18	18	16	16	16	17	18	18	16	17	17	17	17	18	16	17	17
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	87	87	88	88	87	87	88	88	87	87	87	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	89	89	90	90	90	90	90	90	90	89	89	90	90	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,031,425	$ 2,141,493	$ 2,378,630	$ 2,182,817	$ 2,237,387	$ 2,293,322	$ 2,350,655	$ 2,409,421	$ 2,469,657	$ 2,531,398	$ 2,594,683	$ 2,659,550	$ 2,726,039	$ 2,794,190	$ 2,864,045	$ 2,935,646	$ 3,009,037	$ 3,084,263	$ 3,161,370
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,081,515	$ 576,617	$ 573,767	$ 559,025	$ 558,387	$ 531,901	$ 535,722	$ 550,272	$ 607,874	$ 633,492	$ 645,819	$ 605,562	$ 645,982	$ 694,047	$ 664,802	$ 702,924	$ 750,082	$ 693,945	$ 761,716	$ 769,837
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,526,220	$ 1,568,829	$ 1,597,495	$ 1,638,118	$ 1,680,310	$ 1,731,217	$ 1,757,562	$ 1,800,133	$ 1,845,460	$ 1,899,744	$ 1,940,584	$ 1,988,039	$ 2,036,485	$ 2,093,048	$ 2,139,187	$ 2,195,051	$ 2,246,686	$ 2,287,643	$ 2,336,566	$ 2,401,050
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,622,865	$ 1,757,335	$ 1,793,652	$ 1,838,882	$ 1,884,598	$ 1,940,138	$ 1,949,252	$ 2,009,010	$ 2,054,526	$ 2,108,985	$ 2,164,104	$ 2,215,718	$ 2,272,973	$ 2,338,879	$ 2,385,742	$ 2,437,006	$ 2,497,603	$ 2,547,833	$ 2,606,169	$ 2,673,579
VARIABLE O&M COST	$	H-5	$ 4,600	$ 3,982	$ 3,414	$ 2,877	$ 2,992	$ 2,714	$ 4,398	$ 3,919	$ 3,960	$ 4,562	$ 4,496	$ 4,734	$ 4,615	$ 4,545	$ 4,849	$ 5,293	$ 5,417	$ 5,011	$ 5,280	$ 5,268
VARIABLE O&M COST	$	H-6	$ 4,951	$ 4,355	$ 4,014	$ 3,211	$ 3,128	$ 3,264	$ 4,708	$ 4,209	$ 4,370	$ 4,769	$ 4,881	$ 5,011	$ 5,205	$ 4,947	$ 5,136	$ 5,533	$ 5,664	$ 5,382	$ 5,888	$ 5,733
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.04	$ 4.19	$ 4.39	$ 4.59	$ 4.75	$ 4.98	$ 5.01	$ 5.20	$ 5.29	$ 5.28	$ 5.49	$ 5.67	$ 5.78	$ 5.95	$ 6.01	$ 6.05	$ 6.18	$ 6.44	$ 6.55	$ 6.64
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 1 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,039,931	$ 4,124,581	$ 3,979,493	$ 3,909,580	$ 4,032,869	$ 3,870,662	$ 4,084,300	$ 4,194,398	$ 4,716,094	$ 5,059,925	$ 5,148,220	$ 4,775,538	$ 5,104,291	$ 5,479,492	$ 5,292,038	$ 5,716,531	$ 6,083,076	$ 5,703,048	$ 6,285,294	$ 6,505,287
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 130,646	$ 131,934	$ 112,966	$ 97,690	$ 105,060	$ 97,919	$ 163,741	$ 147,388	$ 150,679	$ 173,947	$ 173,251	$ 181,875	$ 176,399	$ 174,001	$ 184,661	$ 202,136	$ 206,454	$ 194,571	$ 204,864	$ 206,741
FUEL COST	$	H-6	$ 139,290	$ 142,833	$ 131,268	$ 107,910	$ 108,720	$ 116,572	$ 173,453	$ 156,805	$ 164,632	$ 180,050	$ 186,275	$ 190,587	$ 197,042	$ 187,533	$ 193,607	$ 209,229	$ 213,698	$ 206,996	$ 226,121	$ 222,814
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.7	15.7	15.6	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.61	$ 33.26	$ 33.18	$ 33.61	$ 35.06	$ 36.85	$ 40.96	$ 41.23	$ 42.72	$ 43.98	$ 45.06	$ 46.68	$ 47.73	$ 49.13	$ 50.43	$ 51.10	$ 52.39	$ 53.56	$ 56.39	$ 57.81
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,010	22,771	22,209	21,509	21,462	21,378	22,580	22,085	22,086	22,446	22,333	22,377	22,312	22,155	22,197	22,399	22,399	22,132	22,244	22,108
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,219,908	$ 979,337	$ 938,112	$ 899,216	$ 938,602	$ 975,191	$ 1,245,258	$ 1,201,639	$ 1,248,470	$ 1,323,217	$ 1,348,475	$ 1,401,148	$ 1,421,656	$ 1,440,214	$ 1,480,491	$ 1,534,158	$ 1,576,365	$ 1,568,568	$ 1,663,067	$ 1,691,804
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.17	$ 43.01	$ 42.24	$ 41.81	$ 43.73	$ 45.62	$ 55.15	$ 54.41	$ 56.53	$ 58.95	$ 60.38	$ 62.62	$ 63.72	$ 65.01	$ 66.70	$ 68.49	$ 70.38	$ 70.87	$ 74.77	$ 76.52
DOGWOOD MARKET SALES	MWh	Dogwood Market	267,979	137,662	130,568	121,734	117,552	106,770	106,826	105,766	115,002	120,067	117,740	106,826	111,821	116,560	110,545	116,264	121,462	107,744	116,247	115,954
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,116,139	$ 5,416,449	$ 5,271,144	$ 5,151,583	$ 5,342,999	$ 5,144,810	$ 5,366,612	$ 5,550,223	$ 6,167,672	$ 6,628,525	$ 6,726,703	$ 6,248,340	$ 6,712,171	$ 7,196,912	$ 6,968,377	$ 7,440,191	$ 7,918,848	$ 7,434,276	$ 8,252,968	$ 8,505,514
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 37.75	$ 39.35	$ 40.37	$ 42.32	$ 45.45	$ 48.19	$ 50.24	$ 52.48	$ 53.63	$ 55.21	$ 57.13	$ 58.49	$ 60.03	$ 61.74	$ 63.04	$ 63.99	$ 65.20	$ 69.00	$ 70.99	$ 73.35
IATAN MARKET SALES	MWh	Iatan Market	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
IATAN MARKET SALES	$	Iatan Market	$ 11,587,366	$ 12,073,978	$ 12,089,364	$ 12,521,789	$ 13,140,787	$ 13,807,357	$ 14,467,268	$ 14,940,275	$ 15,479,950	$ 15,830,330	$ 16,367,778	$ 16,635,280	$ 16,969,341	$ 17,448,265	$ 17,790,826	$ 18,216,528	$ 18,563,417	$ 19,469,875	$ 19,958,785	$ 20,779,431
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.36	$ 29.52	$ 29.69	$ 30.71	$ 32.21	$ 33.74	$ 35.65	$ 36.81	$ 38.06	$ 38.84	$ 40.26	$ 40.92	$ 41.75	$ 42.79	$ 43.81	$ 44.81	$ 45.74	$ 47.75	$ 49.11	$ 51.06
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,017,192	$ 2,154,742	$ 2,174,836	$ 2,220,614	$ 2,344,540	$ 2,330,091	$ 2,581,604	$ 2,668,729	$ 2,733,880	$ 2,761,356	$ 2,732,253	$ 2,821,818	$ 3,030,461	$ 3,098,679	$ 3,148,814	$ 3,180,209	$ 3,107,383	$ 3,436,041	$ 3,553,487	$ 3,655,418
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.22	$ 25.79	$ 26.11	$ 26.66	$ 28.15	$ 27.89	$ 30.99	$ 32.04	$ 32.82	$ 33.05	$ 32.80	$ 33.88	$ 36.38	$ 37.09	$ 37.80	$ 38.18	$ 37.31	$ 41.13	$ 42.66	$ 43.89
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,082	458,819	456,892	457,012	458,025	458,806	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,570	450,947	450,327	454,266	452,790	453,499
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,177,557	$ 13,027,788	$ 13,041,294	$ 13,497,971	$ 14,118,236	$ 14,683,496	$ 15,275,005	$ 15,752,727	$ 16,232,215	$ 16,673,581	$ 17,262,268	$ 17,585,825	$ 17,922,355	$ 18,504,556	$ 18,790,829	$ 19,090,484	$ 19,505,126	$ 20,539,797	$ 21,026,379	$ 21,866,585
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 27.99	$ 28.39	$ 28.54	$ 29.54	$ 30.82	$ 32.00	$ 33.88	$ 34.91	$ 35.84	$ 36.82	$ 38.11	$ 38.84	$ 39.62	$ 40.72	$ 41.52	$ 42.33	$ 43.31	$ 45.22	$ 46.44	$ 48.22
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,568,163	$ 1,623,405	$ 1,617,078	$ 1,633,758	$ 1,751,617	$ 1,625,346	$ 1,972,080	$ 2,001,690	$ 2,039,658	$ 2,050,221	$ 1,862,376	$ 2,201,639	$ 2,314,464	$ 2,307,737	$ 2,360,307	$ 2,344,312	$ 2,118,309	$ 2,653,584	$ 2,664,917	$ 2,726,926
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.34	$ 26.10	$ 26.13	$ 26.40	$ 28.31	$ 26.13	$ 31.87	$ 32.35	$ 32.96	$ 32.96	$ 30.10	$ 35.58	$ 37.40	$ 37.10	$ 38.14	$ 37.88	$ 34.23	$ 42.67	$ 43.06	$ 44.07
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,705,887	$ 28,567,678	$ 30,472,938	$ 33,302,448	$ 30,111,178	$ 30,874,576	$ 29,404,784	$ 31,268,713	$ 30,575,585	$ 31,143,832	$ 33,555,617	$ 33,619,456	$ 33,752,699	$ 37,066,899	$ 35,540,121	$ 39,000,745	$ 36,778,702	$ 37,409,580	$ 38,671,108
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,249,665	$ 3,911,118	$ 3,972,342	$ 4,042,113	$ 4,129,415	$ 4,209,236	$ 4,251,641	$ 4,367,542	$ 4,516,191	$ 4,651,552	$ 4,759,883	$ 4,819,065	$ 4,965,260	$ 5,135,466	$ 5,199,716	$ 5,345,807	$ 5,505,452	$ 5,539,813	$ 5,715,619	$ 5,855,467
TOTAL FUEL COSTS	$		$ 19,968,723	$ 17,496,332	$ 17,606,869	$ 17,786,277	$ 18,339,814	$ 18,842,683	$ 19,372,362	$ 19,834,139	$ 20,612,332	$ 21,548,386	$ 21,971,314	$ 22,001,665	$ 22,699,663	$ 23,486,715	$ 23,806,926	$ 24,771,069	$ 25,711,837	$ 25,884,635	$ 26,990,049	$ 27,972,000
TOTAL ENERGY MARKET PURCHASES	$		$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
TOTAL ENERGY MARKET SALES	$		$ 38,686,326	$ 35,275,699	$ 35,131,828	$ 35,924,931	$ 37,636,781	$ 38,566,291	$ 40,907,827	$ 42,115,284	$ 43,901,846	$ 45,267,229	$ 46,299,853	$ 46,894,050	$ 48,370,448	$ 49,996,363	$ 50,539,643	$ 51,805,883	$ 52,789,448	$ 55,102,142	$ 57,119,604	$ 59,225,678
TOTAL COSTS	$		$ 51,486,710	$ 54,122,442	$ 51,349,147	$ 53,284,694	$ 56,769,118	$ 55,352,947	$ 59,052,231	$ 57,419,651	$ 60,260,172	$ 60,856,644	$ 62,315,633	$ 66,224,803	$ 67,037,187	$ 68,283,600	$ 73,077,549	$ 72,362,874	$ 77,627,199	$ 74,906,739	$ 78,291,340	$ 80,445,588

$767,089,299

Independence Power & Light

Path 2 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			35.0	35.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	50.0	50.0	50.0	50.0	55.0	55.0	55.0	55.0	60.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 2,206,330	$ 2,261,455	$ 2,649,160	$ 2,715,360	$ 2,783,280	$ 2,852,840	$ 3,289,680	$ 3,371,940	$ 3,456,225	$ 3,542,625	$ 4,034,650	$ 4,135,550	$ 4,238,900	$ 4,344,900	$ 4,898,850	$ 5,021,335	$ 5,146,900	$ 5,275,545	$ 5,899,020
IPL OWNERSHIP	%	Dogwood	12.3%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	267,979	183,214	173,772	162,016	156,450	142,099	142,174	140,764	153,056	159,797	156,699	142,174	148,822	155,129	147,124	154,735	161,653	143,396	154,713	154,323
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,082	458,818	456,892	457,012	458,025	458,805	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,569	450,946	450,326	454,265	452,790	453,499
GENERATION	MWh	H-5	2,244	1,896	1,588	1,302	1,324	1,170	1,848	1,606	1,584	1,782	1,716	1,760	1,672	1,606	1,672	1,782	1,782	1,606	1,650	1,606
GENERATION	MWh	H-6	2,415	2,074	1,867	1,453	1,384	1,407	1,978	1,725	1,748	1,863	1,863	1,863	1,886	1,748	1,771	1,863	1,863	1,725	1,840	1,748
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	40	21	20	18	18	16	16	16	17	18	18	16	17	17	17	17	18	16	17	17
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	87	87	88	88	87	87	88	88	87	87	87	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	89	89	90	90	90	90	90	90	90	89	89	90	90	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,703,612	$ 2,850,100	$ 3,165,705	$ 2,905,098	$ 2,977,726	$ 3,052,169	$ 3,128,473	$ 3,206,685	$ 3,286,852	$ 3,369,024	$ 3,453,249	$ 3,539,580	$ 3,628,070	$ 3,718,772	$ 3,811,741	$ 3,907,034	$ 4,004,710	$ 4,104,828	$ 4,207,449
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,081,515	$ 767,416	$ 763,624	$ 744,003	$ 743,155	$ 707,904	$ 712,989	$ 732,354	$ 809,017	$ 843,111	$ 859,516	$ 805,939	$ 859,734	$ 923,703	$ 884,782	$ 935,518	$ 998,279	$ 923,567	$ 1,013,764	$ 1,024,572
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,526,220	$ 1,568,829	$ 1,597,495	$ 1,638,118	$ 1,680,310	$ 1,731,217	$ 1,757,562	$ 1,800,133	$ 1,845,460	$ 1,899,744	$ 1,940,584	$ 1,988,039	$ 2,036,485	$ 2,093,048	$ 2,139,187	$ 2,195,051	$ 2,246,686	$ 2,287,643	$ 2,336,566	$ 2,401,050
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,622,865	$ 1,757,335	$ 1,793,652	$ 1,838,882	$ 1,884,598	$ 1,940,138	$ 1,949,252	$ 2,009,010	$ 2,054,526	$ 2,108,985	$ 2,164,104	$ 2,215,718	$ 2,272,973	$ 2,338,879	$ 2,385,742	$ 2,437,006	$ 2,497,603	$ 2,547,833	$ 2,606,169	$ 2,673,579
VARIABLE O&M COST	$	H-5	$ 4,600	$ 3,982	$ 3,414	$ 2,877	$ 2,992	$ 2,714	$ 4,398	$ 3,919	$ 3,960	$ 4,562	$ 4,496	$ 4,734	$ 4,615	$ 4,545	$ 4,849	$ 5,293	$ 5,417	$ 5,011	$ 5,280	$ 5,268
VARIABLE O&M COST	$	H-6	$ 4,951	$ 4,355	$ 4,014	$ 3,211	$ 3,128	$ 3,264	$ 4,708	$ 4,209	$ 4,370	$ 4,769	$ 4,881	$ 5,011	$ 5,205	$ 4,947	$ 5,136	$ 5,533	$ 5,664	$ 5,382	$ 5,888	$ 5,733
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.04	$ 4.19	$ 4.39	$ 4.59	$ 4.75	$ 4.98	$ 5.01	$ 5.20	$ 5.29	$ 5.28	$ 5.49	$ 5.67	$ 5.78	$ 5.95	$ 6.01	$ 6.05	$ 6.18	$ 6.44	$ 6.55	$ 6.64
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,039,931	$ 5,489,381	$ 5,296,285	$ 5,203,238	$ 5,367,323	$ 5,151,443	$ 5,435,772	$ 5,582,300	$ 6,276,622	$ 6,734,225	$ 6,851,737	$ 6,355,737	$ 6,793,272	$ 7,292,624	$ 7,043,143	$ 7,608,098	$ 8,095,931	$ 7,590,154	$ 8,365,062	$ 8,657,849
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 130,646	$ 131,934	$ 112,966	$ 97,690	$ 105,060	$ 97,919	$ 163,741	$ 147,388	$ 150,679	$ 173,947	$ 173,251	$ 181,875	$ 176,399	$ 174,001	$ 184,661	$ 202,136	$ 206,454	$ 194,571	$ 204,864	$ 206,741
FUEL COST	$	H-6	$ 139,290	$ 142,833	$ 131,268	$ 107,910	$ 108,720	$ 116,572	$ 173,453	$ 156,805	$ 164,632	$ 180,050	$ 186,275	$ 190,587	$ 197,042	$ 187,533	$ 193,607	$ 209,229	$ 213,698	$ 206,996	$ 226,121	$ 222,814
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.7	15.7	15.6	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.61	$ 33.26	$ 33.18	$ 33.61	$ 35.06	$ 36.85	$ 40.96	$ 41.23	$ 42.72	$ 43.98	$ 45.06	$ 46.68	$ 47.73	$ 49.13	$ 50.43	$ 51.10	$ 52.39	$ 53.56	$ 56.39	$ 57.81
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,010	22,771	22,209	21,509	21,462	21,378	22,580	22,085	22,086	22,446	22,333	22,377	22,312	22,155	22,197	22,399	22,399	22,132	22,244	22,108
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,219,908	$ 979,337	$ 938,112	$ 899,216	$ 938,602	$ 975,191	$ 1,245,258	$ 1,201,639	$ 1,248,470	$ 1,323,217	$ 1,348,475	$ 1,401,148	$ 1,421,656	$ 1,440,214	$ 1,480,491	$ 1,534,158	$ 1,576,365	$ 1,568,568	$ 1,663,067	$ 1,691,804
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.17	$ 43.01	$ 42.24	$ 41.81	$ 43.73	$ 45.62	$ 55.15	$ 54.41	$ 56.53	$ 58.95	$ 60.38	$ 62.62	$ 63.72	$ 65.01	$ 66.70	$ 68.49	$ 70.38	$ 70.87	$ 74.77	$ 76.52
DOGWOOD MARKET SALES	MWh	Dogwood Market	267,979	183,214	173,772	162,016	156,450	142,099	142,174	140,764	153,056	159,797	156,699	142,174	148,822	155,129	147,124	154,735	161,653	143,396	154,713	154,323
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,116,139	$ 7,208,721	$ 7,015,335	$ 6,856,213	$ 7,110,966	$ 6,847,198	$ 7,142,394	$ 7,386,761	$ 8,208,520	$ 8,821,866	$ 8,952,530	$ 8,315,881	$ 8,933,190	$ 9,578,329	$ 9,274,173	$ 9,902,107	$ 10,539,150	$ 9,894,235	$ 10,983,828	$ 11,319,940
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 37.75	$ 39.35	$ 40.37	$ 42.32	$ 45.45	$ 48.19	$ 50.24	$ 52.48	$ 53.63	$ 55.21	$ 57.13	$ 58.49	$ 60.03	$ 61.74	$ 63.04	$ 63.99	$ 65.20	$ 69.00	$ 70.99	$ 73.35
IATAN MARKET SALES	MWh	Iatan Market	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
IATAN MARKET SALES	$	Iatan Market	$ 11,587,366	$ 12,073,978	$ 12,089,364	$ 12,521,789	$ 13,140,787	$ 13,807,357	$ 14,467,268	$ 14,940,275	$ 15,479,950	$ 15,830,330	$ 16,367,778	$ 16,635,280	$ 16,969,341	$ 17,448,265	$ 17,790,826	$ 18,216,528	$ 18,563,417	$ 19,469,875	$ 19,958,785	$ 20,779,431
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.36	$ 29.52	$ 29.69	$ 30.71	$ 32.21	$ 33.74	$ 35.65	$ 36.81	$ 38.06	$ 38.84	$ 40.26	$ 40.92	$ 41.75	$ 42.79	$ 43.81	$ 44.81	$ 45.74	$ 47.75	$ 49.11	$ 51.06
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,017,192	$ 2,154,742	$ 2,174,836	$ 2,220,614	$ 2,344,540	$ 2,330,091	$ 2,581,604	$ 2,668,729	$ 2,733,880	$ 2,761,356	$ 2,732,253	$ 2,821,818	$ 3,030,461	$ 3,098,679	$ 3,148,814	$ 3,180,209	$ 3,107,383	$ 3,436,041	$ 3,553,487	$ 3,655,418
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.22	$ 25.79	$ 26.11	$ 26.66	$ 28.15	$ 27.89	$ 30.99	$ 32.04	$ 32.82	$ 33.05	$ 32.80	$ 33.88	$ 36.38	$ 37.09	$ 37.80	$ 38.18	$ 37.31	$ 41.13	$ 42.66	$ 43.89
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,082	458,819	456,892	457,012	458,025	458,806	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,570	450,947	450,327	454,266	452,790	453,499
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,177,557	$ 13,027,788	$ 13,041,294	$ 13,497,971	$ 14,118,236	$ 14,683,496	$ 15,275,005	$ 15,752,727	$ 16,232,215	$ 16,673,581	$ 17,262,268	$ 17,585,825	$ 17,922,355	$ 18,504,556	$ 18,790,829	$ 19,090,484	$ 19,505,126	$ 20,539,797	$ 21,026,379	$ 21,866,585
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 27.99	$ 28.39	$ 28.54	$ 29.54	$ 30.82	$ 32.00	$ 33.88	$ 34.91	$ 35.84	$ 36.82	$ 38.11	$ 38.84	$ 39.62	$ 40.72	$ 41.52	$ 42.33	$ 43.31	$ 45.22	$ 46.44	$ 48.22
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,568,163	$ 1,623,405	$ 1,617,078	$ 1,633,758	$ 1,751,617	$ 1,625,346	$ 1,972,080	$ 2,001,690	$ 2,039,658	$ 2,050,221	$ 1,862,376	$ 2,201,639	$ 2,314,464	$ 2,307,737	$ 2,360,307	$ 2,344,312	$ 2,118,309	$ 2,653,584	$ 2,664,917	$ 2,726,926
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.34	$ 26.10	$ 26.13	$ 26.40	$ 28.31	$ 26.13	$ 31.87	$ 32.35	$ 32.96	$ 32.96	$ 30.10	$ 35.58	$ 37.40	$ 37.10	$ 38.14	$ 37.88	$ 34.23	$ 42.67	$ 43.06	$ 44.07
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,973,961	$ 28,832,799	$ 30,776,126	$ 33,499,467	$ 30,283,804	$ 31,022,236	$ 29,526,840	$ 31,364,515	$ 30,644,493	$ 31,185,170	$ 33,568,696	$ 33,603,549	$ 33,707,117	$ 36,990,868	$ 35,432,904	$ 38,861,546	$ 36,606,713	$ 37,204,008	$ 38,431,100
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,249,665	$ 4,101,917	$ 4,162,199	$ 4,227,091	$ 4,314,183	$ 4,385,239	$ 4,428,909	$ 4,549,624	$ 4,717,333	$ 4,861,171	$ 4,973,581	$ 5,019,442	$ 5,179,012	$ 5,365,122	$ 5,419,696	$ 5,578,400	$ 5,753,650	$ 5,769,436	$ 5,967,667	$ 6,110,201
TOTAL FUEL COSTS	$		$ 19,968,723	$ 18,861,132	$ 18,923,661	$ 19,079,935	$ 19,674,268	$ 20,123,463	$ 20,723,834	$ 21,222,041	$ 22,172,860	$ 23,222,687	$ 23,674,831	$ 23,581,863	$ 24,388,644	$ 25,299,848	$ 25,558,031	$ 26,662,637	$ 27,724,692	$ 27,771,741	$ 29,069,817	$ 30,124,562
TOTAL ENERGY MARKET PURCHASES	$		$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
TOTAL ENERGY MARKET SALES	$		$ 38,686,326	$ 37,067,971	$ 36,876,019	$ 37,629,561	$ 39,404,748	$ 40,268,679	$ 42,683,609	$ 43,951,821	$ 45,942,693	$ 47,460,571	$ 48,525,680	$ 48,961,591	$ 50,591,468	$ 52,377,780	$ 52,845,440	$ 54,267,799	$ 55,409,750	$ 57,562,101	$ 59,850,464	$ 62,040,104
TOTAL COSTS	$		$ 51,486,710	$ 54,153,845	$ 51,376,724	$ 53,361,888	$ 56,717,390	$ 55,279,968	$ 58,952,848	$ 57,275,154	$ 60,076,797	$ 60,616,130	$ 62,048,358	$ 65,950,917	$ 66,702,993	$ 67,899,391	$ 72,666,807	$ 71,917,903	$ 77,128,751	$ 74,391,519	$ 77,686,723	$ 79,798,451

$764,679,628

Independence Power & Light

Path 2 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0	35.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 1,043,730	$ 1,069,815	$ 1,462,080	$ 1,498,640	$ 1,536,100	$ 1,574,500	$ 2,017,325	$ 2,067,775	$ 2,119,450	$ 2,172,450	$ 2,672,100	$ 2,738,910	$ 2,807,400	$ 2,877,570	$ 3,441,095
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	267,979	228,654	216,870	202,198	195,251	177,342	177,435	175,675	191,016	199,429	195,563	177,435	185,732	193,603	183,612	193,111	201,745	178,960	193,084	192,597
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,082	458,818	456,892	457,012	458,025	458,805	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,569	450,946	450,326	454,265	452,790	453,499
GENERATION	MWh	H-5	2,244	1,896	1,588	1,302	1,324	1,170	1,848	1,606	1,584	1,782	1,716	1,760	1,672	1,606	1,672	1,782	1,782	1,606	1,650	1,606
GENERATION	MWh	H-6	2,415	2,074	1,867	1,453	1,384	1,407	1,978	1,725	1,748	1,863	1,863	1,863	1,886	1,748	1,771	1,863	1,863	1,725	1,840	1,748
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	40	21	20	18	18	16	16	16	17	18	18	16	17	17	17	17	18	16	17	17
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	87	87	88	88	87	87	88	88	87	87	87	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	89	89	90	90	90	90	90	90	90	89	89	90	90	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,081,515	$ 957,747	$ 953,013	$ 928,527	$ 927,468	$ 883,475	$ 889,821	$ 913,988	$ 1,009,664	$ 1,052,214	$ 1,072,689	$ 1,005,824	$ 1,072,961	$ 1,152,795	$ 1,104,221	$ 1,167,540	$ 1,245,867	$ 1,152,625	$ 1,265,192	$ 1,278,680
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,526,220	$ 1,568,829	$ 1,597,495	$ 1,638,118	$ 1,680,310	$ 1,731,217	$ 1,757,562	$ 1,800,133	$ 1,845,460	$ 1,899,744	$ 1,940,584	$ 1,988,039	$ 2,036,485	$ 2,093,048	$ 2,139,187	$ 2,195,051	$ 2,246,686	$ 2,287,643	$ 2,336,566	$ 2,401,050
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,622,865	$ 1,757,335	$ 1,793,652	$ 1,838,882	$ 1,884,598	$ 1,940,138	$ 1,949,252	$ 2,009,010	$ 2,054,526	$ 2,108,985	$ 2,164,104	$ 2,215,718	$ 2,272,973	$ 2,338,879	$ 2,385,742	$ 2,437,006	$ 2,497,603	$ 2,547,833	$ 2,606,169	$ 2,673,579
VARIABLE O&M COST	$	H-5	$ 4,600	$ 3,982	$ 3,414	$ 2,877	$ 2,992	$ 2,714	$ 4,398	$ 3,919	$ 3,960	$ 4,562	$ 4,496	$ 4,734	$ 4,615	$ 4,545	$ 4,849	$ 5,293	$ 5,417	$ 5,011	$ 5,280	$ 5,268
VARIABLE O&M COST	$	H-6	$ 4,951	$ 4,355	$ 4,014	$ 3,211	$ 3,128	$ 3,264	$ 4,708	$ 4,209	$ 4,370	$ 4,769	$ 4,881	$ 5,011	$ 5,205	$ 4,947	$ 5,136	$ 5,533	$ 5,664	$ 5,382	$ 5,888	$ 5,733
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.04	$ 4.19	$ 4.39	$ 4.59	$ 4.75	$ 4.98	$ 5.01	$ 5.20	$ 5.29	$ 5.28	$ 5.49	$ 5.67	$ 5.78	$ 5.95	$ 6.01	$ 6.05	$ 6.18	$ 6.44	$ 6.55	$ 6.64
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,039,931	$ 6,850,828	$ 6,609,841	$ 6,493,717	$ 6,698,498	$ 6,429,076	$ 6,783,923	$ 6,966,792	$ 7,833,317	$ 8,404,412	$ 8,551,069	$ 7,932,052	$ 8,478,103	$ 9,101,302	$ 8,789,946	$ 9,495,018	$ 10,103,841	$ 9,472,623	$ 10,439,721	$ 10,805,123
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 130,646	$ 131,934	$ 112,966	$ 97,690	$ 105,060	$ 97,919	$ 163,741	$ 147,388	$ 150,679	$ 173,947	$ 173,251	$ 181,875	$ 176,399	$ 174,001	$ 184,661	$ 202,136	$ 206,454	$ 194,571	$ 204,864	$ 206,741
FUEL COST	$	H-6	$ 139,290	$ 142,833	$ 131,268	$ 107,910	$ 108,720	$ 116,572	$ 173,453	$ 156,805	$ 164,632	$ 180,050	$ 186,275	$ 190,587	$ 197,042	$ 187,533	$ 193,607	$ 209,229	$ 213,698	$ 206,996	$ 226,121	$ 222,814
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.7	15.7	15.6	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.61	$ 33.26	$ 33.18	$ 33.61	$ 35.06	$ 36.85	$ 40.96	$ 41.23	$ 42.72	$ 43.98	$ 45.06	$ 46.68	$ 47.73	$ 49.13	$ 50.43	$ 51.10	$ 52.39	$ 53.56	$ 56.39	$ 57.81
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,010	22,771	22,209	21,509	21,462	21,378	22,580	22,085	22,086	22,446	22,333	22,377	22,312	22,155	22,197	22,399	22,399	22,132	22,244	22,108
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,219,908	$ 979,337	$ 938,112	$ 899,216	$ 938,602	$ 975,191	$ 1,245,258	$ 1,201,639	$ 1,248,470	$ 1,323,217	$ 1,348,475	$ 1,401,148	$ 1,421,656	$ 1,440,214	$ 1,480,491	$ 1,534,158	$ 1,576,365	$ 1,568,568	$ 1,663,067	$ 1,691,804
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.17	$ 43.01	$ 42.24	$ 41.81	$ 43.73	$ 45.62	$ 55.15	$ 54.41	$ 56.53	$ 58.95	$ 60.38	$ 62.62	$ 63.72	$ 65.01	$ 66.70	$ 68.49	$ 70.38	$ 70.87	$ 74.77	$ 76.52
DOGWOOD MARKET SALES	MWh	Dogwood Market	267,979	228,654	216,870	202,198	195,251	177,342	177,435	175,675	191,016	199,429	195,563	177,435	185,732	193,603	183,612	193,111	201,745	178,960	193,084	192,597
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,116,139	$ 8,996,589	$ 8,755,241	$ 8,556,654	$ 8,874,590	$ 8,545,404	$ 8,913,812	$ 9,218,786	$ 10,244,353	$ 11,009,818	$ 11,172,889	$ 10,378,341	$ 11,148,752	$ 11,953,895	$ 11,574,304	$ 12,357,975	$ 13,153,014	$ 12,348,151	$ 13,707,979	$ 14,127,451
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 37.75	$ 39.35	$ 40.37	$ 42.32	$ 45.45	$ 48.19	$ 50.24	$ 52.48	$ 53.63	$ 55.21	$ 57.13	$ 58.49	$ 60.03	$ 61.74	$ 63.04	$ 63.99	$ 65.20	$ 69.00	$ 70.99	$ 73.35
IATAN MARKET SALES	MWh	Iatan Market	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
IATAN MARKET SALES	$	Iatan Market	$ 11,587,366	$ 12,073,978	$ 12,089,364	$ 12,521,789	$ 13,140,787	$ 13,807,357	$ 14,467,268	$ 14,940,275	$ 15,479,950	$ 15,830,330	$ 16,367,778	$ 16,635,280	$ 16,969,341	$ 17,448,265	$ 17,790,826	$ 18,216,528	$ 18,563,417	$ 19,469,875	$ 19,958,785	$ 20,779,431
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.36	$ 29.52	$ 29.69	$ 30.71	$ 32.21	$ 33.74	$ 35.65	$ 36.81	$ 38.06	$ 38.84	$ 40.26	$ 40.92	$ 41.75	$ 42.79	$ 43.81	$ 44.81	$ 45.74	$ 47.75	$ 49.11	$ 51.06
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,017,192	$ 2,154,742	$ 2,174,836	$ 2,220,614	$ 2,344,540	$ 2,330,091	$ 2,581,604	$ 2,668,729	$ 2,733,880	$ 2,761,356	$ 2,732,253	$ 2,821,818	$ 3,030,461	$ 3,098,679	$ 3,148,814	$ 3,180,209	$ 3,107,383	$ 3,436,041	$ 3,553,487	$ 3,655,418
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.22	$ 25.79	$ 26.11	$ 26.66	$ 28.15	$ 27.89	$ 30.99	$ 32.04	$ 32.82	$ 33.05	$ 32.80	$ 33.88	$ 36.38	$ 37.09	$ 37.80	$ 38.18	$ 37.31	$ 41.13	$ 42.66	$ 43.89
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,082	458,819	456,892	457,012	458,025	458,806	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,570	450,947	450,327	454,266	452,790	453,499
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,177,557	$ 13,027,788	$ 13,041,294	$ 13,497,971	$ 14,118,236	$ 14,683,496	$ 15,275,005	$ 15,752,727	$ 16,232,215	$ 16,673,581	$ 17,262,268	$ 17,585,825	$ 17,922,355	$ 18,504,556	$ 18,790,829	$ 19,090,484	$ 19,505,126	$ 20,539,797	$ 21,026,379	$ 21,866,585
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 27.99	$ 28.39	$ 28.54	$ 29.54	$ 30.82	$ 32.00	$ 33.88	$ 34.91	$ 35.84	$ 36.82	$ 38.11	$ 38.84	$ 39.62	$ 40.72	$ 41.52	$ 42.33	$ 43.31	$ 45.22	$ 46.44	$ 48.22
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,568,163	$ 1,623,405	$ 1,617,078	$ 1,633,758	$ 1,751,617	$ 1,625,346	$ 1,972,080	$ 2,001,690	$ 2,039,658	$ 2,050,221	$ 1,862,376	$ 2,201,639	$ 2,314,464	$ 2,307,737	$ 2,360,307	$ 2,344,312	$ 2,118,309	$ 2,653,584	$ 2,664,917	$ 2,726,926
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.34	$ 26.10	$ 26.13	$ 26.40	$ 28.31	$ 26.13	$ 31.87	$ 32.35	$ 32.96	$ 32.96	$ 30.10	$ 35.58	$ 37.40	$ 37.10	$ 38.14	$ 37.88	$ 34.23	$ 42.67	$ 43.06	$ 44.07
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 32,240,384	$ 29,096,178	$ 31,077,380	$ 33,694,712	$ 30,454,611	$ 31,168,032	$ 29,646,985	$ 31,458,357	$ 30,711,393	$ 31,224,450	$ 33,579,665	$ 33,585,479	$ 33,659,320	$ 36,912,565	$ 35,323,360	$ 38,719,960	$ 36,432,277	$ 36,995,928	$ 38,188,521
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,249,665	$ 4,292,248	$ 4,351,588	$ 4,411,615	$ 4,498,496	$ 4,560,810	$ 4,605,740	$ 4,731,259	$ 4,917,981	$ 5,070,274	$ 5,186,753	$ 5,219,327	$ 5,392,239	$ 5,594,214	$ 5,639,134	$ 5,810,422	$ 6,001,238	$ 5,998,494	$ 6,219,095	$ 6,364,310
TOTAL FUEL COSTS	$		$ 19,968,723	$ 20,222,579	$ 20,237,217	$ 20,370,414	$ 21,005,443	$ 21,401,097	$ 22,071,985	$ 22,606,533	$ 23,729,555	$ 24,892,873	$ 25,374,162	$ 25,158,179	$ 26,073,475	$ 27,108,525	$ 27,304,834	$ 28,549,557	$ 29,732,602	$ 29,654,210	$ 31,144,475	$ 32,271,836
TOTAL ENERGY MARKET PURCHASES	$		$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
TOTAL ENERGY MARKET SALES	$		$ 38,686,326	$ 38,855,840	$ 38,615,925	$ 39,330,002	$ 41,168,372	$ 41,966,885	$ 44,455,027	$ 45,783,846	$ 47,978,527	$ 49,648,523	$ 50,746,039	$ 51,024,051	$ 52,807,030	$ 54,753,346	$ 55,145,571	$ 56,723,667	$ 58,023,613	$ 60,016,017	$ 62,574,615	$ 64,847,615
TOTAL COSTS	$		$ 51,486,710	$ 54,184,177	$ 51,403,143	$ 53,437,704	$ 56,664,499	$ 55,205,774	$ 58,852,208	$ 57,129,401	$ 59,892,148	$ 60,374,369	$ 61,779,783	$ 65,675,626	$ 66,367,419	$ 67,513,796	$ 72,254,615	$ 71,471,432	$ 76,628,799	$ 73,874,695	$ 77,080,580	$ 79,149,744

$762,254,827

Independence Power & Light

Path 3 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	10.0	15.0	15.0	15.0	15.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 695,820	$ 1,069,815	$ 1,096,560	$ 1,123,980	$ 1,152,075
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	267,979	228,654	216,870	202,198	195,394	177,342	177,435	175,675	191,016	199,429
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,082	458,818	456,892	457,012	458,025	458,805	450,908	451,274	452,858	452,818
GENERATION	MWh	H-5	2,244	1,896	1,588	1,302	1,324	1,170	1,848	1,606	1,584	1,782
GENERATION	MWh	H-6	2,415	2,074	1,867	1,453	1,384	1,407	1,978	1,725	1,748	1,863
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	12,992	12,772	14,460	14,974	12,698	13,285	14,093
CAPACITY FACTOR	%	Dogwood	40	21	20	18	18	16	16	16	17	18
CAPACITY FACTOR	%	Blue Valley 1b	0	0								
CAPACITY FACTOR	%	Blue Valley 2b	0	0								
CAPACITY FACTOR	%	Blue Valley 3b	0	0								
CAPACITY FACTOR	%	Blue Valley GT1										
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	87	87	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	89	89	90	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0					
CAPACITY FACTOR	%	I-4	0	0	0	0	0					
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	4	4	4	5	4	4	4
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -								
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -								
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -								
TOTAL FIXED COST	$/kW-yr	Blue Valley Common										
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	-					
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	-					
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19
VARIABLE O&M COST	$	Dogwood	$ 1,081,515	$ 957,747	$ 953,013	$ 928,527	$ 927,977	$ 883,475	$ 889,821	$ 913,988	$ 1,009,664	$ 1,052,214
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,526,220	$ 1,568,829	$ 1,597,495	$ 1,638,118	$ 1,680,310	$ 1,731,217	$ 1,757,562	$ 1,800,133	$ 1,845,460	$ 1,899,744
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,622,865	$ 1,757,335	$ 1,793,652	$ 1,838,882	$ 1,884,598	$ 1,940,138	$ 1,949,252	$ 2,009,010	$ 2,054,526	$ 2,108,985
VARIABLE O&M COST	$	H-5	$ 4,600	$ 3,982	$ 3,414	$ 2,877	$ 2,992	$ 2,714	$ 4,398	$ 3,919	$ 3,960	$ 4,562
VARIABLE O&M COST	$	H-6	$ 4,951	$ 4,355	$ 4,014	$ 3,211	$ 3,128	$ 3,264	$ 4,708	$ 4,209	$ 4,370	$ 4,769
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 102,895	$ 103,705	$ 120,306	$ 127,725	$ 110,982	$ 119,037	$ 129,513
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.04	$ 4.19	$ 4.39	$ 4.59	$ 4.75	$ 4.98	$ 5.01	$ 5.20	$ 5.29	$ 5.28
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86									
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86									
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47									
VARIABLE O&M COST	$/MWh	Blue Valley GT1										
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66

Data Item	Units	Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW		20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ 1,574,500	$ 1,613,860	$ 1,654,220	$ 1,695,560	$ 2,172,450	$ 2,226,750	$ 2,282,425	$ 2,339,500	$ 2,877,570	$ 2,949,510
IPL OWNERSHIP	%	Dogwood	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	195,563	177,435	185,732	193,603	183,612	193,111	201,745	178,960	193,084	192,597
GENERATION	MWh	Blue Valley 1b	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	452,976	452,820	452,362	454,448	452,569	450,946	450,326	454,265	452,790	453,499
GENERATION	MWh	H-5	1,716	1,760	1,672	1,606	1,672	1,782	1,782	1,606	1,650	1,606
GENERATION	MWh	H-6	1,863	1,863	1,886	1,748	1,771	1,863	1,863	1,725	1,840	1,748
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	13,285	13,726	13,432	13,946	14,497	13,836	13,983	13,029	14,056	13,175
CAPACITY FACTOR	%	Dogwood	18	16	17	17	17	17	18	16	17	17
CAPACITY FACTOR	%	Blue Valley 1b										
CAPACITY FACTOR	%	Blue Valley 2b										
CAPACITY FACTOR	%	Blue Valley 3b										
CAPACITY FACTOR	%	Blue Valley GT1										
CAPACITY FACTOR	%	Iatan 2	87	87	88	88	87	87	87	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	90	90	90	90	90	89	89	90	90	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3										
CAPACITY FACTOR	%	I-4										
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)	4	4	4	4	4	4	4	4	4	4
TOTAL FIXED COST	$	Dogwood	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b										
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b										
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b										
TOTAL FIXED COST	$/kW-yr	Blue Valley Common										
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3										
TOTAL FIXED COST	$/kW-yr	I-4										
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,072,689	$ 1,005,824	$ 1,072,961	$ 1,152,795	$ 1,104,221	$ 1,167,540	$ 1,245,867	$ 1,152,625	$ 1,265,192	$ 1,278,680
VARIABLE O&M COST	$	Blue Valley 1b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,940,584	$ 1,988,039	$ 2,036,485	$ 2,093,048	$ 2,139,187	$ 2,195,051	$ 2,246,686	$ 2,287,643	$ 2,336,566	$ 2,401,050
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 2,164,104	$ 2,215,718	$ 2,272,973	$ 2,338,879	$ 2,385,742	$ 2,437,006	$ 2,497,603	$ 2,547,833	$ 2,606,169	$ 2,673,579
VARIABLE O&M COST	$	H-5	$ 4,496	$ 4,734	$ 4,615	$ 4,545	$ 4,849	$ 5,293	$ 5,417	$ 5,011	$ 5,280	$ 5,268
VARIABLE O&M COST	$	H-6	$ 4,881	$ 5,011	$ 5,205	$ 4,947	$ 5,136	$ 5,533	$ 5,664	$ 5,382	$ 5,888	$ 5,733
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ 125,148	$ 132,454	$ 132,844	$ 141,412	$ 150,619	$ 147,352	$ 152,691	$ 145,789	$ 161,224	$ 154,942
VARIABLE O&M COST	$/MWh	Dogwood	$ 5.49	$ 5.67	$ 5.78	$ 5.95	$ 6.01	$ 6.05	$ 6.18	$ 6.44	$ 6.55	$ 6.64
VARIABLE O&M COST	$/MWh	Blue Valley 1b										
VARIABLE O&M COST	$/MWh	Blue Valley 2b										
VARIABLE O&M COST	$/MWh	Blue Valley 3b										
VARIABLE O&M COST	$/MWh	Blue Valley GT1										
VARIABLE O&M COST	$/MWh	Iatan 2	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 3 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 7,039,931	$ 6,850,828	$ 6,609,841	$ 6,493,717	$ 6,703,312	$ 6,429,076	$ 6,783,923	$ 6,966,792	$ 7,833,317	$ 8,404,412	$ 8,551,069	$ 7,932,052	$ 8,478,103	$ 9,101,302	$ 8,789,946	$ 9,495,018	$ 10,103,841	$ 9,472,623	$ 10,439,721	$ 10,805,123
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 130,646	$ 131,934	$ 112,966	$ 97,690	$ 105,060	$ 97,919	$ 163,741	$ 147,388	$ 150,679	$ 173,947	$ 173,251	$ 181,875	$ 176,399	$ 174,001	$ 184,661	$ 202,136	$ 206,454	$ 194,571	$ 204,864	$ 206,741
FUEL COST	$	H-6	$ 139,290	$ 142,833	$ 131,268	$ 107,910	$ 108,720	$ 116,572	$ 173,453	$ 156,805	$ 164,632	$ 180,050	$ 186,275	$ 190,587	$ 197,042	$ 187,533	$ 193,607	$ 209,229	$ 213,698	$ 206,996	$ 226,121	$ 222,814
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 518,379	$ 539,090	$ 642,651	$ 709,239	$ 621,745	$ 674,431	$ 735,852	$ 717,737	$ 758,601	$ 757,647	$ 807,692	$ 856,715	$ 840,431	$ 861,385	$ 838,366	$ 932,289	$ 903,893
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.7	15.7	15.6	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.61	$ 33.26	$ 33.18	$ 33.61	$ 35.06	$ 36.85	$ 40.96	$ 41.23	$ 42.72	$ 43.98	$ 45.06	$ 46.68	$ 47.73	$ 49.13	$ 50.43	$ 51.10	$ 52.39	$ 53.56	$ 56.39	$ 57.81
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,010	22,771	22,209	34,501	34,234	35,837	37,554	34,783	35,371	36,538	35,618	36,103	35,744	36,101	36,693	36,235	36,382	35,160	36,300	35,283
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,219,908	$ 979,337	$ 938,112	$ 1,728,735	$ 1,803,278	$ 1,987,955	$ 2,437,894	$ 2,239,057	$ 2,374,633	$ 2,552,998	$ 2,529,875	$ 2,635,741	$ 2,680,432	$ 2,790,964	$ 2,915,226	$ 2,937,403	$ 3,010,850	$ 2,967,262	$ 3,203,637	$ 3,199,771
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.17	$ 43.01	$ 42.24	$ 50.11	$ 52.68	$ 55.47	$ 64.92	$ 64.37	$ 67.13	$ 69.87	$ 71.03	$ 73.01	$ 74.99	$ 77.31	$ 79.45	$ 81.07	$ 82.76	$ 84.39	$ 88.25	$ 90.69
DOGWOOD MARKET SALES	MWh	Dogwood Market	267,979	228,654	216,870	202,198	195,394	177,342	177,435	175,675	191,016	199,429	195,563	177,435	185,732	193,603	183,612	193,111	201,745	178,960	193,084	192,597
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,116,139	$ 8,996,589	$ 8,755,241	$ 8,556,654	$ 8,879,860	$ 8,545,404	$ 8,913,812	$ 9,218,786	$ 10,244,353	$ 11,009,818	$ 11,172,889	$ 10,378,341	$ 11,148,752	$ 11,953,895	$ 11,574,304	$ 12,357,975	$ 13,153,014	$ 12,348,151	$ 13,707,979	$ 14,127,451
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 37.75	$ 39.35	$ 40.37	$ 42.32	$ 45.45	$ 48.19	$ 50.24	$ 52.48	$ 53.63	$ 55.21	$ 57.13	$ 58.49	$ 60.03	$ 61.74	$ 63.04	$ 63.99	$ 65.20	$ 69.00	$ 70.99	$ 73.35
IATAN MARKET SALES	MWh	Iatan Market	408,548	409,068	407,215	407,803	408,034	409,280	405,785	405,899	406,770	407,537	406,529	406,490	406,424	407,750	406,074	406,510	405,844	407,704	406,420	406,969
IATAN MARKET SALES	$	Iatan Market	$ 11,587,366	$ 12,073,978	$ 12,089,364	$ 12,521,789	$ 13,140,787	$ 13,807,357	$ 14,467,268	$ 14,940,275	$ 15,479,950	$ 15,830,330	$ 16,367,778	$ 16,635,280	$ 16,969,341	$ 17,448,265	$ 17,790,826	$ 18,216,528	$ 18,563,417	$ 19,469,875	$ 19,958,785	$ 20,779,431
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.36	$ 29.52	$ 29.69	$ 30.71	$ 32.21	$ 33.74	$ 35.65	$ 36.81	$ 38.06	$ 38.84	$ 40.26	$ 40.92	$ 41.75	$ 42.79	$ 43.81	$ 44.81	$ 45.74	$ 47.75	$ 49.11	$ 51.06
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,017,192	$ 2,154,742	$ 2,174,836	$ 2,220,614	$ 2,344,540	$ 2,330,091	$ 2,581,604	$ 2,668,729	$ 2,733,880	$ 2,761,356	$ 2,732,253	$ 2,821,818	$ 3,030,461	$ 3,098,679	$ 3,148,814	$ 3,180,209	$ 3,107,383	$ 3,436,041	$ 3,553,487	$ 3,655,418
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.22	$ 25.79	$ 26.11	$ 26.66	$ 28.15	$ 27.89	$ 30.99	$ 32.04	$ 32.82	$ 33.05	$ 32.80	$ 33.88	$ 36.38	$ 37.09	$ 37.80	$ 38.18	$ 37.31	$ 41.13	$ 42.66	$ 43.89
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,082	458,819	456,892	457,012	458,025	458,806	450,908	451,274	452,858	452,818	452,976	452,820	452,362	454,448	452,570	450,947	450,327	454,266	452,790	453,499
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,177,557	$ 13,027,788	$ 13,041,294	$ 13,497,971	$ 14,118,236	$ 14,683,496	$ 15,275,005	$ 15,752,727	$ 16,232,215	$ 16,673,581	$ 17,262,268	$ 17,585,825	$ 17,922,355	$ 18,504,556	$ 18,790,829	$ 19,090,484	$ 19,505,126	$ 20,539,797	$ 21,026,379	$ 21,866,585
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 27.99	$ 28.39	$ 28.54	$ 29.54	$ 30.82	$ 32.00	$ 33.88	$ 34.91	$ 35.84	$ 36.82	$ 38.11	$ 38.84	$ 39.62	$ 40.72	$ 41.52	$ 42.33	$ 43.31	$ 45.22	$ 46.44	$ 48.22
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,568,163	$ 1,623,405	$ 1,617,078	$ 1,633,758	$ 1,751,617	$ 1,625,346	$ 1,972,080	$ 2,001,690	$ 2,039,658	$ 2,050,221	$ 1,862,376	$ 2,201,639	$ 2,314,464	$ 2,307,737	$ 2,360,307	$ 2,344,312	$ 2,118,309	$ 2,653,584	$ 2,664,917	$ 2,726,926
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.34	$ 26.10	$ 26.13	$ 26.40	$ 28.31	$ 26.13	$ 31.87	$ 32.35	$ 32.96	$ 32.96	$ 30.10	$ 35.58	$ 37.40	$ 37.10	$ 38.14	$ 37.88	$ 34.23	$ 42.67	$ 43.06	$ 44.07
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 31,651,624	$ 32,187,853	$ 34,499,377	$ 36,518,550	$ 37,945,650	$ 35,247,969	$ 36,578,783	$ 34,706,868	$ 36,499,079	$ 35,782,994	$ 36,695,658	$ 38,636,414	$ 38,399,563	$ 38,755,330	$ 40,972,098	$ 40,135,143	$ 43,835,092	$ 41,522,736	$ 42,603,770	$ 43,323,431
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,249,665	$ 4,292,248	$ 4,351,588	$ 4,514,510	$ 4,602,710	$ 4,681,115	$ 4,733,465	$ 4,842,241	$ 5,037,018	$ 5,199,787	$ 5,311,902	$ 5,351,781	$ 5,525,083	$ 5,735,626	$ 5,789,753	$ 5,957,775	$ 6,153,929	$ 6,144,283	$ 6,380,319	$ 6,519,252
TOTAL FUEL COSTS	$		$ 19,968,723	$ 20,222,579	$ 20,237,217	$ 20,888,793	$ 21,549,346	$ 22,043,748	$ 22,781,224	$ 23,228,278	$ 24,403,986	$ 25,628,726	$ 26,091,899	$ 25,916,779	$ 26,831,122	$ 27,916,217	$ 28,161,549	$ 29,389,988	$ 30,593,987	$ 30,492,576	$ 32,076,764	$ 33,175,729
TOTAL ENERGY MARKET PURCHASES	$		$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
TOTAL ENERGY MARKET SALES	$		$ 38,686,326	$ 38,855,840	$ 38,615,925	$ 40,159,521	$ 42,038,318	$ 42,979,649	$ 45,647,662	$ 46,821,264	$ 49,104,690	$ 50,878,304	$ 51,927,439	$ 52,258,644	$ 54,065,805	$ 56,104,096	$ 56,580,305	$ 58,126,912	$ 59,458,098	$ 61,414,711	$ 64,115,185	$ 66,355,583
TOTAL COSTS	$		$ 50,461,710	$ 54,131,645	$ 56,806,342	$ 58,670,628	$ 60,693,609	$ 59,749,324	$ 63,907,288	$ 61,884,593	$ 64,600,174	$ 65,081,553	$ 66,912,477	$ 70,388,837	$ 70,813,219	$ 72,208,161	$ 75,886,747	$ 75,867,754	$ 81,323,523	$ 78,550,615	$ 82,241,365	$ 83,835,521

$811,401,508

Independence Power & Light

Path 4 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	110.0	110.0	110.0	115.0	115.0	115.0	115.0	120.0	120.0	120.0	120.0	125.0	125.0	125.0	125.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 7,654,020	$ 7,845,310	$ 8,041,440	$ 8,617,180	$ 8,832,575	$ 9,053,375	$ 9,279,695	$ 9,925,320	$ 10,173,360	$ 10,427,760	$ 10,688,400	$ 11,412,125	$ 11,697,500	$ 11,989,875	$ 12,289,625
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	267,979	228,654	216,870	202,198	195,251	177,342	186,647	175,675	194,146	199,429	199,919	181,710	188,279	193,603	186,823	197,420	206,101	170,887	193,084	193,999
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	408,548	409,068	407,215	407,803	408,034	409,280	413,781	408,632	406,698	407,537	406,436	408,127	414,620	407,750	406,295	407,157	407,390	407,704	406,595	407,915
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,082	458,818	456,892	457,012	458,025	458,805	450,908	450,257	451,993	452,818	453,390	452,921	452,553	454,448	451,519	451,012	450,359	458,250	459,229	453,016
GENERATION	MWh	H-5	2,244	1,896	1,588	1,302	1,324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	2,415	2,074	1,867	1,453	1,384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	40	21	20	18	18	16	17	16	18	18	18	16	17	17	17	18	19	15	17	18
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	89	88	88	88	88	88	90	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	89	89	90	90	90	90	90	90	90	90	89	91	91	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1															
CAPACITY FACTOR	%	H-6	1	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,081,515	$ 957,747	$ 953,013	$ 928,527	$ 927,468	$ 883,475	$ 926,395	$ 913,988	$ 1,024,033	$ 1,052,214	$ 1,094,797	$ 1,028,039	$ 1,088,119	$ 1,152,795	$ 1,120,928	$ 1,191,795	$ 1,270,854	$ 1,113,612	$ 1,265,192	$ 1,287,865
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,526,220	$ 1,568,829	$ 1,597,495	$ 1,638,118	$ 1,680,310	$ 1,731,217	$ 1,790,818	$ 1,811,604	$ 1,845,731	$ 1,899,744	$ 1,940,142	$ 1,995,421	$ 2,076,245	$ 2,093,048	$ 2,139,748	$ 2,197,934	$ 2,254,614	$ 2,287,643	$ 2,336,551	$ 2,404,849
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,622,865	$ 1,757,335	$ 1,793,652	$ 1,838,882	$ 1,884,598	$ 1,940,138	$ 1,949,252	$ 2,003,684	$ 2,050,610	$ 2,108,985	$ 2,165,242	$ 2,217,048	$ 2,273,927	$ 2,338,879	$ 2,380,226	$ 2,437,357	$ 2,497,785	$ 2,568,983	$ 2,641,352	$ 2,670,526
VARIABLE O&M COST	$	H-5	$ 4,600	$ 3,982	$ 3,414	$ 2,877	$ 2,992	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 4,951	$ 4,355	$ 4,014	$ 3,211	$ 3,128	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.04	$ 4.19	$ 4.39	$ 4.59	$ 4.75	$ 4.98	$ 4.96	$ 5.20	$ 5.27	$ 5.28	$ 5.48	$ 5.66	$ 5.78	$ 5.95	$ 6.00	$ 6.04	$ 6.17	$ 6.52	$ 6.55	$ 6.64
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 4 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.89
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,039,931	$ 6,850,828	$ 6,609,841	$ 6,493,717	$ 6,698,498	$ 6,429,076	$ 7,119,621	$ 6,966,792	$ 7,953,394	$ 8,404,412	$ 8,729,656	$ 8,110,994	$ 8,588,627	$ 9,101,302	$ 8,932,513	$ 9,693,348	$ 10,308,948	$ 9,058,718	$ 10,439,721	$ 10,878,939
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 130,646	$ 131,934	$ 112,966	$ 97,690	$ 105,060	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 139,290	$ 142,833	$ 131,268	$ 107,910	$ 108,720	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.7	15.7	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.61	$ 33.26	$ 33.18	$ 33.61	$ 35.06	$ 36.85	$ 40.96	$ 41.23	$ 42.72	$ 43.98	$ 45.06	$ 46.68	$ 47.73	$ 49.13	$ 50.43	$ 51.10	$ 52.39	$ 53.56	$ 56.39	$ 57.81
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,010	22,771	22,209	21,509	21,462	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,219,908	$ 979,337	$ 938,112	$ 899,216	$ 938,602	$ 696,200	$ 765,596	$ 768,217	$ 797,876	$ 829,139	$ 849,152	$ 877,941	$ 891,873	$ 919,834	$ 936,755	$ 959,840	$ 987,463	$ 1,002,919	$ 1,050,687	$ 1,079,626
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.17	$ 43.01	$ 42.24	$ 41.81	$ 43.73	$ 37.03	$ 40.82	$ 40.96	$ 42.54	$ 44.10	$ 45.28	$ 46.81	$ 47.56	$ 48.93	$ 49.95	$ 51.18	$ 52.65	$ 53.34	$ 56.02	$ 57.57
DOGWOOD MARKET SALES	MWh	Dogwood Market	267,979	228,654	216,870	202,198	195,251	177,342	186,647	175,675	194,146	199,429	199,919	181,710	188,279	193,603	186,823	197,420	206,101	170,887	193,084	193,999
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,116,139	$ 8,996,589	$ 8,755,241	$ 8,556,654	$ 8,874,590	$ 8,545,404	$ 9,300,890	$ 9,218,786	$ 10,383,132	$ 11,009,818	$ 11,383,401	$ 10,589,468	$ 11,284,656	$ 11,953,895	$ 11,739,795	$ 12,592,069	$ 13,394,962	$ 11,879,718	$ 13,707,979	$ 14,216,667
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 37.75	$ 39.35	$ 40.37	$ 42.32	$ 45.45	$ 48.19	$ 49.83	$ 52.48	$ 53.48	$ 55.21	$ 56.94	$ 58.28	$ 59.94	$ 61.74	$ 62.84	$ 63.78	$ 64.99	$ 69.52	$ 70.99	$ 73.28
IATAN MARKET SALES	MWh	Iatan Market	408,548	409,068	407,215	407,803	408,034	409,280	413,781	408,632	406,698	407,537	406,436	408,127	414,620	407,750	406,295	407,157	407,390	407,704	406,595	407,915
IATAN MARKET SALES	$	Iatan Market	$ 11,587,366	$ 12,073,978	$ 12,089,364	$ 12,521,789	$ 13,140,787	$ 13,807,357	$ 14,660,691	$ 14,957,082	$ 15,396,010	$ 15,830,330	$ 16,290,311	$ 16,582,352	$ 17,209,608	$ 17,448,265	$ 17,711,326	$ 18,167,687	$ 18,551,231	$ 19,469,875	$ 19,865,005	$ 20,720,188
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.36	$ 29.52	$ 29.69	$ 30.71	$ 32.21	$ 33.74	$ 35.43	$ 36.60	$ 37.86	$ 38.84	$ 40.08	$ 40.63	$ 41.51	$ 42.79	$ 43.59	$ 44.62	$ 45.54	$ 47.75	$ 48.86	$ 50.80
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,017,192	$ 2,154,742	$ 2,174,836	$ 2,220,614	$ 2,344,540	$ 2,330,091	$ 2,581,604	$ 2,668,729	$ 2,733,880	$ 2,761,356	$ 2,732,253	$ 2,821,818	$ 3,030,461	$ 3,098,679	$ 3,148,814	$ 3,180,209	$ 3,107,383	$ 3,436,041	$ 3,553,487	$ 3,655,418
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.22	$ 25.79	$ 26.11	$ 26.66	$ 28.15	$ 27.89	$ 30.99	$ 32.04	$ 32.82	$ 33.05	$ 32.80	$ 33.88	$ 36.38	$ 37.09	$ 37.80	$ 38.18	$ 37.31	$ 41.13	$ 42.66	$ 43.89
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,082	458,819	456,892	457,012	458,025	458,806	450,908	450,257	451,993	452,818	453,391	452,922	452,553	454,448	451,519	451,012	450,359	458,250	459,230	453,016
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,177,557	$ 13,027,788	$ 13,041,294	$ 13,497,971	$ 14,118,236	$ 14,683,496	$ 15,275,005	$ 15,720,348	$ 16,191,915	$ 16,673,581	$ 17,394,288	$ 17,710,607	$ 18,054,095	$ 18,504,556	$ 18,745,344	$ 19,221,571	$ 19,641,672	$ 20,854,608	$ 21,311,286	$ 21,824,898
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 27.99	$ 28.39	$ 28.54	$ 29.54	$ 30.82	$ 32.00	$ 33.88	$ 34.91	$ 35.82	$ 36.82	$ 38.36	$ 39.10	$ 39.89	$ 40.72	$ 41.52	$ 42.62	$ 43.61	$ 45.51	$ 46.41	$ 48.18
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,568,163	$ 1,623,405	$ 1,617,078	$ 1,633,758	$ 1,751,617	$ 1,625,346	$ 1,972,080	$ 2,001,690	$ 2,039,658	$ 2,050,221	$ 1,862,376	$ 2,201,639	$ 2,314,464	$ 2,307,737	$ 2,360,307	$ 2,344,312	$ 2,118,309	$ 2,653,584	$ 2,664,917	$ 2,726,926
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.34	$ 26.10	$ 26.13	$ 26.40	$ 28.31	$ 26.13	$ 31.87	$ 32.35	$ 32.96	$ 32.96	$ 30.10	$ 35.58	$ 37.40	$ 37.10	$ 38.14	$ 37.88	$ 34.23	$ 42.67	$ 43.06	$ 44.07
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 29,053,102	$ 30,834,541	$ 30,995,017	$ 36,331,556	$ 35,092,236	$ 35,732,735	$ 36,763,953	$ 37,472,364	$ 38,145,548	$ 38,862,368	$ 40,010,755	$ 40,800,279	$ 41,556,740	$ 42,358,800	$ 43,637,481	$ 44,517,837	$ 45,367,110	$ 46,264,486
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,249,665	$ 4,292,248	$ 4,351,588	$ 4,411,615	$ 4,498,496	$ 4,554,831	$ 4,666,465	$ 4,729,276	$ 4,920,374	$ 5,060,943	$ 5,200,181	$ 5,240,508	$ 5,438,291	$ 5,584,722	$ 5,640,902	$ 5,827,085	$ 6,023,253	$ 5,970,238	$ 6,243,094	$ 6,363,240
TOTAL FUEL COSTS	$		$ 19,968,723	$ 20,222,579	$ 20,237,217	$ 20,370,414	$ 21,005,443	$ 21,186,606	$ 22,178,662	$ 22,314,992	$ 23,538,118	$ 24,538,877	$ 25,194,195	$ 24,983,460	$ 25,941,219	$ 26,746,992	$ 27,031,840	$ 28,328,831	$ 29,529,759	$ 28,918,664	$ 30,824,552	$ 31,875,873
TOTAL ENERGY MARKET PURCHASES	$		$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
TOTAL ENERGY MARKET SALES	$		$ 38,686,326	$ 38,855,840	$ 38,615,925	$ 39,330,002	$ 41,168,372	$ 41,687,894	$ 44,555,866	$ 45,334,851	$ 47,542,472	$ 49,154,445	$ 50,511,781	$ 50,783,825	$ 52,785,157	$ 54,232,967	$ 54,642,340	$ 56,465,689	$ 57,801,020	$ 59,296,745	$ 62,153,360	$ 64,223,724
TOTAL COSTS	$		$ 48,411,710	$ 52,975,958	$ 51,360,068	$ 53,194,865	$ 53,964,804	$ 61,141,240	$ 62,842,975	$ 63,370,623	$ 65,444,755	$ 67,266,089	$ 68,768,599	$ 71,045,017	$ 72,728,363	$ 74,804,110	$ 77,130,794	$ 78,560,788	$ 81,588,085	$ 81,915,726	$ 85,577,091	$ 87,452,567

$806,899,194

Independence Power & Light

Path 5 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0	85.0	85.0	85.0	90.0	90.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 4,870,740	$ 5,349,075	$ 5,482,800	$ 5,619,900	$ 5,760,375	$ 6,298,000	$ 6,455,440	$ 6,616,880	$ 6,782,240	$ 7,386,330	$ 7,570,950	$ 7,760,245	$ 7,954,300	$ 8,632,710	$ 8,848,530
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	267,979	228,654	216,870	202,198	195,394	177,342	186,647	175,675	194,146	199,429	199,919	181,710	188,279	193,603	186,823	197,420	206,101	170,887	193,084	193,999
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	408,548	409,068	407,215	407,803	408,034	409,280	413,781	408,632	406,698	407,537	406,436	408,127	414,620	407,750	406,295	407,157	407,390	407,704	406,595	407,915
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,082	458,818	456,892	457,012	458,025	458,805	450,908	450,257	451,993	452,818	453,390	452,921	452,553	454,448	451,519	451,012	450,359	458,250	459,229	453,016
GENERATION	MWh	H-5	2,244	1,896	1,588	1,302	1,324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	2,415	2,074	1,867	1,453	1,384	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	12,992	12,772	14,460	14,974	12,698	13,285	14,093	13,285	13,726	13,432	13,946	14,497	13,836	13,983	13,029	14,056	13,175
CAPACITY FACTOR	%	Dogwood	40	21	20	18	18	16	17	16	18	18	18	16	17	17	17	18	19	15	17	18
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	89	88	88	88	88	88	90	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	89	89	90	90	90	90	90	90	90	90	89	91	91	90
CAPACITY FACTOR	%	H-5	1	1	1	1	1															
CAPACITY FACTOR	%	H-6	1	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0			0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,081,515	$ 957,747	$ 953,013	$ 928,527	$ 927,977	$ 883,475	$ 926,395	$ 913,988	$ 1,024,033	$ 1,052,214	$ 1,094,797	$ 1,028,039	$ 1,088,119	$ 1,152,795	$ 1,120,928	$ 1,191,795	$ 1,270,854	$ 1,113,612	$ 1,265,192	$ 1,287,865
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,526,220	$ 1,568,829	$ 1,597,495	$ 1,638,118	$ 1,680,310	$ 1,731,217	$ 1,790,818	$ 1,811,604	$ 1,845,731	$ 1,899,744	$ 1,940,142	$ 1,995,421	$ 2,076,245	$ 2,093,048	$ 2,139,748	$ 2,197,934	$ 2,254,614	$ 2,287,643	$ 2,336,551	$ 2,404,849
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,622,865	$ 1,757,335	$ 1,793,652	$ 1,838,882	$ 1,884,598	$ 1,940,138	$ 1,949,252	$ 2,003,684	$ 2,050,610	$ 2,108,985	$ 2,165,242	$ 2,217,048	$ 2,273,927	$ 2,338,879	$ 2,380,226	$ 2,437,357	$ 2,497,785	$ 2,568,983	$ 2,641,352	$ 2,670,526
VARIABLE O&M COST	$	H-5	$ 4,600	$ 3,982	$ 3,414	$ 2,877	$ 2,992	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 4,951	$ 4,355	$ 4,014	$ 3,211	$ 3,128	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 102,895	$ 103,705	$ 120,306	$ 127,725	$ 110,982	$ 119,037	$ 129,513	$ 125,148	$ 132,454	$ 132,844	$ 141,412	$ 150,619	$ 147,352	$ 152,691	$ 145,789	$ 161,224	$ 154,942
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.04	$ 4.19	$ 4.39	$ 4.59	$ 4.75	$ 4.98	$ 4.96	$ 5.20	$ 5.27	$ 5.28	$ 5.48	$ 5.66	$ 5.78	$ 5.95	$ 6.00	$ 6.04	$ 6.17	$ 6.52	$ 6.55	$ 6.64
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 5 - F1 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.89
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 7,039,931	$ 6,850,828	$ 6,609,841	$ 6,493,717	$ 6,703,312	$ 6,429,076	$ 7,119,621	$ 6,966,792	$ 7,953,394	$ 8,404,412	$ 8,729,656	$ 8,110,994	$ 8,588,627	$ 9,101,302	$ 8,932,513	$ 9,693,348	$ 10,308,948	$ 9,058,718	$ 10,439,721	$ 10,878,939
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 130,646	$ 131,934	$ 112,966	$ 97,690	$ 105,060	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 139,290	$ 142,833	$ 131,268	$ 107,910	$ 108,720	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 518,379	$ 539,090	$ 642,651	$ 709,239	$ 621,745	$ 674,431	$ 735,852	$ 717,737	$ 758,601	$ 757,647	$ 807,692	$ 856,715	$ 840,431	$ 861,385	$ 838,366	$ 932,289	$ 903,893
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.7	15.7	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.61	$ 33.26	$ 33.18	$ 33.61	$ 35.06	$ 36.85	$ 40.96	$ 41.23	$ 42.72	$ 43.98	$ 45.06	$ 46.68	$ 47.73	$ 49.13	$ 50.43	$ 51.10	$ 52.39	$ 53.56	$ 56.39	$ 57.81
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,010	22,771	22,209	34,501	34,234	33,260	33,728	31,452	32,039	32,893	32,039	32,480	32,186	32,747	33,250	32,590	32,737	31,829	32,810	31,929
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,219,908	$ 979,337	$ 938,112	$ 1,728,735	$ 1,803,278	$ 1,708,964	$ 1,958,231	$ 1,805,635	$ 1,924,040	$ 2,058,921	$ 2,030,552	$ 2,112,534	$ 2,150,648	$ 2,270,584	$ 2,371,489	$ 2,363,085	$ 2,421,948	$ 2,401,613	$ 2,591,257	$ 2,587,594
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.17	$ 43.01	$ 42.24	$ 50.11	$ 52.68	$ 51.38	$ 58.06	$ 57.41	$ 60.05	$ 62.59	$ 63.38	$ 65.04	$ 66.82	$ 69.34	$ 71.32	$ 72.51	$ 73.98	$ 75.45	$ 78.98	$ 81.04
DOGWOOD MARKET SALES	MWh	Dogwood Market	267,979	228,654	216,870	202,198	195,394	177,342	186,647	175,675	194,146	199,429	199,919	181,710	188,279	193,603	186,823	197,420	206,101	170,887	193,084	193,999
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,116,139	$ 8,996,589	$ 8,755,241	$ 8,556,654	$ 8,879,860	$ 8,545,404	$ 9,300,890	$ 9,218,786	$ 10,383,132	$ 11,009,818	$ 11,383,401	$ 10,589,468	$ 11,284,656	$ 11,953,895	$ 11,739,795	$ 12,592,069	$ 13,394,962	$ 11,879,718	$ 13,707,979	$ 14,216,667
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 37.75	$ 39.35	$ 40.37	$ 42.32	$ 45.45	$ 48.19	$ 49.83	$ 52.48	$ 53.48	$ 55.21	$ 56.94	$ 58.28	$ 59.94	$ 61.74	$ 62.84	$ 63.78	$ 64.99	$ 69.52	$ 70.99	$ 73.28
IATAN MARKET SALES	MWh	Iatan Market	408,548	409,068	407,215	407,803	408,034	409,280	413,781	408,632	406,698	407,537	406,436	408,127	414,620	407,750	406,295	407,157	407,390	407,704	406,595	407,915
IATAN MARKET SALES	$	Iatan Market	$ 11,587,366	$ 12,073,978	$ 12,089,364	$ 12,521,789	$ 13,140,787	$ 13,807,357	$ 14,660,691	$ 14,957,082	$ 15,396,010	$ 15,830,330	$ 16,290,311	$ 16,582,352	$ 17,209,608	$ 17,448,265	$ 17,711,326	$ 18,167,687	$ 18,551,231	$ 19,469,875	$ 19,865,005	$ 20,720,188
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.36	$ 29.52	$ 29.69	$ 30.71	$ 32.21	$ 33.74	$ 35.43	$ 36.60	$ 37.86	$ 38.84	$ 40.08	$ 40.63	$ 41.51	$ 42.79	$ 43.59	$ 44.62	$ 45.54	$ 47.75	$ 48.86	$ 50.80
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,017,192	$ 2,154,742	$ 2,174,836	$ 2,220,614	$ 2,344,540	$ 2,330,091	$ 2,581,604	$ 2,668,729	$ 2,733,880	$ 2,761,356	$ 2,732,253	$ 2,821,818	$ 3,030,461	$ 3,098,679	$ 3,148,814	$ 3,180,209	$ 3,107,383	$ 3,436,041	$ 3,553,487	$ 3,655,418
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.22	$ 25.79	$ 26.11	$ 26.66	$ 28.15	$ 27.89	$ 30.99	$ 32.04	$ 32.82	$ 33.05	$ 32.80	$ 33.88	$ 36.38	$ 37.09	$ 37.80	$ 38.18	$ 37.31	$ 41.13	$ 42.66	$ 43.89
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,082	458,819	456,892	457,012	458,025	458,806	450,908	450,257	451,993	452,818	453,391	452,922	452,553	454,448	451,519	451,012	450,359	458,250	459,230	453,016
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,177,557	$ 13,027,788	$ 13,041,294	$ 13,497,971	$ 14,118,236	$ 14,683,496	$ 15,275,005	$ 15,720,348	$ 16,191,915	$ 16,673,581	$ 17,394,288	$ 17,710,607	$ 18,054,095	$ 18,504,556	$ 18,745,344	$ 19,221,571	$ 19,641,672	$ 20,854,608	$ 21,311,286	$ 21,824,898
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 27.99	$ 28.39	$ 28.54	$ 29.54	$ 30.82	$ 32.00	$ 33.88	$ 34.91	$ 35.82	$ 36.82	$ 38.36	$ 39.10	$ 39.89	$ 40.72	$ 41.52	$ 42.62	$ 43.61	$ 45.51	$ 46.41	$ 48.18
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,568,163	$ 1,623,405	$ 1,617,078	$ 1,633,758	$ 1,751,617	$ 1,625,346	$ 1,972,080	$ 2,001,690	$ 2,039,658	$ 2,050,221	$ 1,862,376	$ 2,201,639	$ 2,314,464	$ 2,307,737	$ 2,360,307	$ 2,344,312	$ 2,118,309	$ 2,653,584	$ 2,664,917	$ 2,726,926
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.34	$ 26.10	$ 26.13	$ 26.40	$ 28.31	$ 26.13	$ 31.87	$ 32.35	$ 32.96	$ 32.96	$ 30.10	$ 35.58	$ 37.40	$ 37.10	$ 38.14	$ 37.88	$ 34.23	$ 42.67	$ 43.06	$ 44.07
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 34,477,839	$ 36,275,711	$ 36,453,031	$ 39,023,555	$ 38,088,978	$ 38,685,210	$ 39,296,381	$ 39,948,930	$ 40,958,474	$ 41,626,435	$ 42,311,161	$ 43,039,040	$ 44,166,754	$ 44,914,895	$ 45,681,799	$ 46,494,055	$ 47,753,163	$ 48,591,005
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,249,665	$ 4,292,248	$ 4,351,588	$ 4,514,510	$ 4,602,710	$ 4,675,137	$ 4,794,189	$ 4,840,259	$ 5,039,411	$ 5,190,456	$ 5,325,330	$ 5,372,962	$ 5,571,135	$ 5,726,135	$ 5,791,521	$ 5,974,437	$ 6,175,944	$ 6,116,027	$ 6,404,318	$ 6,518,181
TOTAL FUEL COSTS	$		$ 19,968,723	$ 20,222,579	$ 20,237,217	$ 20,888,793	$ 21,549,346	$ 21,829,257	$ 22,887,901	$ 22,936,738	$ 24,212,549	$ 25,274,729	$ 25,911,932	$ 25,742,061	$ 26,698,866	$ 27,554,684	$ 27,888,555	$ 29,169,262	$ 30,391,144	$ 29,757,030	$ 31,756,841	$ 32,779,767
TOTAL ENERGY MARKET PURCHASES	$		$ 33,278,024	$ 36,284,805	$ 36,334,085	$ 36,908,297	$ 38,634,221	$ 40,756,141	$ 45,461,478	$ 45,928,470	$ 47,764,782	$ 49,348,351	$ 50,740,456	$ 52,742,507	$ 54,123,256	$ 55,905,084	$ 57,543,652	$ 58,511,761	$ 60,198,613	$ 61,805,731	$ 65,295,696	$ 67,172,692
TOTAL ENERGY MARKET SALES	$		$ 38,686,326	$ 38,855,840	$ 38,615,925	$ 40,159,521	$ 42,038,318	$ 42,700,658	$ 45,748,501	$ 46,372,269	$ 48,668,635	$ 50,384,227	$ 51,693,181	$ 52,018,418	$ 54,043,933	$ 55,583,717	$ 56,077,075	$ 57,868,934	$ 59,235,505	$ 60,695,439	$ 63,693,931	$ 65,731,692
TOTAL COSTS	$		$ 48,411,710	$ 52,975,958	$ 56,784,804	$ 58,427,789	$ 59,200,990	$ 63,583,432	$ 65,484,044	$ 66,018,408	$ 67,644,488	$ 69,378,239	$ 71,243,010	$ 73,465,547	$ 74,660,485	$ 76,641,226	$ 79,313,408	$ 80,701,421	$ 83,211,995	$ 83,477,405	$ 87,516,087	$ 89,329,953

$837,809,169

Independence Power & Light

Path 1 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			60.0	60.0	65.0	65.0	65.0	65.0	70.0	70.0	70.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 3,782,280	$ 3,876,780	$ 4,304,885	$ 4,412,460	$ 4,522,830	$ 4,635,865	$ 5,117,280	$ 5,245,240	$ 5,376,350	$ 5,510,750	$ 6,051,975	$ 6,203,325	$ 6,358,350	$ 6,517,350	$ 7,125,600	$ 7,303,760	$ 7,486,400	$ 7,673,520	$ 8,356,945
IPL OWNERSHIP	%	Dogwood	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	575,638	576,230	580,054	581,410	585,633	596,032	588,213	587,353	587,473	586,059	586,382	588,416	589,031	587,400	586,183	586,195	590,125	588,822	588,983
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,794	457,419	455,697	455,052	454,808	457,813	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,031,425	$ 2,141,493	$ 2,378,630	$ 2,182,817	$ 2,237,387	$ 2,293,322	$ 2,350,655	$ 2,409,421	$ 2,469,657	$ 2,531,398	$ 2,594,683	$ 2,659,550	$ 2,726,039	$ 2,794,190	$ 2,864,045	$ 2,935,646	$ 3,009,037	$ 3,084,263	$ 3,161,370
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 1,933,485	$ 1,983,314	$ 2,034,617	$ 2,105,076	$ 2,161,627	$ 2,248,155	$ 2,280,032	$ 2,333,590	$ 2,387,372	$ 2,443,433	$ 2,514,238	$ 2,584,204	$ 2,658,690	$ 2,713,343	$ 2,774,790	$ 2,839,773	$ 2,882,906	$ 2,965,005	$ 3,023,200
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,125	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,567,765	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 1 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,689,682	$ 10,582,230	$ 10,854,374	$ 11,321,836	$ 11,668,887	$ 12,031,528	$ 12,503,704	$ 12,712,704	$ 13,030,110	$ 13,338,109	$ 13,702,947	$ 14,118,185	$ 14,442,679	$ 14,894,744	$ 15,187,107	$ 15,531,682	$ 15,844,252	$ 16,861,964	$ 17,168,134	$ 17,871,707
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	22,253	22,449	21,773	21,840	21,932	21,862	21,753	21,930	21,887	21,975	21,752	21,930	21,190	22,019	21,771
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 817,075	$ 852,159	$ 815,263	$ 842,228	$ 866,884	$ 885,402	$ 902,764	$ 939,516	$ 959,354	$ 993,522	$ 996,178	$ 1,035,726	$ 1,008,589	$ 1,114,601	$ 1,128,168
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 36.72	$ 37.96	$ 37.44	$ 38.56	$ 39.53	$ 40.50	$ 41.50	$ 42.84	$ 43.83	$ 45.21	$ 45.80	$ 47.23	$ 47.60	$ 50.62	$ 51.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	575,638	576,230	580,053	581,410	585,633	596,032	588,213	587,353	587,473	586,059	586,382	588,416	589,031	587,399	586,183	586,195	590,125	588,822	588,983
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 15,547,621	$ 16,093,943	$ 16,892,880	$ 17,523,175	$ 18,219,095	$ 19,039,513	$ 19,339,702	$ 19,795,720	$ 20,344,191	$ 20,837,101	$ 21,397,833	$ 21,978,228	$ 22,621,796	$ 23,045,146	$ 23,594,995	$ 24,166,132	$ 25,406,168	$ 26,010,873	$ 26,964,314
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.88	$ 33.70	$ 34.63	$ 35.55	$ 36.49	$ 37.35	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 43.05	$ 44.17	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282	455,788	456,006	455,794	457,419	455,697	455,052	454,808	457,814	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221	$ 14,639,218	$ 15,035,126	$ 15,331,730	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,585,651	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43	$ 32.12	$ 32.97	$ 33.64	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.41	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,705,887	$ 28,567,678	$ 30,472,938	$ 33,302,448	$ 30,111,178	$ 30,874,576	$ 29,404,784	$ 31,268,713	$ 30,575,585	$ 31,143,832	$ 33,555,617	$ 33,619,456	$ 33,752,699	$ 37,066,899	$ 35,540,121	$ 39,000,745	$ 36,778,702	$ 37,409,580	$ 38,671,108
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 5,257,448	$ 5,379,074	$ 5,518,802	$ 5,675,242	$ 5,837,155	$ 6,001,082	$ 6,125,967	$ 6,266,034	$ 6,433,101	$ 6,577,175	$ 6,749,538	$ 6,928,463	$ 7,123,797	$ 7,273,457	$ 7,446,664	$ 7,628,949	$ 7,755,121	$ 7,946,443	$ 8,134,894
TOTAL FUEL COSTS	$		$ 20,082,084	$ 23,789,433	$ 24,343,038	$ 25,104,784	$ 25,893,603	$ 26,918,980	$ 27,755,775	$ 28,271,425	$ 28,850,384	$ 29,722,361	$ 30,386,501	$ 31,202,921	$ 31,908,128	$ 32,781,798	$ 33,585,393	$ 34,440,747	$ 35,340,259	$ 36,883,537	$ 37,734,073	$ 39,193,300
TOTAL ENERGY MARKET PURCHASES	$		$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 41,684,808	$ 43,058,740	$ 44,934,886	$ 46,613,059	$ 48,064,649	$ 50,159,345	$ 50,829,541	$ 51,873,895	$ 53,165,658	$ 54,048,395	$ 55,671,456	$ 57,141,407	$ 58,708,206	$ 59,739,716	$ 61,074,371	$ 62,123,916	$ 65,644,373	$ 67,168,588	$ 69,638,140
TOTAL COSTS	$		$ 48,122,817	$ 49,865,016	$ 46,447,429	$ 48,527,228	$ 52,258,430	$ 49,957,548	$ 51,780,121	$ 50,491,494	$ 53,138,227	$ 53,309,279	$ 54,916,578	$ 57,925,650	$ 58,745,890	$ 59,640,742	$ 64,224,409	$ 63,468,620	$ 68,371,347	$ 65,646,527	$ 68,361,004	$ 70,334,087
			$683,564,138																			

Independence Power & Light

Path 2 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			35.0	35.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	50.0	50.0	50.0	50.0	55.0	55.0	55.0	55.0	60.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 2,206,330	$ 2,261,455	$ 2,649,160	$ 2,715,360	$ 2,783,280	$ 2,852,840	$ 3,289,680	$ 3,371,940	$ 3,456,225	$ 3,542,625	$ 4,034,650	$ 4,135,550	$ 4,238,900	$ 4,344,900	$ 4,898,850	$ 5,021,335	$ 5,146,900	$ 5,275,545	$ 5,899,020
IPL OWNERSHIP	%	Dogwood	12.3%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	766,114	766,901	771,990	773,795	779,416	793,255	782,850	781,705	781,864	779,983	780,412	783,119	783,938	781,767	780,148	780,164	785,394	783,660	783,874
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,794	457,419	455,697	455,052	454,808	457,813	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,703,612	$ 2,850,100	$ 3,165,705	$ 2,905,098	$ 2,977,726	$ 3,052,169	$ 3,128,473	$ 3,206,685	$ 3,286,852	$ 3,369,024	$ 3,453,249	$ 3,539,580	$ 3,628,070	$ 3,718,772	$ 3,811,741	$ 3,907,034	$ 4,004,710	$ 4,104,828	$ 4,207,449
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 2,573,264	$ 2,639,581	$ 2,707,860	$ 2,801,633	$ 2,876,897	$ 2,992,057	$ 3,034,482	$ 3,105,761	$ 3,177,340	$ 3,251,951	$ 3,346,185	$ 3,439,303	$ 3,538,435	$ 3,611,173	$ 3,692,952	$ 3,779,438	$ 3,836,844	$ 3,946,109	$ 4,023,559
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,125	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,567,765	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,689,682	$ 14,083,829	$ 14,446,025	$ 15,068,167	$ 15,530,055	$ 16,012,692	$ 16,641,109	$ 16,919,265	$ 17,341,699	$ 17,751,613	$ 18,237,174	$ 18,789,812	$ 19,221,680	$ 19,823,330	$ 20,212,435	$ 20,671,027	$ 21,087,024	$ 22,441,492	$ 22,848,972	$ 23,785,354
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	22,253	22,449	21,773	21,840	21,932	21,862	21,753	21,930	21,887	21,975	21,752	21,930	21,190	22,019	21,771
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 817,075	$ 852,159	$ 815,263	$ 842,228	$ 866,884	$ 885,402	$ 902,764	$ 939,516	$ 959,354	$ 993,522	$ 996,178	$ 1,035,726	$ 1,008,589	$ 1,114,601	$ 1,128,168
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 36.72	$ 37.96	$ 37.44	$ 38.56	$ 39.53	$ 40.50	$ 41.50	$ 42.84	$ 43.83	$ 45.21	$ 45.80	$ 47.23	$ 47.60	$ 50.62	$ 51.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	766,114	766,901	771,990	773,795	779,416	793,255	782,849	781,705	781,864	779,983	780,412	783,119	783,938	781,767	780,148	780,164	785,393	783,660	783,874
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 20,692,240	$ 21,419,337	$ 22,482,638	$ 23,321,494	$ 24,247,690	$ 25,339,579	$ 25,739,099	$ 26,346,011	$ 27,075,968	$ 27,731,979	$ 28,478,254	$ 29,250,698	$ 30,107,220	$ 30,670,653	$ 31,402,445	$ 32,162,567	$ 33,812,924	$ 34,617,722	$ 35,886,651
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.88	$ 33.70	$ 34.63	$ 35.55	$ 36.49	$ 37.35	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 43.05	$ 44.17	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282	455,788	456,006	455,794	457,419	455,697	455,052	454,808	457,814	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221	$ 14,639,218	$ 15,035,126	$ 15,331,730	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,585,651	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43	$ 32.12	$ 32.97	$ 33.64	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.41	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,973,961	$ 28,832,799	$ 30,776,126	$ 33,499,467	$ 30,283,804	$ 31,022,236	$ 29,526,840	$ 31,364,515	$ 30,644,493	$ 31,185,170	$ 33,568,696	$ 33,603,549	$ 33,707,117	$ 36,990,868	$ 35,432,904	$ 38,861,546	$ 36,606,713	$ 37,204,008	$ 38,431,100
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 5,897,228	$ 6,035,341	$ 6,192,045	$ 6,371,800	$ 6,552,425	$ 6,744,984	$ 6,880,417	$ 7,038,205	$ 7,223,069	$ 7,385,694	$ 7,581,485	$ 7,783,561	$ 8,003,542	$ 8,171,287	$ 8,364,826	$ 8,568,614	$ 8,709,058	$ 8,927,546	$ 9,135,253
TOTAL FUEL COSTS	$		$ 20,082,084	$ 27,291,033	$ 27,934,688	$ 28,851,115	$ 29,754,771	$ 30,900,145	$ 31,893,180	$ 32,477,986	$ 33,161,973	$ 34,135,865	$ 34,920,728	$ 35,874,548	$ 36,687,128	$ 37,710,384	$ 38,610,720	$ 39,580,093	$ 40,583,032	$ 42,463,065	$ 43,414,911	$ 45,106,946
TOTAL ENERGY MARKET PURCHASES	$		$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 46,829,427	$ 48,384,134	$ 50,524,643	$ 52,411,378	$ 54,093,244	$ 56,459,411	$ 57,228,938	$ 58,424,186	$ 59,897,435	$ 60,943,273	$ 62,751,877	$ 64,413,878	$ 66,193,629	$ 67,365,224	$ 68,881,821	$ 70,120,352	$ 74,051,129	$ 75,775,438	$ 78,560,477
TOTAL COSTS	$		$ 48,122,817	$ 49,129,851	$ 45,635,073	$ 47,660,233	$ 51,214,856	$ 48,798,014	$ 50,509,020	$ 49,175,163	$ 51,767,499	$ 51,849,882	$ 53,405,783	$ 56,361,881	$ 57,091,610	$ 57,918,068	$ 62,446,028	$ 61,611,462	$ 66,418,150	$ 63,601,247	$ 66,210,523	$ 68,085,747

$667,617,447

Independence Power & Light

Path 2 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0	35.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 1,043,730	$ 1,069,815	$ 1,462,080	$ 1,498,640	$ 1,536,100	$ 1,574,500	$ 2,017,325	$ 2,067,775	$ 2,119,450	$ 2,172,450	$ 2,672,100	$ 2,738,910	$ 2,807,400	$ 2,877,570	$ 3,441,095
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	989,994	977,008	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,020	978,286
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,794	457,419	455,697	455,052	454,808	457,813	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,734,131	$ 3,787,078	$ 3,876,035	$ 3,965,367	$ 4,058,483	$ 4,176,088	$ 4,292,300	$ 4,416,019	$ 4,506,796	$ 4,608,858	$ 4,716,794	$ 4,788,437	$ 4,924,801	$ 5,021,461
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,125	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,567,765	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,768,348	$ 21,115,491	$ 21,642,694	$ 22,154,273	$ 22,760,260	$ 23,449,961	$ 23,988,938	$ 24,739,807	$ 25,225,415	$ 25,797,745	$ 26,316,915	$ 28,007,311	$ 28,515,852	$ 29,684,470
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	22,253	22,449	21,773	21,840	21,932	21,862	21,753	21,930	21,887	21,975	21,752	21,930	21,190	22,019	21,771
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 817,075	$ 852,159	$ 815,263	$ 842,228	$ 866,884	$ 885,402	$ 902,764	$ 939,516	$ 959,354	$ 993,522	$ 996,178	$ 1,035,726	$ 1,008,589	$ 1,114,601	$ 1,128,168
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 36.72	$ 37.96	$ 37.44	$ 38.56	$ 39.53	$ 40.50	$ 41.50	$ 42.84	$ 43.83	$ 45.21	$ 45.80	$ 47.23	$ 47.60	$ 50.62	$ 51.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	989,994	977,008	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,020	978,286
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,624,166	$ 32,122,773	$ 32,880,208	$ 33,791,205	$ 34,609,916	$ 35,541,279	$ 36,505,301	$ 37,574,251	$ 38,277,425	$ 39,190,711	$ 40,139,355	$ 42,199,025	$ 43,203,425	$ 44,787,067
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.88	$ 33.70	$ 34.63	$ 35.55	$ 36.49	$ 37.35	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 43.05	$ 44.17	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282	455,788	456,006	455,794	457,419	455,697	455,052	454,808	457,814	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221	$ 14,639,218	$ 15,035,126	$ 15,331,730	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,585,651	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43	$ 32.12	$ 32.97	$ 33.64	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.41	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 32,240,384	$ 29,096,178	$ 31,077,380	$ 33,694,712	$ 30,454,611	$ 31,168,032	$ 29,646,985	$ 31,458,357	$ 30,711,393	$ 31,224,450	$ 33,579,665	$ 33,585,479	$ 33,659,320	$ 36,912,565	$ 35,323,360	$ 38,719,960	$ 36,432,277	$ 36,995,928	$ 38,188,521
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 6,863,634	$ 7,066,646	$ 7,265,937	$ 7,487,058	$ 7,633,013	$ 7,808,480	$ 8,011,096	$ 8,192,225	$ 8,411,388	$ 8,636,559	$ 8,881,126	$ 9,066,911	$ 9,280,732	$ 9,505,970	$ 9,660,651	$ 9,906,239	$ 10,133,155
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 32,588,242	$ 33,606,452	$ 34,871,527	$ 36,020,419	$ 36,674,212	$ 37,462,969	$ 38,538,525	$ 39,443,814	$ 40,534,697	$ 41,454,387	$ 42,626,861	$ 43,623,701	$ 44,706,810	$ 45,812,923	$ 48,028,884	$ 49,081,791	$ 51,006,062
TOTAL ENERGY MARKET PURCHASES	$		$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 56,100,667	$ 58,195,450	$ 60,107,027	$ 62,743,998	$ 63,612,612	$ 64,958,383	$ 66,612,672	$ 67,821,210	$ 69,814,901	$ 71,668,480	$ 73,660,661	$ 74,971,995	$ 76,670,088	$ 78,097,140	$ 82,437,230	$ 84,361,141	$ 87,460,893
TOTAL COSTS	$		$ 48,122,817	$ 48,395,498	$ 44,823,624	$ 46,794,178	$ 50,172,556	$ 47,639,934	$ 49,239,542	$ 47,860,456	$ 50,398,414	$ 50,392,232	$ 51,896,744	$ 54,799,877	$ 55,439,195	$ 56,197,299	$ 60,669,558	$ 59,756,275	$ 64,467,024	$ 61,558,123	$ 64,062,313	$ 65,839,771
			$651,688,888																			

Independence Power & Light

Path 3 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 695,820	$ 1,069,815	$ 1,096,560	$ 1,123,980	$ 1,152,075	$ 1,574,500	$ 1,613,860	$ 1,654,220	$ 1,695,560	$ 2,172,450	$ 2,226,750	$ 2,282,425	$ 2,339,500	$ 2,877,570	$ 2,949,510
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	989,994	977,008	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,020	978,286
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,794	457,419	455,697	455,052	454,808	457,813	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	38,975	44,187	46,279	63,821	52,554	54,610	54,683	54,206	52,591	53,582	54,940	56,518	54,903	56,445	47,967	57,179	54,059
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	12	14	14	20	16	17	17	17	16	17	17	17	17	17	15	18	17
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,734,131	$ 3,787,078	$ 3,876,035	$ 3,965,367	$ 4,058,483	$ 4,176,088	$ 4,292,300	$ 4,416,019	$ 4,506,796	$ 4,608,858	$ 4,716,794	$ 4,788,437	$ 4,924,801	$ 5,021,461
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,125	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,567,765	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 308,715	$ 358,797	$ 385,039	$ 544,419	$ 459,350	$ 489,344	$ 502,537	$ 510,620	$ 507,504	$ 529,944	$ 557,137	$ 587,289	$ 584,719	$ 616,375	$ 536,760	$ 655,871	$ 635,742
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 3 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,768,348	$ 21,115,491	$ 21,642,694	$ 22,154,273	$ 22,760,260	$ 23,449,961	$ 23,988,938	$ 24,739,807	$ 25,225,415	$ 25,797,745	$ 26,316,915	$ 28,007,311	$ 28,515,852	$ 29,684,470
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 963,582	$ 1,121,361	$ 1,206,636	$ 1,708,024	$ 1,437,768	$ 1,526,388	$ 1,570,091	$ 1,596,838	$ 1,595,294	$ 1,664,626	$ 1,747,310	$ 1,840,685	$ 1,840,319	$ 1,926,515	$ 1,709,200	$ 2,105,723	$ 2,056,870
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	60,408	66,143	68,531	86,270	74,327	76,450	76,615	76,068	74,344	75,512	76,827	78,493	76,655	78,375	69,157	79,198	75,830
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 2,206,847	$ 2,518,309	$ 2,685,041	$ 3,421,332	$ 2,966,746	$ 3,135,635	$ 3,217,908	$ 3,272,862	$ 3,291,483	$ 3,433,475	$ 3,581,274	$ 3,756,559	$ 3,744,669	$ 3,927,906	$ 3,565,481	$ 4,248,965	$ 4,182,082
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 36.53	$ 38.07	$ 39.18	$ 39.66	$ 39.91	$ 41.02	$ 42.00	$ 43.03	$ 44.27	$ 45.47	$ 46.62	$ 47.86	$ 48.85	$ 50.12	$ 51.56	$ 53.65	$ 55.15
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	989,994	977,008	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,020	978,286
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,624,166	$ 32,122,773	$ 32,880,208	$ 33,791,205	$ 34,609,916	$ 35,541,279	$ 36,505,301	$ 37,574,251	$ 38,277,425	$ 39,190,711	$ 40,139,355	$ 42,199,025	$ 43,203,425	$ 44,787,067
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.88	$ 33.70	$ 34.63	$ 35.55	$ 36.49	$ 37.35	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 43.05	$ 44.17	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282	455,788	456,006	455,794	457,419	455,697	455,052	454,808	457,814	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221	$ 14,639,218	$ 15,035,126	$ 15,331,730	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,585,651	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43	$ 32.12	$ 32.97	$ 33.64	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.41	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 31,651,624	$ 32,187,853	$ 34,499,377	$ 36,518,550	$ 37,945,650	$ 35,247,969	$ 36,578,783	$ 34,706,868	$ 36,499,079	$ 35,782,994	$ 36,695,658	$ 38,636,414	$ 38,399,563	$ 38,755,330	$ 40,972,098	$ 40,135,143	$ 43,835,092	$ 41,522,736	$ 42,603,770	$ 43,323,431
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 7,172,349	$ 7,425,443	$ 7,650,976	$ 8,031,477	$ 8,092,363	$ 8,297,824	$ 8,513,633	$ 8,702,845	$ 8,918,892	$ 9,166,503	$ 9,438,262	$ 9,654,200	$ 9,865,451	$ 10,122,345	$ 10,197,411	$ 10,562,109	$ 10,768,897
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 33,551,824	$ 34,727,813	$ 36,078,163	$ 37,728,443	$ 38,111,980	$ 38,989,357	$ 40,108,616	$ 41,040,653	$ 42,129,991	$ 43,119,013	$ 44,374,170	$ 45,464,385	$ 46,547,130	$ 47,739,438	$ 49,738,084	$ 51,187,513	$ 53,062,932
TOTAL ENERGY MARKET PURCHASES	$		$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 57,588,816	$ 59,934,478	$ 61,974,993	$ 65,313,171	$ 65,764,095	$ 67,251,790	$ 68,963,696	$ 70,208,670	$ 72,203,621	$ 74,162,439	$ 76,282,581	$ 77,735,032	$ 79,418,578	$ 80,989,320	$ 84,994,122	$ 87,495,505	$ 90,514,807
TOTAL COSTS	$		$ 47,097,817	$ 48,342,967	$ 50,226,823	$ 52,019,496	$ 54,164,623	$ 52,157,001	$ 54,333,563	$ 52,665,974	$ 55,161,461	$ 55,185,436	$ 57,087,951	$ 59,570,705	$ 59,953,890	$ 60,975,835	$ 64,394,028	$ 64,244,605	$ 69,232,866	$ 66,337,649	$ 69,297,385	$ 70,613,378
			$701,299,028																			

Independence Power & Light

Path 4 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	110.0	110.0	110.0	115.0	115.0	115.0	115.0	120.0	120.0	120.0	120.0	125.0	125.0	125.0	125.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 7,654,020	$ 7,845,310	$ 8,041,440	$ 8,617,180	$ 8,832,575	$ 9,053,375	$ 9,279,695	$ 9,925,320	$ 10,173,360	$ 10,427,760	$ 10,688,400	$ 11,412,125	$ 11,697,500	$ 11,989,875	$ 12,289,625
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,480	973,500	980,183	978,020	978,364
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,466	456,450	457,281	456,117	456,038	455,932	457,419	455,633	455,179	455,027	461,660	463,115	456,547
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	89	89	89	88	89	89	89	89	89	88	88	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	90	89	88	88	88	88	90	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	92	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1															
CAPACITY FACTOR	%	H-6	4	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,708,228	$ 3,787,078	$ 3,878,367	$ 3,965,367	$ 4,072,149	$ 4,176,826	$ 4,303,485	$ 4,416,019	$ 4,506,957	$ 4,608,127	$ 4,716,045	$ 4,788,858	$ 4,924,801	$ 5,022,740
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,802,733	$ 1,822,445	$ 1,853,713	$ 1,908,015	$ 1,948,156	$ 2,003,851	$ 2,085,272	$ 2,102,275	$ 2,149,394	$ 2,207,535	$ 2,265,926	$ 2,296,996	$ 2,347,554	$ 2,413,341
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,026,696	$ 2,070,791	$ 2,129,698	$ 2,178,212	$ 2,232,245	$ 2,290,819	$ 2,354,099	$ 2,401,835	$ 2,459,787	$ 2,523,538	$ 2,588,151	$ 2,663,704	$ 2,691,352
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 4 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,548,306	$ 21,115,491	$ 21,490,126	$ 22,154,273	$ 22,679,048	$ 23,286,380	$ 23,886,527	$ 24,739,807	$ 25,025,485	$ 25,601,849	$ 26,117,803	$ 27,893,284	$ 28,515,852	$ 29,449,553
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 602,871	$ 630,997	$ 629,819	$ 647,553	$ 666,690	$ 681,261	$ 699,029	$ 718,882	$ 738,116	$ 757,098	$ 771,925	$ 793,294	$ 813,534	$ 847,278	$ 871,054
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 32.07	$ 33.65	$ 33.58	$ 34.53	$ 35.46	$ 36.33	$ 37.27	$ 38.33	$ 39.26	$ 40.37	$ 41.16	$ 42.30	$ 43.27	$ 45.18	$ 46.45
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,479	973,500	980,183	978,020	978,364
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,410,007	$ 32,122,773	$ 32,867,982	$ 33,791,205	$ 34,667,763	$ 35,490,744	$ 36,547,224	$ 37,574,251	$ 38,233,360	$ 39,101,220	$ 40,052,028	$ 42,104,591	$ 43,203,425	$ 44,729,185
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.95	$ 32.88	$ 33.65	$ 34.63	$ 35.48	$ 36.41	$ 37.28	$ 38.41	$ 39.17	$ 40.17	$ 41.14	$ 42.96	$ 44.17	$ 45.72
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,934,906	$ 12,994,557	$ 13,174,210	$ 13,425,101	$ 13,740,577	$ 14,118,605	$ 14,651,468	$ 14,735,043	$ 15,062,046	$ 15,455,438	$ 15,757,555	$ 16,456,092	$ 16,882,454	$ 17,564,570
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.05	$ 31.61	$ 32.25	$ 32.80	$ 33.67	$ 34.45	$ 35.18	$ 35.98	$ 36.90	$ 37.79	$ 38.49	$ 40.20	$ 41.33	$ 42.91
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,467	456,450	457,282	456,117	456,039	455,933	457,419	455,634	455,180	455,028	461,661	463,116	456,547
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,746,025	$ 14,074,647	$ 14,371,221	$ 14,722,634	$ 15,112,011	$ 15,413,214	$ 15,803,524	$ 16,079,876	$ 16,431,412	$ 16,803,470	$ 17,815,994	$ 18,232,418	$ 18,734,428
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.18	$ 30.83	$ 31.43	$ 32.28	$ 33.14	$ 33.81	$ 34.55	$ 35.29	$ 36.10	$ 36.93	$ 38.59	$ 39.37	$ 41.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 29,053,102	$ 30,834,541	$ 30,995,017	$ 36,331,556	$ 35,092,236	$ 35,732,735	$ 36,763,953	$ 37,472,364	$ 38,145,548	$ 38,862,368	$ 40,010,755	$ 40,800,279	$ 41,556,740	$ 42,358,800	$ 43,637,481	$ 44,517,837	$ 45,367,110	$ 46,264,486
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 6,863,634	$ 7,066,646	$ 7,257,929	$ 7,486,118	$ 7,636,219	$ 7,802,871	$ 8,003,081	$ 8,198,518	$ 8,412,922	$ 8,679,575	$ 8,872,393	$ 9,058,186	$ 9,275,449	$ 9,505,509	$ 9,674,004	$ 9,936,059	$ 10,127,433
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 32,588,242	$ 33,606,452	$ 34,707,801	$ 35,730,138	$ 36,553,303	$ 37,167,769	$ 38,374,533	$ 39,198,439	$ 40,222,169	$ 41,301,815	$ 42,446,558	$ 43,213,346	$ 44,323,835	$ 45,433,861	$ 47,837,612	$ 48,996,750	$ 50,528,069
TOTAL ENERGY MARKET PURCHASES	$		$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 56,100,667	$ 58,195,450	$ 59,892,823	$ 62,581,195	$ 63,545,424	$ 64,845,413	$ 66,412,478	$ 67,801,435	$ 69,725,500	$ 71,886,230	$ 73,439,423	$ 74,817,317	$ 76,516,156	$ 77,966,160	$ 82,378,084	$ 84,445,594	$ 87,312,637
TOTAL COSTS	$		$ 45,047,817	$ 47,187,280	$ 44,780,548	$ 46,551,339	$ 47,472,861	$ 53,559,348	$ 53,035,329	$ 53,895,691	$ 55,516,171	$ 57,181,389	$ 58,598,535	$ 59,860,988	$ 61,537,165	$ 63,370,460	$ 65,049,333	$ 66,557,388	$ 69,136,001	$ 69,524,911	$ 72,293,822	$ 73,580,277
			$694,316,767																			

Independence Power & Light

Path 5 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0	85.0	85.0	85.0	90.0	90.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 4,870,740	$ 5,349,075	$ 5,482,800	$ 5,619,900	$ 5,760,375	$ 6,298,000	$ 6,455,440	$ 6,616,880	$ 6,782,240	$ 7,386,330	$ 7,570,950	$ 7,760,245	$ 7,954,300	$ 8,632,710	$ 8,848,530
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,480	973,500	980,183	978,020	978,364
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,466	456,450	457,281	456,117	456,038	455,932	457,419	455,633	455,179	455,027	461,660	463,115	456,547
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	38,975	44,187	46,279	64,078	52,554	54,646	54,683	54,500	52,701	53,692	54,940	56,702	55,123	56,702	47,967	57,179	54,059
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	89	89	89	88	89	89	89	89	89	88	88	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	90	89	88	88	88	88	90	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	92	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1															
CAPACITY FACTOR	%	H-6	4	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	12	14	14	20	16	17	17	17	16	17	17	18	17	18	15	18	17
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,708,228	$ 3,787,078	$ 3,878,367	$ 3,965,367	$ 4,072,149	$ 4,176,826	$ 4,303,485	$ 4,416,019	$ 4,506,957	$ 4,608,127	$ 4,716,045	$ 4,788,858	$ 4,924,801	$ 5,022,740
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,802,733	$ 1,822,445	$ 1,853,713	$ 1,908,015	$ 1,948,156	$ 2,003,851	$ 2,085,272	$ 2,102,275	$ 2,149,394	$ 2,207,535	$ 2,265,926	$ 2,296,996	$ 2,347,554	$ 2,413,341
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,026,696	$ 2,070,791	$ 2,129,698	$ 2,178,212	$ 2,232,245	$ 2,290,819	$ 2,354,099	$ 2,401,835	$ 2,459,787	$ 2,523,538	$ 2,588,151	$ 2,663,704	$ 2,691,352
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 308,715	$ 358,797	$ 385,039	$ 546,610	$ 459,350	$ 489,673	$ 502,537	$ 513,385	$ 508,567	$ 531,033	$ 557,137	$ 589,195	$ 587,064	$ 619,180	$ 536,760	$ 655,871	$ 635,742
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 5 - F3 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,548,306	$ 21,115,491	$ 21,490,126	$ 22,154,273	$ 22,679,048	$ 23,286,380	$ 23,886,527	$ 24,739,807	$ 25,025,485	$ 25,601,849	$ 26,117,803	$ 27,893,284	$ 28,515,852	$ 29,449,553
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 963,582	$ 1,121,361	$ 1,206,636	$ 1,715,518	$ 1,437,768	$ 1,527,259	$ 1,570,091	$ 1,606,970	$ 1,598,867	$ 1,668,273	$ 1,747,310	$ 1,847,517	$ 1,848,617	$ 1,936,582	$ 1,709,200	$ 2,105,723	$ 2,056,489
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	60,408	66,143	65,079	82,832	71,308	73,400	73,484	73,253	71,455	72,446	73,741	75,455	73,877	75,455	66,768	75,933	72,813
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 2,206,847	$ 2,518,309	$ 2,470,837	$ 3,210,000	$ 2,781,302	$ 2,941,994	$ 3,017,714	$ 3,081,930	$ 3,092,267	$ 3,217,484	$ 3,360,036	$ 3,528,766	$ 3,531,255	$ 3,698,764	$ 3,370,426	$ 3,981,642	$ 3,924,384
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 36.53	$ 38.07	$ 37.97	$ 38.75	$ 39.00	$ 40.08	$ 41.07	$ 42.07	$ 43.28	$ 44.41	$ 45.57	$ 46.77	$ 47.80	$ 49.02	$ 50.48	$ 52.44	$ 53.90
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,479	973,500	980,183	978,020	978,364
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,410,007	$ 32,122,773	$ 32,867,982	$ 33,791,205	$ 34,667,763	$ 35,490,744	$ 36,547,224	$ 37,574,251	$ 38,233,360	$ 39,101,220	$ 40,052,028	$ 42,104,591	$ 43,203,425	$ 44,729,185
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.95	$ 32.88	$ 33.65	$ 34.63	$ 35.48	$ 36.41	$ 37.28	$ 38.41	$ 39.17	$ 40.17	$ 41.14	$ 42.96	$ 44.17	$ 45.72
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,934,906	$ 12,994,557	$ 13,174,210	$ 13,425,101	$ 13,740,577	$ 14,118,605	$ 14,651,468	$ 14,735,043	$ 15,062,046	$ 15,455,438	$ 15,757,555	$ 16,456,092	$ 16,882,454	$ 17,564,570
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.05	$ 31.61	$ 32.25	$ 32.80	$ 33.67	$ 34.45	$ 35.18	$ 35.98	$ 36.90	$ 37.79	$ 38.49	$ 40.20	$ 41.33	$ 42.91
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,467	456,450	457,282	456,117	456,039	455,933	457,419	455,634	455,180	455,028	461,661	463,116	456,547
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,746,025	$ 14,074,647	$ 14,371,221	$ 14,722,634	$ 15,112,011	$ 15,413,214	$ 15,803,524	$ 16,079,876	$ 16,431,412	$ 16,803,470	$ 17,815,994	$ 18,232,418	$ 18,734,428
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.18	$ 30.83	$ 31.43	$ 32.28	$ 33.14	$ 33.81	$ 34.55	$ 35.29	$ 36.10	$ 36.93	$ 38.59	$ 39.37	$ 41.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 34,477,839	$ 36,275,711	$ 36,453,031	$ 39,023,555	$ 38,088,978	$ 38,685,210	$ 39,296,381	$ 39,948,930	$ 40,958,474	$ 41,626,435	$ 42,311,161	$ 43,039,040	$ 44,166,754	$ 44,914,895	$ 45,681,799	$ 46,494,055	$ 47,753,163	$ 48,591,005
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 7,172,349	$ 7,425,443	$ 7,642,967	$ 8,032,729	$ 8,095,569	$ 8,292,544	$ 8,505,618	$ 8,711,903	$ 8,921,489	$ 9,210,609	$ 9,429,529	$ 9,647,382	$ 9,862,514	$ 10,124,689	$ 10,210,764	$ 10,591,929	$ 10,763,176
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 33,551,824	$ 34,727,813	$ 35,914,437	$ 37,445,656	$ 37,991,071	$ 38,695,029	$ 39,944,623	$ 40,805,409	$ 41,821,036	$ 42,970,088	$ 44,193,868	$ 45,060,863	$ 46,172,452	$ 47,370,443	$ 49,546,812	$ 51,102,473	$ 52,584,558
TOTAL ENERGY MARKET PURCHASES	$		$ 27,375,168	$ 30,797,057	$ 31,216,379	$ 32,365,590	$ 34,000,196	$ 35,154,885	$ 37,308,032	$ 37,518,858	$ 38,626,991	$ 39,743,889	$ 40,857,465	$ 42,089,029	$ 43,431,250	$ 44,690,654	$ 46,038,377	$ 47,115,460	$ 48,525,311	$ 49,873,541	$ 52,439,497	$ 53,972,926
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 57,588,816	$ 59,934,478	$ 61,760,789	$ 65,160,198	$ 65,696,907	$ 67,139,854	$ 68,763,502	$ 70,202,104	$ 72,118,738	$ 74,384,833	$ 76,061,344	$ 77,588,985	$ 79,275,486	$ 80,871,630	$ 84,934,976	$ 87,579,958	$ 90,365,968
TOTAL COSTS	$		$ 45,047,817	$ 47,187,280	$ 50,205,285	$ 51,776,657	$ 52,672,005	$ 55,975,056	$ 55,715,195	$ 56,593,801	$ 57,771,090	$ 59,379,558	$ 61,131,146	$ 62,339,251	$ 63,538,275	$ 65,291,747	$ 67,324,391	$ 68,789,834	$ 70,830,612	$ 71,190,197	$ 74,307,104	$ 75,545,696
			$725,689,991																			

Independence Power & Light

Path 1 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			60.0	60.0	65.0	65.0	65.0	65.0	70.0	70.0	70.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 3,782,280	$ 3,876,780	$ 4,304,885	$ 4,412,460	$ 4,522,830	$ 4,635,865	$ 5,117,280	$ 5,245,240	$ 5,376,350	$ 5,510,750	$ 6,051,975	$ 6,203,325	$ 6,358,350	$ 6,517,350	$ 7,125,600	$ 7,303,760	$ 7,486,400	$ 7,673,520	$ 8,356,945
IPL OWNERSHIP	%	Dogwood	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	275,759	156,428	159,244	153,345	152,612	145,287	137,540	136,156	134,859	143,300	142,132	131,719	135,868	141,689	137,810	137,137	141,499	131,110	143,219	140,419
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,616	459,456	457,827	458,455	459,234	460,384	458,631	457,730	459,160	460,071	458,746	458,939	458,698	460,075	458,665	458,386	458,121	460,337	458,632	458,926
GENERATION	MWh	H-5	2,266	994	840	796	796	796	1,012	770	770	770	770	858	858	946	902	770	770	726	924	792
GENERATION	MWh	H-6	2,392	1,108	901	832	832	832	1,219	920	989	897	805	989	1,012	1,012	1,035	897	1,035	805	1,035	989
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	42	23	24	23	23	22	21	20	20	22	21	20	20	21	21	21	21	20	22	21
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
CAPACITY FACTOR	%	H-5	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	H-6	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,031,425	$ 2,141,493	$ 2,378,630	$ 2,182,817	$ 2,237,387	$ 2,293,322	$ 2,350,655	$ 2,409,421	$ 2,469,657	$ 2,531,398	$ 2,594,683	$ 2,659,550	$ 2,726,039	$ 2,794,190	$ 2,864,045	$ 2,935,646	$ 3,009,037	$ 3,084,263	$ 3,161,370
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,107,894	$ 641,249	$ 667,456	$ 670,283	$ 700,692	$ 685,058	$ 686,520	$ 702,731	$ 713,162	$ 759,254	$ 786,101	$ 751,722	$ 789,871	$ 841,680	$ 832,367	$ 842,456	$ 883,124	$ 848,492	$ 939,401	$ 933,120
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,529,437	$ 1,572,011	$ 1,602,464	$ 1,643,646	$ 1,684,863	$ 1,735,954	$ 1,771,227	$ 1,814,470	$ 1,858,136	$ 1,912,683	$ 1,953,527	$ 2,001,435	$ 2,050,928	$ 2,107,971	$ 2,155,438	$ 2,210,741	$ 2,265,005	$ 2,303,171	$ 2,353,075	$ 2,414,017
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,624,852	$ 1,759,762	$ 1,797,302	$ 1,844,648	$ 1,889,560	$ 1,946,777	$ 1,982,534	$ 2,037,531	$ 2,083,061	$ 2,142,648	$ 2,191,551	$ 2,245,556	$ 2,304,642	$ 2,367,709	$ 2,417,759	$ 2,477,048	$ 2,540,604	$ 2,581,862	$ 2,639,745	$ 2,705,554
VARIABLE O&M COST	$	H-5	$ 4,645	$ 2,087	$ 1,806	$ 1,759	$ 1,799	$ 1,847	$ 2,409	$ 1,879	$ 1,925	$ 1,971	$ 2,017	$ 2,308	$ 2,368	$ 2,677	$ 2,616	$ 2,287	$ 2,341	$ 2,265	$ 2,957	$ 2,598
VARIABLE O&M COST	$	H-6	$ 4,904	$ 2,327	$ 1,937	$ 1,839	$ 1,880	$ 1,930	$ 2,901	$ 2,245	$ 2,473	$ 2,296	$ 2,109	$ 2,660	$ 2,793	$ 2,864	$ 3,002	$ 2,664	$ 3,146	$ 2,512	$ 3,312	$ 3,244
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.02	$ 4.10	$ 4.19	$ 4.37	$ 4.59	$ 4.72	$ 4.99	$ 5.16	$ 5.29	$ 5.30	$ 5.53	$ 5.71	$ 5.81	$ 5.94	$ 6.04	$ 6.14	$ 6.24	$ 6.47	$ 6.56	$ 6.65
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 1 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,263,529	$ 4,704,985	$ 4,870,525	$ 4,940,510	$ 5,255,866	$ 5,266,457	$ 5,314,768	$ 5,474,186	$ 5,598,043	$ 6,119,291	$ 6,307,930	$ 5,981,387	$ 6,290,287	$ 6,750,526	$ 6,700,195	$ 6,833,219	$ 7,183,892	$ 7,048,914	$ 7,852,325	$ 7,987,176
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	This data is company confidential and has been redacted.																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	This data is company confidential and has been redacted.																			
FUEL COST	$	H-5	$ 131,957	$ 69,472	$ 60,024	$ 60,112	$ 63,600	$ 67,077	$ 88,773	$ 69,943	$ 72,524	$ 74,312	$ 76,886	$ 87,709	$ 89,629	$ 101,543	$ 98,937	$ 86,431	$ 88,241	$ 87,342	$ 113,479	$ 100,807
FUEL COST	$	H-6	$ 137,947	$ 76,639	$ 63,708	$ 62,194	$ 65,802	$ 69,400	$ 106,058	$ 82,595	$ 92,318	$ 85,643	$ 79,588	$ 100,035	$ 104,677	$ 107,382	$ 111,903	$ 99,667	$ 117,563	$ 95,709	$ 125,750	$ 124,989
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.7	15.7	15.7	15.7	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.5	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	This data is company confidential and has been redacted.																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.85	$ 33.60	$ 33.65	$ 34.23	$ 35.86	$ 37.80	$ 42.06	$ 42.26	$ 43.78	$ 45.18	$ 46.28	$ 47.94	$ 49.02	$ 50.34	$ 51.68	$ 52.49	$ 53.81	$ 55.00	$ 57.79	$ 59.24
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,009	20,903	20,495	20,382	20,382	20,429	20,985	20,444	20,513	20,468	20,329	20,601	20,624	20,759	20,691	20,421	20,559	20,332	20,713	20,535
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,223,337	$ 830,399	$ 804,107	$ 809,032	$ 848,947	$ 897,437	$ 1,045,784	$ 996,044	$ 1,042,317	$ 1,069,459	$ 1,085,167	$ 1,151,083	$ 1,179,506	$ 1,223,086	$ 1,244,906	$ 1,239,521	$ 1,289,340	$ 1,284,290	$ 1,396,440	$ 1,413,137
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.29	$ 39.73	$ 39.23	$ 39.69	$ 41.65	$ 43.93	$ 49.84	$ 48.72	$ 50.81	$ 52.25	$ 53.38	$ 55.88	$ 57.19	$ 58.92	$ 60.17	$ 60.70	$ 62.71	$ 63.17	$ 67.42	$ 68.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	275,759	156,428	159,244	153,345	152,612	145,287	137,540	136,156	134,859	143,300	142,132	131,719	135,868	141,689	137,810	137,137	141,499	131,110	143,219	140,419
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,481,620	$ 6,154,028	$ 6,380,188	$ 6,446,275	$ 6,900,970	$ 6,918,473	$ 6,971,969	$ 7,213,503	$ 7,407,601	$ 8,045,442	$ 8,286,971	$ 7,833,718	$ 8,290,710	$ 8,891,209	$ 8,817,802	$ 8,958,669	$ 9,430,131	$ 9,220,044	$ 10,299,211	$ 10,462,930
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 38.01	$ 39.34	$ 40.07	$ 42.04	$ 45.22	$ 47.62	$ 50.69	$ 52.98	$ 54.93	$ 56.14	$ 58.30	$ 59.47	$ 61.02	$ 62.75	$ 63.99	$ 65.33	$ 66.64	$ 70.32	$ 71.91	$ 74.51
IATAN MARKET SALES	MWh	Iatan Market	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
IATAN MARKET SALES	$	Iatan Market	$ 11,842,428	$ 12,445,523	$ 12,575,969	$ 13,109,860	$ 13,823,819	$ 14,619,792	$ 15,488,840	$ 15,980,140	$ 16,551,846	$ 16,877,618	$ 17,478,911	$ 17,739,350	$ 18,177,846	$ 18,669,002	$ 19,008,993	$ 19,479,024	$ 19,847,616	$ 20,826,228	$ 21,333,505	$ 22,142,972
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.93	$ 30.36	$ 30.79	$ 32.04	$ 33.79	$ 35.62	$ 37.87	$ 39.06	$ 40.41	$ 41.13	$ 42.71	$ 43.35	$ 44.41	$ 45.46	$ 46.46	$ 47.58	$ 48.51	$ 50.74	$ 52.12	$ 54.12
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,063,758	$ 2,234,649	$ 2,272,852	$ 2,348,336	$ 2,507,831	$ 2,542,530	$ 2,825,330	$ 2,902,285	$ 2,982,186	$ 3,045,438	$ 3,037,853	$ 3,119,415	$ 3,316,435	$ 3,377,468	$ 3,438,475	$ 3,507,761	$ 3,454,926	$ 3,762,798	$ 3,864,420	$ 3,987,381
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.78	$ 26.75	$ 27.29	$ 28.19	$ 30.11	$ 30.44	$ 33.92	$ 34.84	$ 35.80	$ 36.46	$ 36.47	$ 37.45	$ 39.82	$ 40.43	$ 41.28	$ 42.11	$ 41.48	$ 45.04	$ 46.40	$ 47.87
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,616	459,456	457,827	458,456	459,235	460,385	458,631	457,731	459,160	460,072	458,746	458,940	458,699	460,076	458,665	458,387	458,121	460,337	458,632	458,927
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,352,857	$ 13,285,877	$ 13,473,132	$ 14,128,699	$ 14,994,519	$ 15,799,708	$ 16,772,039	$ 17,228,900	$ 17,785,031	$ 18,318,192	$ 18,870,506	$ 19,285,086	$ 19,670,111	$ 20,227,920	$ 20,513,656	$ 20,974,132	$ 21,446,059	$ 22,537,689	$ 23,027,326	$ 23,884,015
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 28.36	$ 28.92	$ 29.43	$ 30.82	$ 32.65	$ 34.32	$ 36.57	$ 37.64	$ 38.73	$ 39.82	$ 41.13	$ 42.02	$ 42.88	$ 43.97	$ 44.72	$ 45.76	$ 46.81	$ 48.96	$ 50.21	$ 52.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,628,714	$ 1,730,771	$ 1,727,701	$ 1,760,267	$ 1,906,980	$ 1,881,375	$ 2,178,540	$ 2,196,836	$ 2,244,600	$ 2,304,059	$ 2,236,089	$ 2,467,519	$ 2,556,710	$ 2,540,693	$ 2,611,958	$ 2,642,528	$ 2,543,235	$ 2,932,853	$ 2,924,783	$ 3,000,977
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 26.32	$ 27.83	$ 27.92	$ 28.45	$ 30.82	$ 30.25	$ 35.20	$ 35.50	$ 36.27	$ 37.05	$ 36.13	$ 39.87	$ 41.32	$ 40.85	$ 42.21	$ 42.70	$ 41.10	$ 47.16	$ 47.26	$ 48.49
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,705,887	$ 28,567,678	$ 30,472,938	$ 33,302,448	$ 30,111,178	$ 30,874,576	$ 29,404,784	$ 31,268,713	$ 30,575,585	$ 31,143,832	$ 33,555,617	$ 33,619,456	$ 33,752,699	$ 37,066,899	$ 35,540,121	$ 39,000,745	$ 36,778,702	$ 37,409,580	$ 38,671,108
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,281,246	$ 3,977,436	$ 4,070,965	$ 4,162,175	$ 4,278,794	$ 4,371,565	$ 4,445,591	$ 4,558,855	$ 4,658,757	$ 4,818,852	$ 4,935,305	$ 5,003,682	$ 5,150,602	$ 5,322,902	$ 5,411,181	$ 5,535,196	$ 5,694,220	$ 5,738,302	$ 5,938,490	$ 6,058,532
TOTAL FUEL COSTS	$		$ 20,210,660	$ 17,968,040	$ 18,408,236	$ 18,774,027	$ 19,512,379	$ 20,201,307	$ 20,628,345	$ 21,116,121	$ 21,491,527	$ 22,579,981	$ 23,072,503	$ 23,177,469	$ 23,871,175	$ 24,761,378	$ 25,220,397	$ 25,861,343	$ 26,818,274	$ 27,192,267	$ 28,548,324	$ 29,414,376
TOTAL ENERGY MARKET PURCHASES	$		$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
TOTAL ENERGY MARKET SALES	$		$ 39,592,714	$ 36,681,247	$ 37,233,948	$ 38,602,470	$ 40,983,067	$ 42,659,315	$ 45,282,502	$ 46,517,708	$ 48,013,580	$ 49,660,209	$ 50,995,497	$ 51,596,171	$ 53,191,318	$ 54,929,378	$ 55,635,789	$ 56,801,633	$ 58,011,306	$ 60,563,901	$ 62,845,684	$ 64,891,412
TOTAL COSTS	$		$ 51,111,347	$ 53,631,770	$ 50,658,336	$ 52,393,601	$ 55,625,725	$ 53,827,244	$ 57,355,619	$ 55,634,669	$ 58,354,837	$ 59,002,785	$ 60,267,344	$ 64,313,724	$ 65,035,689	$ 66,198,998	$ 71,034,399	$ 70,231,791	$ 75,327,492	$ 72,620,879	$ 75,974,853	$ 78,093,414

$748,050,802

Independence Power & Light

Path 2 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			35.0	35.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	50.0	50.0	50.0	50.0	55.0	55.0	55.0	55.0	60.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 2,206,330	$ 2,261,455	$ 2,649,160	$ 2,715,360	$ 2,783,280	$ 2,852,840	$ 3,289,680	$ 3,371,940	$ 3,456,225	$ 3,542,625	$ 4,034,650	$ 4,135,550	$ 4,238,900	$ 4,344,900	$ 4,898,850	$ 5,021,335	$ 5,146,900	$ 5,275,545	$ 5,899,020
IPL OWNERSHIP	%	Dogwood	12.3%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	275,759	208,190	211,937	204,086	203,111	193,362	183,051	181,209	179,483	190,718	189,163	175,304	180,825	188,573	183,410	182,515	188,320	174,493	190,610	186,883
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,616	459,456	457,827	458,455	459,234	460,384	458,631	457,730	459,160	460,071	458,746	458,939	458,698	460,075	458,665	458,386	458,121	460,337	458,632	458,926
GENERATION	MWh	H-5	2,266	994	840	796	796	796	1,012	770	770	770	770	858	858	946	902	770	770	726	924	792
GENERATION	MWh	H-6	2,392	1,108	901	832	832	832	1,219	920	989	897	805	989	1,012	1,012	1,035	897	1,035	805	1,035	989
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	42	23	24	23	23	22	21	20	20	22	21	20	20	21	21	21	21	20	22	21
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
CAPACITY FACTOR	%	H-5	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	H-6	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,703,612	$ 2,850,100	$ 3,165,705	$ 2,905,098	$ 2,977,726	$ 3,052,169	$ 3,128,473	$ 3,206,685	$ 3,286,852	$ 3,369,024	$ 3,453,249	$ 3,539,580	$ 3,628,070	$ 3,718,772	$ 3,811,741	$ 3,907,034	$ 4,004,710	$ 4,104,828	$ 4,207,449
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,107,894	$ 853,434	$ 888,314	$ 892,075	$ 932,547	$ 911,740	$ 913,686	$ 935,261	$ 949,143	$ 1,010,487	$ 1,046,217	$ 1,000,462	$ 1,051,234	$ 1,120,187	$ 1,107,793	$ 1,121,220	$ 1,175,345	$ 1,129,253	$ 1,250,244	$ 1,241,884
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,529,437	$ 1,572,011	$ 1,602,464	$ 1,643,646	$ 1,684,863	$ 1,735,954	$ 1,771,227	$ 1,814,470	$ 1,858,136	$ 1,912,683	$ 1,953,527	$ 2,001,435	$ 2,050,928	$ 2,107,971	$ 2,155,438	$ 2,210,741	$ 2,265,005	$ 2,303,171	$ 2,353,075	$ 2,414,017
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,624,852	$ 1,759,762	$ 1,797,302	$ 1,844,648	$ 1,889,560	$ 1,946,777	$ 1,982,534	$ 2,037,531	$ 2,083,061	$ 2,142,648	$ 2,191,551	$ 2,245,556	$ 2,304,642	$ 2,367,709	$ 2,417,759	$ 2,477,048	$ 2,540,604	$ 2,581,862	$ 2,639,745	$ 2,705,554
VARIABLE O&M COST	$	H-5	$ 4,645	$ 2,087	$ 1,806	$ 1,759	$ 1,799	$ 1,847	$ 2,409	$ 1,879	$ 1,925	$ 1,971	$ 2,017	$ 2,308	$ 2,368	$ 2,677	$ 2,616	$ 2,287	$ 2,341	$ 2,265	$ 2,957	$ 2,598
VARIABLE O&M COST	$	H-6	$ 4,904	$ 2,327	$ 1,937	$ 1,839	$ 1,880	$ 1,930	$ 2,901	$ 2,245	$ 2,473	$ 2,296	$ 2,109	$ 2,660	$ 2,793	$ 2,864	$ 3,002	$ 2,664	$ 3,146	$ 2,512	$ 3,312	$ 3,244
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.02	$ 4.10	$ 4.19	$ 4.37	$ 4.59	$ 4.72	$ 4.99	$ 5.16	$ 5.29	$ 5.30	$ 5.53	$ 5.71	$ 5.81	$ 5.94	$ 6.04	$ 6.14	$ 6.24	$ 6.47	$ 6.56	$ 6.65
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	$ 7,263,529	$ 6,261,837	$ 6,482,154	$ 6,575,296	$ 6,995,003	$ 7,009,098	$ 7,073,395	$ 7,285,564	$ 7,450,403	$ 8,144,130
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**									
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**									
FUEL COST	$	H-5	$ 131,957	$ 69,472	$ 60,024	$ 60,112	$ 63,600	$ 67,077	$ 88,773	$ 69,943	$ 72,524	$ 74,312
FUEL COST	$	H-6	$ 137,947	$ 76,639	$ 63,708	$ 62,194	$ 65,802	$ 69,400	$ 106,058	$ 82,595	$ 92,318	$ 85,643
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.7	15.7	15.7	15.7	15.7	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**									
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.85	$ 33.60	$ 33.65	$ 34.23	$ 35.86	$ 37.80	$ 42.06	$ 42.26	$ 43.78	$ 45.18
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,009	20,903	20,495	20,382	20,382	20,429	20,985	20,444	20,513	20,468
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,223,337	$ 830,399	$ 804,107	$ 809,032	$ 848,947	$ 897,437	$ 1,045,784	$ 996,044	$ 1,042,317	$ 1,069,459
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.29	$ 39.73	$ 39.23	$ 39.69	$ 41.65	$ 43.93	$ 49.84	$ 48.72	$ 50.81	$ 52.25
DOGWOOD MARKET SALES	MWh	Dogwood Market	275,759	208,189	211,937	204,086	203,110	193,362	183,051	181,209	179,483	190,718
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,481,620	$ 8,190,361	$ 8,491,356	$ 8,579,311	$ 9,184,462	$ 9,207,756	$ 9,278,954	$ 9,600,410	$ 9,858,733	$ 10,707,633
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 38.01	$ 39.34	$ 40.07	$ 42.04	$ 45.22	$ 47.62	$ 50.69	$ 52.98	$ 54.93	$ 56.14
IATAN MARKET SALES	MWh	Iatan Market	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325
IATAN MARKET SALES	$	Iatan Market	$ 11,842,428	$ 12,445,523	$ 12,575,969	$ 13,109,860	$ 13,823,819	$ 14,619,792	$ 15,488,840	$ 15,980,140	$ 16,551,846	$ 16,877,618
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.93	$ 30.36	$ 30.79	$ 32.04	$ 33.79	$ 35.62	$ 37.87	$ 39.06	$ 40.41	$ 41.13
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
MARSHALL MARKET SALES	$	Marshall Market	$ 2,063,758	$ 2,234,649	$ 2,272,852	$ 2,348,336	$ 2,507,831	$ 2,542,530	$ 2,825,330	$ 2,902,285	$ 2,982,186	$ 3,045,438
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.78	$ 26.75	$ 27.29	$ 28.19	$ 30.11	$ 30.44	$ 33.92	$ 34.84	$ 35.80	$ 36.46
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,616	459,456	457,827	458,456	459,235	460,385	458,631	457,731	459,160	460,072
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,352,857	$ 13,285,877	$ 13,473,132	$ 14,128,699	$ 14,994,519	$ 15,799,708	$ 16,772,039	$ 17,228,900	$ 17,785,031	$ 18,318,192
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 28.36	$ 28.92	$ 29.43	$ 30.82	$ 32.65	$ 34.32	$ 36.57	$ 37.64	$ 38.73	$ 39.82
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,628,714	$ 1,730,771	$ 1,727,701	$ 1,760,267	$ 1,906,980	$ 1,881,375	$ 2,178,540	$ 2,196,836	$ 2,244,600	$ 2,304,059
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 26.32	$ 27.83	$ 27.92	$ 28.45	$ 30.82	$ 30.25	$ 35.20	$ 35.50	$ 36.27	$ 37.05
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,973,961	$ 28,832,799	$ 30,776,126	$ 33,499,467	$ 30,283,804	$ 31,022,236	$ 29,526,840	$ 31,364,515	$ 30,644,493
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,281,246	$ 4,189,621	$ 4,291,822	$ 4,383,967	$ 4,510,649	$ 4,598,247	$ 4,672,756	$ 4,791,385	$ 4,894,738	$ 5,070,085
TOTAL FUEL COSTS	$		$ 20,210,660	$ 19,524,892	$ 20,019,865	$ 20,408,814	$ 21,251,515	$ 21,943,948	$ 22,386,971	$ 22,927,498	$ 23,343,887	$ 24,604,819
TOTAL ENERGY MARKET PURCHASES	$		$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576
TOTAL ENERGY MARKET SALES	$		$ 39,592,714	$ 38,717,579	$ 39,345,116	$ 40,735,506	$ 43,266,558	$ 44,948,599	$ 47,589,487	$ 48,904,615	$ 50,464,713	$ 52,322,400
TOTAL COSTS	$		$ 51,111,347	$ 53,632,550	$ 50,644,775	$ 52,420,332	$ 55,510,243	$ 53,679,910	$ 57,182,086	$ 55,413,725	$ 58,087,847	$ 58,685,574

Data Item	Units	Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	$ 8,395,188	$ 7,960,594	$ 8,371,707	$ 8,984,237	$ 8,917,252	$ 9,094,293	$ 9,561,002	$ 9,381,360	$ 10,450,615	$ 10,630,087
FUEL COST	$	Blue Valley 1b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2										
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2										
FUEL COST	$	H-5	$ 76,886	$ 87,709	$ 89,629	$ 101,543	$ 98,937	$ 86,431	$ 88,241	$ 87,342	$ 113,479	$ 100,807
FUEL COST	$	H-6	$ 79,588	$ 100,035	$ 104,677	$ 107,382	$ 111,903	$ 99,667	$ 117,563	$ 95,709	$ 125,750	$ 124,989
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.5	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost										
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 46.28	$ 47.94	$ 49.02	$ 50.34	$ 51.68	$ 52.49	$ 53.81	$ 55.00	$ 57.79	$ 59.24
INDEPENDENCE MARKET SALES	MWh	Independence Market	20,329	20,601	20,624	20,759	20,691	20,421	20,559	20,332	20,713	20,535
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,085,167	$ 1,151,083	$ 1,179,506	$ 1,223,086	$ 1,244,906	$ 1,239,521	$ 1,289,340	$ 1,284,290	$ 1,396,440	$ 1,413,137
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 53.38	$ 55.88	$ 57.19	$ 58.92	$ 60.17	$ 60.70	$ 62.71	$ 63.17	$ 67.42	$ 68.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	189,163	175,304	180,825	188,573	183,410	182,515	188,320	174,493	190,610	186,883
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,029,082	$ 10,425,851	$ 11,034,059	$ 11,833,260	$ 11,735,562	$ 11,923,041	$ 12,550,508	$ 12,270,904	$ 13,707,161	$ 13,925,055
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 58.30	$ 59.47	$ 61.02	$ 62.75	$ 63.99	$ 65.33	$ 66.64	$ 70.32	$ 71.91	$ 74.51
IATAN MARKET SALES	MWh	Iatan Market	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
IATAN MARKET SALES	$	Iatan Market	$ 17,478,911	$ 17,739,350	$ 18,177,846	$ 18,669,002	$ 19,008,993	$ 19,479,024	$ 19,847,616	$ 20,826,228	$ 21,333,505	$ 22,142,972
IATAN MARKET SALES	$/MWh	Iatan Market	$ 42.71	$ 43.35	$ 44.41	$ 45.46	$ 46.46	$ 47.58	$ 48.51	$ 50.74	$ 52.12	$ 54.12
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 3,037,853	$ 3,119,415	$ 3,316,435	$ 3,377,468	$ 3,438,475	$ 3,507,761	$ 3,454,926	$ 3,762,798	$ 3,864,420	$ 3,987,381
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 36.47	$ 37.45	$ 39.82	$ 40.43	$ 41.28	$ 42.11	$ 41.48	$ 45.04	$ 46.40	$ 47.87
NEBRASKA MARKET SALES	MWh	Nebraska City Market	458,746	458,940	458,699	460,076	458,665	458,387	458,121	460,337	458,632	458,927
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 18,870,506	$ 19,285,086	$ 19,670,111	$ 20,227,920	$ 20,513,656	$ 20,974,132	$ 21,446,059	$ 22,537,689	$ 23,027,326	$ 23,884,015
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 41.13	$ 42.02	$ 42.88	$ 43.97	$ 44.72	$ 45.76	$ 46.81	$ 48.96	$ 50.21	$ 52.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 2,236,089	$ 2,467,519	$ 2,556,710	$ 2,540,693	$ 2,611,958	$ 2,642,528	$ 2,543,235	$ 2,932,853	$ 2,924,783	$ 3,000,977
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 36.13	$ 39.87	$ 41.32	$ 40.85	$ 42.21	$ 42.70	$ 41.10	$ 47.16	$ 47.26	$ 48.49
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		$ 31,185,170	$ 33,568,696	$ 33,603,549	$ 33,707,117	$ 36,990,868	$ 35,432,904	$ 38,861,546	$ 36,606,713	$ 37,204,008	$ 38,431,100
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 5,195,422	$ 5,252,422	$ 5,411,966	$ 5,601,409	$ 5,686,607	$ 5,813,960	$ 5,986,441	$ 6,019,063	$ 6,249,332	$ 6,367,296
TOTAL FUEL COSTS	$		$ 25,159,761	$ 25,156,676	$ 25,952,595	$ 26,995,089	$ 27,437,453	$ 28,122,416	$ 29,195,383	$ 29,524,712	$ 31,146,613	$ 32,057,287
TOTAL ENERGY MARKET PURCHASES	$		$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
TOTAL ENERGY MARKET SALES	$		$ 53,737,609	$ 54,188,304	$ 55,934,667	$ 57,871,429	$ 58,553,549	$ 59,766,006	$ 61,131,683	$ 63,614,761	$ 66,253,634	$ 68,353,536
TOTAL COSTS	$		$ 59,913,945	$ 63,962,617	$ 64,619,217	$ 65,723,584	$ 70,533,090	$ 69,700,039	$ 74,737,247	$ 72,011,237	$ 75,270,463	$ 77,342,956

$744,801,360

Independence Power & Light

Path 2 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0	35.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 1,043,730	$ 1,069,815	$ 1,462,080	$ 1,498,640	$ 1,536,100	$ 1,574,500	$ 2,017,325	$ 2,067,775	$ 2,119,450	$ 2,172,450	$ 2,672,100	$ 2,738,910	$ 2,807,400	$ 2,877,570	$ 3,441,095
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	275,759	259,824	264,500	254,702	253,485	241,319	228,450	226,151	223,997	238,018	236,078	218,782	225,673	235,342	228,899	227,781	235,026	217,770	237,884	233,232
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,616	459,456	457,827	458,455	459,234	460,384	458,631	457,730	459,160	460,071	458,746	458,939	458,698	460,075	458,665	458,386	458,121	460,337	458,632	458,926
GENERATION	MWh	H-5	2,266	994	840	796	796	796	1,012	770	770	770	770	858	858	946	902	770	770	726	924	792
GENERATION	MWh	H-6	2,392	1,108	901	832	832	832	1,219	920	989	897	805	989	1,012	1,012	1,035	897	1,035	805	1,035	989
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	42	23	24	23	23	22	21	20	20	22	21	20	20	21	21	21	21	20	22	21
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
CAPACITY FACTOR	%	H-5	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	H-6	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,107,894	$ 1,065,099	$ 1,108,629	$ 1,113,323	$ 1,163,832	$ 1,137,865	$ 1,140,293	$ 1,167,219	$ 1,184,545	$ 1,261,102	$ 1,305,694	$ 1,248,592	$ 1,311,956	$ 1,398,010	$ 1,382,542	$ 1,399,300	$ 1,466,848	$ 1,409,325	$ 1,560,322	$ 1,549,889
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,529,437	$ 1,572,011	$ 1,602,464	$ 1,643,646	$ 1,684,863	$ 1,735,954	$ 1,771,227	$ 1,814,470	$ 1,858,136	$ 1,912,683	$ 1,953,527	$ 2,001,435	$ 2,050,928	$ 2,107,971	$ 2,155,438	$ 2,210,741	$ 2,265,005	$ 2,303,171	$ 2,353,075	$ 2,414,017
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,624,852	$ 1,759,762	$ 1,797,302	$ 1,844,648	$ 1,889,560	$ 1,946,777	$ 1,982,534	$ 2,037,531	$ 2,083,061	$ 2,142,648	$ 2,191,551	$ 2,245,556	$ 2,304,642	$ 2,367,709	$ 2,417,759	$ 2,477,048	$ 2,540,604	$ 2,581,862	$ 2,639,745	$ 2,705,554
VARIABLE O&M COST	$	H-5	$ 4,645	$ 2,087	$ 1,806	$ 1,759	$ 1,799	$ 1,847	$ 2,409	$ 1,879	$ 1,925	$ 1,971	$ 2,017	$ 2,308	$ 2,368	$ 2,677	$ 2,616	$ 2,287	$ 2,341	$ 2,265	$ 2,957	$ 2,598
VARIABLE O&M COST	$	H-6	$ 4,904	$ 2,327	$ 1,937	$ 1,839	$ 1,880	$ 1,930	$ 2,901	$ 2,245	$ 2,473	$ 2,296	$ 2,109	$ 2,660	$ 2,793	$ 2,864	$ 3,002	$ 2,664	$ 3,146	$ 2,512	$ 3,312	$ 3,244
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.02	$ 4.10	$ 4.19	$ 4.37	$ 4.59	$ 4.72	$ 4.99	$ 5.16	$ 5.29	$ 5.30	$ 5.53	$ 5.71	$ 5.81	$ 5.94	$ 6.04	$ 6.14	$ 6.24	$ 6.47	$ 6.56	$ 6.65
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,263,529	$ 7,814,865	$ 8,089,823	$ 8,206,066	$ 8,729,866	$ 8,747,457	$ 8,827,701	$ 9,092,490	$ 9,298,212	$ 10,163,993	$ 10,477,318	$ 9,934,938	$ 10,448,013	$ 11,212,460	$ 11,128,861	$ 11,349,811	$ 11,932,270	$ 11,708,074	$ 13,042,520	$ 13,266,504
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 131,957	$ 69,472	$ 60,024	$ 60,112	$ 63,600	$ 67,077	$ 88,773	$ 69,943	$ 72,524	$ 74,312	$ 76,886	$ 87,709	$ 89,629	$ 101,543	$ 98,937	$ 86,431	$ 88,241	$ 87,342	$ 113,479	$ 100,807
FUEL COST	$	H-6	$ 137,947	$ 76,639	$ 63,708	$ 62,194	$ 65,802	$ 69,400	$ 106,058	$ 82,595	$ 92,318	$ 85,643	$ 79,588	$ 100,035	$ 104,677	$ 107,382	$ 111,903	$ 99,667	$ 117,563	$ 95,709	$ 125,750	$ 124,989
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.7	15.7	15.7	15.7	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.5	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.85	$ 33.60	$ 33.65	$ 34.23	$ 35.86	$ 37.80	$ 42.06	$ 42.26	$ 43.78	$ 45.18	$ 46.28	$ 47.94	$ 49.02	$ 50.34	$ 51.68	$ 52.49	$ 53.81	$ 55.00	$ 57.79	$ 59.24
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,009	20,903	20,495	20,382	20,382	20,429	20,985	20,444	20,513	20,468	20,329	20,601	20,624	20,759	20,691	20,421	20,559	20,332	20,713	20,535
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,223,337	$ 830,399	$ 804,107	$ 809,032	$ 848,947	$ 897,437	$ 1,045,784	$ 996,044	$ 1,042,317	$ 1,069,459	$ 1,085,167	$ 1,151,083	$ 1,179,506	$ 1,223,086	$ 1,244,906	$ 1,239,521	$ 1,289,340	$ 1,284,290	$ 1,396,440	$ 1,413,137
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.29	$ 39.73	$ 39.23	$ 39.69	$ 41.65	$ 43.93	$ 49.84	$ 48.72	$ 50.81	$ 52.25	$ 53.38	$ 55.88	$ 57.19	$ 58.92	$ 60.17	$ 60.70	$ 62.71	$ 63.17	$ 67.42	$ 68.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	275,759	259,823	264,500	254,702	253,485	241,319	228,450	226,151	223,997	238,018	236,078	218,782	225,673	235,342	228,899	227,781	235,026	217,770	237,884	233,232
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,481,620	$ 10,221,690	$ 10,597,337	$ 10,707,106	$ 11,462,343	$ 11,491,415	$ 11,580,271	$ 11,981,453	$ 12,303,844	$ 13,363,283	$ 13,764,456	$ 13,011,615	$ 13,770,667	$ 14,768,082	$ 14,646,153	$ 14,880,130	$ 15,663,217	$ 15,314,268	$ 17,106,738	$ 17,378,672
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 38.01	$ 39.34	$ 40.07	$ 42.04	$ 45.22	$ 47.62	$ 50.69	$ 52.98	$ 54.93	$ 56.14	$ 58.30	$ 59.47	$ 61.02	$ 62.75	$ 63.99	$ 65.33	$ 66.64	$ 70.32	$ 71.91	$ 74.51
IATAN MARKET SALES	MWh	Iatan Market	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
IATAN MARKET SALES	$	Iatan Market	$ 11,842,428	$ 12,445,523	$ 12,575,969	$ 13,109,860	$ 13,823,819	$ 14,619,792	$ 15,488,840	$ 15,980,140	$ 16,551,846	$ 16,877,618	$ 17,478,911	$ 17,739,350	$ 18,177,846	$ 18,669,002	$ 19,008,993	$ 19,479,024	$ 19,847,616	$ 20,826,228	$ 21,333,505	$ 22,142,972
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.93	$ 30.36	$ 30.79	$ 32.04	$ 33.79	$ 35.62	$ 37.87	$ 39.06	$ 40.41	$ 41.13	$ 42.71	$ 43.35	$ 44.41	$ 45.46	$ 46.46	$ 47.58	$ 48.51	$ 50.74	$ 52.12	$ 54.12
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,063,758	$ 2,234,649	$ 2,272,852	$ 2,348,336	$ 2,507,831	$ 2,542,530	$ 2,825,330	$ 2,902,285	$ 2,982,186	$ 3,045,438	$ 3,037,853	$ 3,119,415	$ 3,316,435	$ 3,377,468	$ 3,438,475	$ 3,507,761	$ 3,454,926	$ 3,762,798	$ 3,864,420	$ 3,987,381
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.78	$ 26.75	$ 27.29	$ 28.19	$ 30.11	$ 30.44	$ 33.92	$ 34.84	$ 35.80	$ 36.46	$ 36.47	$ 37.45	$ 39.82	$ 40.43	$ 41.28	$ 42.11	$ 41.48	$ 45.04	$ 46.40	$ 47.87
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,616	459,456	457,827	458,456	459,235	460,385	458,631	457,731	459,160	460,072	458,746	458,940	458,699	460,076	458,665	458,387	458,121	460,337	458,632	458,927
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,352,857	$ 13,285,877	$ 13,473,132	$ 14,128,699	$ 14,994,519	$ 15,799,708	$ 16,772,039	$ 17,228,900	$ 17,785,031	$ 18,318,192	$ 18,870,506	$ 19,285,086	$ 19,670,111	$ 20,227,920	$ 20,513,656	$ 20,974,132	$ 21,446,059	$ 22,537,689	$ 23,027,326	$ 23,884,015
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 28.36	$ 28.92	$ 29.43	$ 30.82	$ 32.65	$ 34.32	$ 36.57	$ 37.64	$ 38.73	$ 39.82	$ 41.13	$ 42.02	$ 42.88	$ 43.97	$ 44.72	$ 45.76	$ 46.81	$ 48.96	$ 50.21	$ 52.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,628,714	$ 1,730,771	$ 1,727,701	$ 1,760,267	$ 1,906,980	$ 1,881,375	$ 2,178,540	$ 2,196,836	$ 2,244,600	$ 2,304,059	$ 2,236,089	$ 2,467,519	$ 2,556,710	$ 2,540,693	$ 2,611,958	$ 2,642,528	$ 2,543,235	$ 2,932,853	$ 2,924,783	$ 3,000,977
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 26.32	$ 27.83	$ 27.92	$ 28.45	$ 30.82	$ 30.25	$ 35.20	$ 35.50	$ 36.27	$ 37.05	$ 36.13	$ 39.87	$ 41.32	$ 40.85	$ 42.21	$ 42.70	$ 41.10	$ 47.16	$ 47.26	$ 48.49
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 32,240,384	$ 29,096,178	$ 31,077,380	$ 33,694,712	$ 30,454,611	$ 31,168,032	$ 29,646,985	$ 31,458,357	$ 30,711,393	$ 31,224,450	$ 33,579,665	$ 33,585,479	$ 33,659,320	$ 36,912,565	$ 35,323,360	$ 38,719,960	$ 36,432,277	$ 36,995,928	$ 38,188,521
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,281,246	$ 4,401,285	$ 4,512,137	$ 4,605,215	$ 4,741,935	$ 4,824,372	$ 4,899,364	$ 5,023,343	$ 5,130,139	$ 5,320,701	$ 5,454,899	$ 5,500,552	$ 5,672,687	$ 5,879,232	$ 5,961,355	$ 6,092,039	$ 6,277,944	$ 6,299,135	$ 6,559,411	$ 6,675,301
TOTAL FUEL COSTS	$		$ 20,210,660	$ 21,077,920	$ 21,627,534	$ 22,039,584	$ 22,986,378	$ 23,682,307	$ 24,141,277	$ 24,734,424	$ 25,191,697	$ 26,624,683	$ 27,241,891	$ 27,131,020	$ 28,028,901	$ 29,223,312	$ 29,649,063	$ 30,377,934	$ 31,566,652	$ 31,851,427	$ 33,738,519	$ 34,693,705
TOTAL ENERGY MARKET PURCHASES	$		$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
TOTAL ENERGY MARKET SALES	$		$ 39,592,714	$ 40,748,909	$ 41,451,097	$ 42,863,301	$ 45,544,440	$ 47,232,257	$ 49,890,803	$ 51,285,657	$ 52,909,823	$ 54,978,049	$ 56,472,983	$ 56,774,068	$ 58,671,275	$ 60,806,251	$ 61,464,140	$ 62,723,095	$ 64,244,393	$ 66,658,125	$ 69,653,211	$ 71,807,154
TOTAL COSTS	$		$ 51,111,347	$ 53,632,335	$ 50,630,157	$ 52,445,809	$ 55,393,755	$ 53,531,542	$ 57,007,478	$ 55,191,712	$ 57,819,790	$ 58,367,303	$ 59,559,457	$ 63,610,296	$ 64,201,566	$ 65,247,009	$ 70,030,554	$ 69,167,003	$ 74,145,722	$ 71,400,223	$ 74,564,791	$ 76,591,183

$741,538,852

Independence Power & Light

Path 3 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 695,820	$ 1,069,815	$ 1,096,560	$ 1,123,980	$ 1,152,075	$ 1,574,500	$ 1,613,860	$ 1,654,220	$ 1,695,560	$ 2,172,450	$ 2,226,750	$ 2,282,425	$ 2,339,500	$ 2,877,570	$ 2,949,510
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	275,759	259,824	264,500	254,702	253,485	241,319	228,450	226,151	223,997	238,018	236,078	218,782	225,673	235,342	228,899	227,781	235,026	217,770	237,884	233,232
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,616	459,456	457,827	458,455	459,234	460,384	458,631	457,730	459,160	460,071	458,746	458,939	458,698	460,075	458,665	458,386	458,121	460,337	458,632	458,926
GENERATION	MWh	H-5	2,266	994	840	796	796	796	1,012	770	770	770	770	858	858	946	902	770	770	726	924	792
GENERATION	MWh	H-6	2,392	1,108	901	832	832	832	1,219	920	989	897	805	989	1,012	1,012	1,035	897	1,035	805	1,035	989
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	13,579	13,029	15,120	20,075	16,699	17,726	17,873	17,139	18,093	18,130	18,827	19,414	18,167	18,644	17,249	18,680	17,836
CAPACITY FACTOR	%	Dogwood	42	23	24	23	23	22	21	20	20	22	21	20	20	21	21	21	21	20	22	21
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91
CAPACITY FACTOR	%	H-5	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	H-6	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	1	0
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	4	4	5	6	5	5	5	5	6	6	6	6	6	6	5	6	5
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,107,894	$ 1,065,099	$ 1,108,629	$ 1,113,323	$ 1,163,832	$ 1,137,865	$ 1,140,293	$ 1,167,219	$ 1,184,545	$ 1,261,102	$ 1,305,694	$ 1,248,592	$ 1,311,956	$ 1,398,010	$ 1,382,542	$ 1,399,300	$ 1,466,848	$ 1,409,325	$ 1,560,322	$ 1,549,889
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Iatan 2	$ 1,529,437	$ 1,572,011	$ 1,602,464	$ 1,643,646	$ 1,684,863	$ 1,735,954	$ 1,771,227	$ 1,814,470	$ 1,858,136	$ 1,912,683	$ 1,953,527	$ 2,001,435	$ 2,050,928	$ 2,107,971	$ 2,155,438	$ 2,210,741	$ 2,265,005	$ 2,303,171	$ 2,353,075	$ 2,414,017
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Nebraska City 2	$ 1,624,852	$ 1,759,762	$ 1,797,302	$ 1,844,648	$ 1,889,560	$ 1,946,777	$ 1,982,534	$ 2,037,531	$ 2,083,061	$ 2,142,648	$ 2,191,551	$ 2,245,556	$ 2,304,642	$ 2,367,709	$ 2,417,759	$ 2,477,048	$ 2,540,604	$ 2,581,862	$ 2,639,745	$ 2,705,554
VARIABLE O&M COST	$	H-5	$ 4,645	$ 2,087	$ 1,806	$ 1,759	$ 1,799	$ 1,847	$ 2,409	$ 1,879	$ 1,925	$ 1,971	$ 2,017	$ 2,308	$ 2,368	$ 2,677	$ 2,616	$ 2,287	$ 2,341	$ 2,265	$ 2,957	$ 2,598
VARIABLE O&M COST	$	H-6	$ 4,904	$ 2,327	$ 1,937	$ 1,839	$ 1,880	$ 1,930	$ 2,901	$ 2,245	$ 2,473	$ 2,296	$ 2,109	$ 2,660	$ 2,793	$ 2,864	$ 3,002	$ 2,664	$ 3,146	$ 2,512	$ 3,312	$ 3,244
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 107,546	$ 105,791	$ 125,802	$ 171,239	$ 145,945	$ 158,826	$ 164,252	$ 161,448	$ 174,598	$ 179,304	$ 190,907	$ 201,715	$ 193,473	$ 203,588	$ 193,016	$ 214,263	$ 209,754
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.02	$ 4.10	$ 4.19	$ 4.37	$ 4.59	$ 4.72	$ 4.99	$ 5.16	$ 5.29	$ 5.30	$ 5.53	$ 5.71	$ 5.81	$ 5.94	$ 6.04	$ 6.14	$ 6.24	$ 6.47	$ 6.56	$ 6.65
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 3 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	3.73	3.83	3.93	4.02	4.11	4.23	4.32	4.45	4.54	4.66	4.78	4.89	5.02	5.15	5.27	5.40	5.55	5.61	5.76	5.90
VARIABLE O&M COST	$/MWh	H-5	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	H-6	2.05	2.10	2.15	2.21	2.26	2.32	2.38	2.44	2.50	2.56	2.62	2.69	2.76	2.83	2.90	2.97	3.04	3.12	3.20	3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				7.92	8.12	8.32	8.53	8.74	8.96	9.19	9.42	9.65	9.89	10.14	10.39	10.65	10.92	11.19	11.47	11.76
FUEL COST	$	Dogwood	7,263,529	7,814,865	8,089,823	8,206,066	8,729,866	8,747,457	8,827,701	9,092,490	9,298,212	10,163,993	10,477,318	9,934,938	10,448,013	11,212,460	11,128,861	11,349,811	11,932,270	11,708,074	13,042,520	13,266,504
FUEL COST	$	Blue Valley 1b	42,987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 2b	42,987	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley 3b	128,160	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Blue Valley GT1	`	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	J-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	131,957	69,472	60,024	60,112	63,600	67,077	88,773	69,943	72,524	74,312	76,886	87,709	89,629	101,543	98,937	86,431	88,241	87,342	113,479	100,807
FUEL COST	$	H-6	137,947	76,639	63,708	62,194	65,802	69,400	106,058	82,595	92,318	85,643	79,588	100,035	104,677	107,382	111,903	99,667	117,563	95,709	125,750	124,989
FUEL COST	$	I-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	I-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	-	-	-	543,141	550,589	672,966	947,297	816,489	896,138	928,704	922,066	993,339	1,017,087	1,084,868	1,141,328	1,098,326	1,150,097	1,109,685	1,233,710	1,221,218
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.7	15.7	15.7	15.7	15.7	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.5	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	33,535,530	36,661,655	36,845,405	37,586,932	39,515,170	41,802,510	46,689,609	47,072,617	48,949,420	50,688,576	52,111,200	54,173,127	55,585,775	57,291,397	58,971,711	60,096,765	61,825,560	63,475,510	66,924,144	68,840,810
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	30.85	33.60	33.65	34.23	35.86	37.80	42.06	42.26	43.78	45.18	46.28	47.94	49.02	50.34	51.68	52.49	53.81	55.00	57.79	59.24
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,009	20,903	20,495	33,961	33,410	35,549	41,060	37,142	38,239	38,341	37,468	38,694	38,754	39,586	40,105	38,587	39,203	37,581	39,393	38,371
INDEPENDENCE MARKET SALES	$	Independence Market	1,223,337	830,399	804,107	1,636,026	1,686,410	1,906,285	2,439,648	2,188,389	2,354,067	2,430,259	2,406,775	2,592,122	2,661,004	2,802,890	2,916,635	2,840,233	2,970,904	2,897,065	3,192,489	3,173,521
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	45.29	39.73	39.23	48.17	50.48	53.62	59.42	58.92	61.56	63.39	64.24	66.99	68.66	70.81	72.72	73.61	75.78	77.09	81.04	82.71
DOGWOOD MARKET SALES	MWh	Dogwood Market	275,759	259,823	264,500	254,702	253,485	241,319	228,450	226,151	223,997	238,018	236,078	218,782	225,673	235,342	228,899	227,781	235,026	217,770	237,884	233,232
DOGWOOD MARKET SALES	$	Dogwood Market	10,481,620	10,221,690	10,597,337	10,707,106	11,462,343	11,491,415	11,580,271	11,981,453	12,303,844	13,363,283	13,764,456	13,011,615	13,770,667	14,768,082	14,646,153	14,880,130	15,663,217	15,314,268	17,106,738	17,378,672
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	38.01	39.34	40.07	42.04	45.22	47.62	50.69	52.98	54.93	56.14	58.30	59.47	61.02	62.75	63.99	65.33	66.64	70.32	71.91	74.51
IATAN MARKET SALES	MWh	Iatan Market	409,414	409,903	408,488	409,185	409,144	410,406	408,956	409,145	409,570	410,325	409,250	409,237	409,314	410,664	409,167	409,425	409,164	410,475	409,294	409,170
IATAN MARKET SALES	$	Iatan Market	11,842,428	12,445,523	12,575,969	13,109,860	13,823,819	14,619,792	15,488,840	15,980,140	16,551,846	16,877,618	17,478,911	17,739,350	18,177,846	18,669,002	19,008,993	19,479,024	19,847,616	20,826,228	21,333,505	22,142,972
IATAN MARKET SALES	$/MWh	Iatan Market	28.93	30.36	30.79	32.04	33.79	35.62	37.87	39.06	40.41	41.13	42.71	43.35	44.41	45.46	46.46	47.58	48.51	50.74	52.12	54.12
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	2,063,758	2,234,649	2,272,852	2,348,336	2,507,831	2,542,530	2,825,330	2,902,285	2,982,186	3,045,438	3,037,853	3,119,415	3,316,435	3,377,468	3,438,475	3,507,761	3,454,926	3,762,798	3,864,420	3,987,381
MARSHALL MARKET SALES	$/MWh	Marshall Market	24.78	26.75	27.29	28.19	30.11	30.44	33.92	34.84	35.80	36.46	36.47	37.45	39.82	40.43	41.28	42.11	41.48	45.04	46.40	47.87
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,616	459,456	457,827	458,456	459,235	460,385	458,631	457,731	459,160	460,072	458,746	458,940	458,699	460,076	458,665	458,387	458,121	460,337	458,632	458,927
NEBRASKA MARKET SALES	$	Nebraska City Market	12,352,857	13,285,877	13,473,132	14,128,699	14,994,519	15,799,708	16,772,039	17,228,900	17,785,031	18,318,192	18,870,506	19,285,086	19,670,111	20,227,920	20,513,656	20,974,132	21,446,059	22,537,689	23,027,326	23,884,015
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	28.36	28.92	29.43	30.82	32.65	34.32	36.57	37.64	38.73	39.82	41.13	42.02	42.88	43.97	44.72	45.76	46.81	48.96	50.21	52.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	1,628,714	1,730,771	1,727,701	1,760,267	1,906,980	1,881,375	2,178,540	2,196,836	2,244,600	2,304,059	2,236,089	2,467,519	2,556,710	2,540,693	2,611,958	2,642,528	2,543,235	2,932,853	2,924,783	3,000,977
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	26.32	27.83	27.92	28.45	30.82	30.25	35.20	35.50	36.27	37.05	36.13	39.87	41.32	40.85	42.21	42.70	41.10	47.16	47.26	48.49
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		31,651,624	32,187,853	34,499,377	36,518,550	37,945,650	35,247,969	36,578,783	34,706,868	36,499,079	35,782,994	36,695,658	38,636,414	38,399,563	38,755,330	40,972,098	40,135,143	43,835,092	41,522,736	42,603,770	43,323,431
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		4,281,246	4,401,285	4,512,137	4,712,761	4,847,726	4,950,174	5,070,603	5,169,288	5,288,965	5,484,953	5,616,347	5,675,150	5,851,991	6,070,138	6,163,070	6,285,513	6,481,532	6,492,151	6,773,674	6,885,055
TOTAL FUEL COSTS	$		20,210,660	21,077,920	21,627,534	22,582,725	23,536,967	24,355,272	25,088,574	25,550,913	26,087,835	27,553,387	28,163,958	28,124,359	29,045,987	30,308,180	30,790,390	31,476,260	32,716,749	32,961,112	34,972,229	35,914,923
TOTAL ENERGY MARKET PURCHASES	$		33,535,530	36,661,655	36,845,405	37,586,932	39,515,170	41,802,510	46,689,609	47,072,617	48,949,420	50,688,576	52,111,200	54,173,127	55,585,775	57,291,397	58,971,711	60,096,765	61,825,560	63,475,510	66,924,144	68,840,810
TOTAL ENERGY MARKET SALES	$		39,592,714	40,748,909	41,451,097	43,690,295	46,381,902	48,241,105	51,284,667	52,478,003	54,221,573	56,338,850	57,794,590	58,215,107	60,152,774	62,386,055	63,135,869	64,323,808	65,925,957	68,270,901	71,449,260	73,567,537
TOTAL COSTS	$		50,086,347	53,579,804	56,033,356	57,710,671	59,463,610	58,114,821	62,142,902	60,021,683	62,603,725	63,171,059	64,792,573	68,393,942	68,730,541	70,038,991	73,761,400	73,669,872	78,932,976	76,180,607	79,824,557	81,396,681

$791,445,021

Independence Power & Light

Path 4 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	110.0	110.0	110.0	115.0	115.0	115.0	115.0	120.0	120.0	120.0	120.0	125.0	125.0	125.0	125.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 7,654,020	$ 7,845,310	$ 8,041,440	$ 8,617,180	$ 8,832,575	$ 9,053,375	$ 9,279,695	$ 9,925,320	$ 10,173,360	$ 10,427,760	$ 10,688,400	$ 11,412,125	$ 11,697,500	$ 11,989,875	$ 12,289,625
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	275,759	259,824	264,500	254,702	253,485	241,319	232,810	226,151	227,481	238,581	242,618	225,420	232,383	235,342	231,914	234,249	241,566	218,216	237,884	236,248
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	409,414	409,903	408,488	409,185	409,144	410,406	417,068	411,985	409,532	410,325	409,250	410,967	417,532	410,664	409,417	410,204	410,841	410,475	409,491	410,145
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,616	459,456	457,827	458,455	459,234	460,384	458,631	457,922	459,168	460,071	458,937	458,842	458,698	460,075	458,673	458,386	458,121	464,098	466,270	458,935
GENERATION	MWh	H-5	2,266	994	840	796	796	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	2,392	1,108	901	832	832	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	42	23	24	23	23	22	21	20	21	22	22	20	21	21	21	21	22	20	22	21
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	90	89	88	88	88	89	90	88	88	89	89	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	92	92	91
CAPACITY FACTOR	%	H-5	1	1	0	0	0															
CAPACITY FACTOR	%	H-6	1	1	0	0	0															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,107,894	$ 1,065,099	$ 1,108,629	$ 1,113,323	$ 1,163,832	$ 1,137,865	$ 1,156,635	$ 1,167,219	$ 1,198,267	$ 1,261,331	$ 1,336,840	$ 1,280,830	$ 1,345,211	$ 1,398,010	$ 1,394,270	$ 1,433,663	$ 1,502,314	$ 1,407,458	$ 1,560,322	$ 1,563,224
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,529,437	$ 1,572,011	$ 1,602,464	$ 1,643,646	$ 1,684,863	$ 1,735,954	$ 1,804,984	$ 1,826,415	$ 1,858,562	$ 1,912,683	$ 1,953,527	$ 2,009,270	$ 2,090,796	$ 2,107,971	$ 2,156,149	$ 2,214,330	$ 2,273,657	$ 2,303,171	$ 2,353,181	$ 2,417,984
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,624,852	$ 1,759,762	$ 1,797,302	$ 1,844,648	$ 1,889,560	$ 1,946,777	$ 1,982,534	$ 2,037,544	$ 2,083,098	$ 2,142,648	$ 2,191,630	$ 2,245,915	$ 2,304,642	$ 2,367,709	$ 2,417,802	$ 2,477,048	$ 2,540,604	$ 2,601,772	$ 2,681,763	$ 2,705,368
VARIABLE O&M COST	$	H-5	$ 4,645	$ 2,087	$ 1,806	$ 1,759	$ 1,799	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 4,904	$ 2,327	$ 1,937	$ 1,839	$ 1,880	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.02	$ 4.10	$ 4.19	$ 4.37	$ 4.59	$ 4.72	$ 4.97	$ 5.16	$ 5.27	$ 5.29	$ 5.51	$ 5.68	$ 5.79	$ 5.94	$ 6.01	$ 6.12	$ 6.22	$ 6.45	$ 6.56	$ 6.62
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 4 - F1 Market - Low Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.89
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 7,263,529	$ 7,814,865	$ 8,089,823	$ 8,206,066	$ 8,729,866	$ 8,747,457	$ 8,983,678	$ 9,092,490	$ 9,427,629	$ 10,184,929	$ 10,739,573	$ 10,206,897	$ 10,729,104	$ 11,212,460	$ 11,253,023	$ 11,641,016	$ 12,233,509	$ 11,704,414	$ 13,042,520	$ 13,412,416
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 131,957	$ 69,472	$ 60,024	$ 60,112	$ 63,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 137,947	$ 76,639	$ 63,708	$ 62,194	$ 65,802	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.7	15.7	15.7	15.7															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.85	$ 33.60	$ 33.65	$ 34.23	$ 35.86	$ 37.80	$ 42.06	$ 42.26	$ 43.78	$ 45.18	$ 46.28	$ 47.94	$ 49.02	$ 50.34	$ 51.68	$ 52.49	$ 53.81	$ 55.00	$ 57.79	$ 59.24
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,009	20,903	20,495	20,382	20,382	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,223,337	$ 830,399	$ 804,107	$ 809,032	$ 848,947	$ 718,962	$ 788,009	$ 788,245	$ 819,630	$ 850,011	$ 869,800	$ 898,804	$ 917,971	$ 944,906	$ 963,158	$ 984,553	$ 1,011,485	$ 1,032,399	$ 1,078,082	$ 1,109,078
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.29	$ 39.73	$ 39.23	$ 39.69	$ 41.65	$ 38.24	$ 42.02	$ 42.03	$ 43.70	$ 45.21	$ 46.38	$ 47.93	$ 48.95	$ 50.26	$ 51.36	$ 52.50	$ 53.93	$ 54.91	$ 57.49	$ 59.14
DOGWOOD MARKET SALES	MWh	Dogwood Market	275,759	259,823	264,500	254,702	253,485	241,319	232,810	226,151	227,481	238,581	242,618	225,420	232,383	235,342	231,914	234,249	241,566	218,216	237,884	236,248
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,481,620	$ 10,221,690	$ 10,597,337	$ 10,707,106	$ 11,462,343	$ 11,491,415	$ 11,759,136	$ 11,981,453	$ 12,452,003	$ 13,384,517	$ 14,074,634	$ 13,333,233	$ 14,103,227	$ 14,768,082	$ 14,787,724	$ 15,224,011	$ 16,019,672	$ 15,317,462	$ 17,106,738	$ 17,543,225
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 38.01	$ 39.34	$ 40.07	$ 42.04	$ 45.22	$ 47.62	$ 50.51	$ 52.98	$ 54.74	$ 56.10	$ 58.01	$ 59.15	$ 60.69	$ 62.75	$ 63.76	$ 64.99	$ 66.32	$ 70.19	$ 71.91	$ 74.26
IATAN MARKET SALES	MWh	Iatan Market	409,414	409,903	408,488	409,185	409,144	410,406	417,068	411,985	409,532	410,325	409,250	410,967	417,532	410,664	409,417	410,204	410,842	410,475	409,491	410,145
IATAN MARKET SALES	$	Iatan Market	$ 11,842,428	$ 12,445,523	$ 12,575,969	$ 13,109,860	$ 13,823,819	$ 14,619,792	$ 15,808,798	$ 16,144,424	$ 16,618,427	$ 16,877,618	$ 17,545,659	$ 17,843,166	$ 18,552,027	$ 18,669,002	$ 19,108,589	$ 19,589,416	$ 19,999,081	$ 20,826,228	$ 21,430,491	$ 22,285,837
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.93	$ 30.36	$ 30.79	$ 32.04	$ 33.79	$ 35.62	$ 37.90	$ 39.19	$ 40.58	$ 41.13	$ 42.87	$ 43.42	$ 44.43	$ 45.46	$ 46.67	$ 47.76	$ 48.68	$ 50.74	$ 52.33	$ 54.34
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,063,758	$ 2,234,649	$ 2,272,852	$ 2,348,336	$ 2,507,831	$ 2,542,530	$ 2,825,330	$ 2,902,285	$ 2,982,186	$ 3,045,438	$ 3,037,853	$ 3,119,415	$ 3,316,435	$ 3,377,468	$ 3,438,475	$ 3,507,761	$ 3,454,926	$ 3,762,798	$ 3,864,420	$ 3,987,381
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.78	$ 26.75	$ 27.29	$ 28.19	$ 30.11	$ 30.44	$ 33.92	$ 34.84	$ 35.80	$ 36.46	$ 36.47	$ 37.45	$ 39.82	$ 40.43	$ 41.28	$ 42.11	$ 41.48	$ 45.04	$ 46.40	$ 47.87
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,616	459,456	457,827	458,456	459,235	460,385	458,631	457,923	459,169	460,072	458,938	458,842	458,699	460,076	458,674	458,387	458,121	464,099	466,270	458,935
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,352,857	$ 13,285,877	$ 13,473,132	$ 14,128,699	$ 14,994,519	$ 15,799,708	$ 16,772,039	$ 17,244,664	$ 17,845,027	$ 18,318,192	$ 18,974,033	$ 19,380,183	$ 19,770,404	$ 20,227,920	$ 20,582,984	$ 21,077,152	$ 21,553,381	$ 22,828,072	$ 23,399,804	$ 23,964,492
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 28.36	$ 28.92	$ 29.43	$ 30.82	$ 32.65	$ 34.32	$ 36.57	$ 37.66	$ 38.86	$ 39.82	$ 41.34	$ 42.24	$ 43.10	$ 43.97	$ 44.88	$ 45.98	$ 47.05	$ 49.19	$ 50.19	$ 52.22
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,628,714	$ 1,730,771	$ 1,727,701	$ 1,760,267	$ 1,906,980	$ 1,881,375	$ 2,178,540	$ 2,196,836	$ 2,244,600	$ 2,304,059	$ 2,236,089	$ 2,467,519	$ 2,556,710	$ 2,540,693	$ 2,611,958	$ 2,642,528	$ 2,543,235	$ 2,932,853	$ 2,924,783	$ 3,000,977
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 26.32	$ 27.83	$ 27.92	$ 28.45	$ 30.82	$ 30.25	$ 35.20	$ 35.50	$ 36.27	$ 37.05	$ 36.13	$ 39.87	$ 41.32	$ 40.85	$ 42.21	$ 42.70	$ 41.10	$ 47.16	$ 47.26	$ 48.49
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 29,053,102	$ 30,834,541	$ 30,995,017	$ 36,331,556	$ 35,092,236	$ 35,732,735	$ 36,763,953	$ 37,472,364	$ 38,145,548	$ 38,862,368	$ 40,010,755	$ 40,800,279	$ 41,556,740	$ 42,358,800	$ 43,637,481	$ 44,517,837	$ 45,367,110	$ 46,264,486
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,281,246	$ 4,401,285	$ 4,512,137	$ 4,605,215	$ 4,741,935	$ 4,820,595	$ 4,944,153	$ 5,031,178	$ 5,139,928	$ 5,316,662	$ 5,481,996	$ 5,536,015	$ 5,740,649	$ 5,873,690	$ 5,968,222	$ 6,125,041	$ 6,316,575	$ 6,312,401	$ 6,595,267	$ 6,686,576
TOTAL FUEL COSTS	$		$ 20,210,660	$ 21,077,920	$ 21,627,534	$ 22,039,584	$ 22,986,378	$ 23,545,830	$ 24,212,475	$ 24,615,052	$ 25,174,537	$ 26,485,663	$ 27,346,611	$ 27,232,362	$ 28,243,455	$ 29,014,386	$ 29,545,055	$ 30,476,761	$ 31,676,366	$ 31,740,234	$ 33,635,443	$ 34,584,669
TOTAL ENERGY MARKET PURCHASES	$		$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
TOTAL ENERGY MARKET SALES	$		$ 39,592,714	$ 40,748,909	$ 41,451,097	$ 42,863,301	$ 45,544,440	$ 47,053,782	$ 50,131,851	$ 51,257,907	$ 52,961,872	$ 54,779,836	$ 56,738,068	$ 57,042,320	$ 59,216,774	$ 60,528,070	$ 61,492,887	$ 63,025,420	$ 64,581,778	$ 66,699,812	$ 69,804,318	$ 71,890,989
TOTAL COSTS	$		$ 48,036,347	$ 52,424,117	$ 50,587,082	$ 52,202,970	$ 52,694,060	$ 59,446,709	$ 60,806,621	$ 61,193,675	$ 63,065,965	$ 65,183,429	$ 66,347,287	$ 68,761,551	$ 70,363,860	$ 72,451,682	$ 74,548,840	$ 76,031,947	$ 78,874,202	$ 79,346,170	$ 82,717,646	$ 84,485,552

$784,533,324

Independence Power & Light

Path 5 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	305.6	306.7	307.7	308.8	309.9	311.0	312.1	313.2	314.3	315.4	316.5	317.6	318.7	319.8	320.9	322.0	323.2	324.3	325.4	326.6
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,087	1,091	1,095	1,098	1,102	1,106	1,110	1,114	1,118	1,122	1,126	1,130	1,134	1,138	1,141	1,145	1,149	1,154	1,158	1,162
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0	85.0	85.0	85.0	90.0	90.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 4,870,740	$ 5,349,075	$ 5,482,800	$ 5,619,900	$ 5,760,375	$ 6,298,000	$ 6,455,440	$ 6,616,880	$ 6,782,240	$ 7,386,330	$ 7,570,950	$ 7,760,245	$ 7,954,300	$ 8,632,710	$ 8,848,530
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	275,759	259,824	264,500	254,702	253,485	241,319	232,810	226,151	227,481	238,581	242,618	225,420	232,383	235,342	231,914	234,249	241,566	218,216	237,884	236,248
GENERATION	MWh	Blue Valley 1b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	743	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	409,414	409,903	408,488	409,185	409,144	410,406	417,068	411,985	409,532	410,325	409,250	410,967	417,532	410,664	409,417	410,204	410,841	410,475	409,491	410,145
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	435,616	459,456	457,827	458,455	459,234	460,384	458,631	457,922	459,168	460,071	458,937	458,842	458,698	460,075	458,673	458,386	458,121	464,098	466,270	458,935
GENERATION	MWh	H-5	2,266	994	840	796	796	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	2,392	1,108	901	832	832	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	13,579	13,029	15,120	20,038	16,699	17,726	17,873	17,176	18,056	18,093	18,827	19,414	18,167	18,644	17,249	18,680	17,836
CAPACITY FACTOR	%	Dogwood	42	23	24	23	23	22	21	20	21	22	22	20	21	21	21	21	22	20	22	21
CAPACITY FACTOR	%	Blue Valley 1b	0	0																		
CAPACITY FACTOR	%	Blue Valley 2b	0	0																		
CAPACITY FACTOR	%	Blue Valley 3b	0	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	88	88	88	88	88	88	90	89	88	88	88	89	90	88	88	89	89	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	86	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	92	92	91
CAPACITY FACTOR	%	H-5	1	1	0	0	0															
CAPACITY FACTOR	%	H-6	1	1	0	0	0															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	4	4	5	6	5	5	5	5	6	6	6	6	6	6	5	6	5
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,107,894	$ 1,065,099	$ 1,108,629	$ 1,113,323	$ 1,163,832	$ 1,137,865	$ 1,156,635	$ 1,167,219	$ 1,198,267	$ 1,261,331	$ 1,336,840	$ 1,280,830	$ 1,345,211	$ 1,398,010	$ 1,394,270	$ 1,433,663	$ 1,502,314	$ 1,407,458	$ 1,560,322	$ 1,563,224
VARIABLE O&M COST	$	Blue Valley 1b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 2,123	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 5,267	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,529,437	$ 1,572,011	$ 1,602,464	$ 1,643,646	$ 1,684,863	$ 1,735,954	$ 1,804,984	$ 1,826,415	$ 1,858,562	$ 1,912,683	$ 1,953,527	$ 2,009,270	$ 2,090,796	$ 2,107,971	$ 2,156,149	$ 2,214,330	$ 2,273,657	$ 2,303,171	$ 2,353,181	$ 2,417,984
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,624,852	$ 1,759,762	$ 1,797,302	$ 1,844,648	$ 1,889,560	$ 1,946,777	$ 1,982,534	$ 2,037,544	$ 2,083,098	$ 2,142,648	$ 2,191,630	$ 2,245,915	$ 2,304,642	$ 2,367,709	$ 2,417,802	$ 2,477,048	$ 2,540,604	$ 2,601,772	$ 2,681,763	$ 2,705,368
VARIABLE O&M COST	$	H-5	$ 4,645	$ 2,087	$ 1,806	$ 1,759	$ 1,799	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 4,904	$ 2,327	$ 1,937	$ 1,839	$ 1,880	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 107,546	$ 105,791	$ 125,802	$ 170,926	$ 145,945	$ 158,826	$ 164,252	$ 161,794	$ 174,244	$ 178,941	$ 190,907	$ 201,715	$ 193,473	$ 203,588	$ 193,016	$ 214,263	$ 209,754
VARIABLE O&M COST	$/MWh	Dogwood	$ 4.02	$ 4.10	$ 4.19	$ 4.37	$ 4.59	$ 4.72	$ 4.97	$ 5.16	$ 5.27	$ 5.29	$ 5.51	$ 5.68	$ 5.79	$ 5.94	$ 6.01	$ 6.12	$ 6.22	$ 6.45	$ 6.56	$ 6.62
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.47																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 5 - F3 Market - High Gas

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.89
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 7,263,529	$ 7,814,865	$ 8,089,823	$ 8,206,066	$ 8,729,866	$ 8,747,457	$ 8,983,678	$ 9,092,490	$ 9,427,629	$ 10,184,929	$ 10,739,573	$ 10,206,897	$ 10,729,104	$ 11,212,460	$ 11,253,023	$ 11,641,016	$ 12,233,509	$ 11,704,414	$ 13,042,520	$ 13,412,416
FUEL COST	$	Blue Valley 1b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 42,987	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 128,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 131,957	$ 69,472	$ 60,024	$ 60,112	$ 63,600	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 137,947	$ 76,639	$ 63,708	$ 62,194	$ 65,802	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 543,141	$ 550,589	$ 672,966	$ 945,244	$ 816,489	$ 896,138	$ 928,704	$ 924,314	$ 990,957	$ 1,014,656	$ 1,084,868	$ 1,141,328	$ 1,098,232	$ 1,150,003	$ 1,109,685	$ 1,233,710	$ 1,221,218
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.5
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.3																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.9																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.7	15.7	15.7	15.7															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.5	15.5	15.5	15.5															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,087,012	1,091,003	1,095,007	1,097,991	1,102,001	1,106,005	1,110,001	1,113,994	1,117,999	1,121,996	1,125,992	1,129,990	1,134,003	1,138,001	1,140,997	1,144,998	1,149,008	1,154,004	1,157,996	1,162,001
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 30.85	$ 33.60	$ 33.65	$ 34.23	$ 35.86	$ 37.80	$ 42.06	$ 42.26	$ 43.78	$ 45.18	$ 46.28	$ 47.94	$ 49.02	$ 50.34	$ 51.68	$ 52.49	$ 53.81	$ 55.00	$ 57.79	$ 59.24
INDEPENDENCE MARKET SALES	MWh	Independence Market	27,009	20,903	20,495	33,961	33,410	33,921	38,792	35,452	36,480	36,674	35,930	36,810	36,847	37,628	38,168	36,920	37,398	36,050	37,434	36,590
INDEPENDENCE MARKET SALES	$	Independence Market	$ 1,223,337	$ 830,399	$ 804,107	$ 1,636,026	$ 1,686,410	$ 1,727,809	$ 2,179,383	$ 1,980,591	$ 2,131,380	$ 2,210,812	$ 2,194,069	$ 2,337,016	$ 2,396,582	$ 2,524,710	$ 2,634,887	$ 2,585,208	$ 2,692,988	$ 2,645,175	$ 2,874,131	$ 2,869,462
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 45.29	$ 39.73	$ 39.23	$ 48.17	$ 50.48	$ 50.94	$ 56.18	$ 55.87	$ 58.43	$ 60.28	$ 61.07	$ 63.49	$ 65.04	$ 67.10	$ 69.03	$ 70.02	$ 72.01	$ 73.38	$ 76.78	$ 78.42
DOGWOOD MARKET SALES	MWh	Dogwood Market	275,759	259,823	264,500	254,702	253,485	241,319	232,810	226,151	227,481	238,581	242,618	225,420	232,383	235,342	231,914	234,249	241,566	218,216	237,884	236,248
DOGWOOD MARKET SALES	$	Dogwood Market	$ 10,481,620	$ 10,221,690	$ 10,597,337	$ 10,707,106	$ 11,462,343	$ 11,491,415	$ 11,759,136	$ 11,981,453	$ 12,452,003	$ 13,384,517	$ 14,074,634	$ 13,333,233	$ 14,103,227	$ 14,768,082	$ 14,787,724	$ 15,224,011	$ 16,019,672	$ 15,317,462	$ 17,106,738	$ 17,543,225
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 38.01	$ 39.34	$ 40.07	$ 42.04	$ 45.22	$ 47.62	$ 50.51	$ 52.98	$ 54.74	$ 56.10	$ 58.01	$ 59.15	$ 60.69	$ 62.75	$ 63.76	$ 64.99	$ 66.32	$ 70.19	$ 71.91	$ 74.26
IATAN MARKET SALES	MWh	Iatan Market	409,414	409,903	408,488	409,185	409,144	410,406	417,068	411,985	409,532	410,325	409,250	410,967	417,532	410,664	409,417	410,204	410,842	410,475	409,491	410,145
IATAN MARKET SALES	$	Iatan Market	$ 11,842,428	$ 12,445,523	$ 12,575,969	$ 13,109,860	$ 13,823,819	$ 14,619,792	$ 15,808,798	$ 16,144,424	$ 16,618,427	$ 16,877,618	$ 17,545,659	$ 17,843,166	$ 18,552,027	$ 18,669,002	$ 19,108,589	$ 19,589,416	$ 19,999,081	$ 20,826,228	$ 21,430,491	$ 22,285,837
IATAN MARKET SALES	$/MWh	Iatan Market	$ 28.93	$ 30.36	$ 30.79	$ 32.04	$ 33.79	$ 35.62	$ 37.90	$ 39.19	$ 40.58	$ 41.13	$ 42.87	$ 43.42	$ 44.43	$ 45.46	$ 46.67	$ 47.76	$ 48.68	$ 50.74	$ 52.33	$ 54.34
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,063,758	$ 2,234,649	$ 2,272,852	$ 2,348,336	$ 2,507,831	$ 2,542,530	$ 2,825,330	$ 2,902,285	$ 2,982,186	$ 3,045,438	$ 3,037,853	$ 3,119,415	$ 3,316,435	$ 3,377,468	$ 3,438,475	$ 3,507,761	$ 3,454,926	$ 3,762,798	$ 3,864,420	$ 3,987,381
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 24.78	$ 26.75	$ 27.29	$ 28.19	$ 30.11	$ 30.44	$ 33.92	$ 34.84	$ 35.80	$ 36.46	$ 36.47	$ 37.45	$ 39.82	$ 40.43	$ 41.28	$ 42.11	$ 41.48	$ 45.04	$ 46.40	$ 47.87
NEBRASKA MARKET SALES	MWh	Nebraska City Market	435,616	459,456	457,827	458,456	459,235	460,385	458,631	457,923	459,169	460,072	458,938	458,842	458,699	460,076	458,674	458,387	458,121	464,099	466,270	458,935
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 12,352,857	$ 13,285,877	$ 13,473,132	$ 14,128,699	$ 14,994,519	$ 15,799,708	$ 16,772,039	$ 17,244,664	$ 17,845,027	$ 18,318,192	$ 18,974,033	$ 19,380,183	$ 19,770,404	$ 20,227,920	$ 20,582,984	$ 21,077,152	$ 21,553,381	$ 22,828,072	$ 23,399,804	$ 23,964,492
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 28.36	$ 28.92	$ 29.43	$ 30.82	$ 32.65	$ 34.32	$ 36.57	$ 37.66	$ 38.86	$ 39.82	$ 41.34	$ 42.24	$ 43.10	$ 43.97	$ 44.88	$ 45.98	$ 47.05	$ 49.19	$ 50.19	$ 52.22
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,628,714	$ 1,730,771	$ 1,727,701	$ 1,760,267	$ 1,906,980	$ 1,881,375	$ 2,178,540	$ 2,196,836	$ 2,244,600	$ 2,304,059	$ 2,236,089	$ 2,467,519	$ 2,556,710	$ 2,540,693	$ 2,611,958	$ 2,642,528	$ 2,543,235	$ 2,932,853	$ 2,924,783	$ 3,000,977
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 26.32	$ 27.83	$ 27.92	$ 28.45	$ 30.82	$ 30.25	$ 35.20	$ 35.50	$ 36.27	$ 37.05	$ 36.13	$ 39.87	$ 41.32	$ 40.85	$ 42.21	$ 42.70	$ 41.10	$ 47.16	$ 47.26	$ 48.49
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 34,477,839	$ 36,275,711	$ 36,453,031	$ 39,023,555	$ 38,088,978	$ 38,685,210	$ 39,296,381	$ 39,948,930	$ 40,958,474	$ 41,626,435	$ 42,311,161	$ 43,039,040	$ 44,166,754	$ 44,914,895	$ 45,681,799	$ 46,494,055	$ 47,753,163	$ 48,591,005
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,281,246	$ 4,401,285	$ 4,512,137	$ 4,712,761	$ 4,847,726	$ 4,946,397	$ 5,115,078	$ 5,177,123	$ 5,298,754	$ 5,480,914	$ 5,643,790	$ 5,710,259	$ 5,919,590	$ 6,064,597	$ 6,169,936	$ 6,318,515	$ 6,520,163	$ 6,505,417	$ 6,809,530	$ 6,896,329
TOTAL FUEL COSTS	$		$ 20,210,660	$ 21,077,920	$ 21,627,534	$ 22,582,725	$ 23,536,967	$ 24,218,796	$ 25,157,719	$ 25,431,541	$ 26,070,675	$ 27,414,367	$ 28,270,925	$ 28,223,319	$ 29,258,111	$ 30,099,255	$ 30,686,382	$ 31,574,993	$ 32,826,369	$ 32,849,919	$ 34,869,152	$ 35,805,887
TOTAL ENERGY MARKET PURCHASES	$		$ 33,535,530	$ 36,661,655	$ 36,845,405	$ 37,586,932	$ 39,515,170	$ 41,802,510	$ 46,689,609	$ 47,072,617	$ 48,949,420	$ 50,688,576	$ 52,111,200	$ 54,173,127	$ 55,585,775	$ 57,291,397	$ 58,971,711	$ 60,096,765	$ 61,825,560	$ 63,475,510	$ 66,924,144	$ 68,840,810
TOTAL ENERGY MARKET SALES	$		$ 39,592,714	$ 40,748,909	$ 41,451,097	$ 43,690,295	$ 46,381,902	$ 48,062,629	$ 51,523,225	$ 52,450,252	$ 54,273,622	$ 56,140,637	$ 58,062,337	$ 58,480,532	$ 60,695,385	$ 62,107,875	$ 63,164,616	$ 64,626,075	$ 66,263,282	$ 68,312,588	$ 71,600,367	$ 73,651,372
TOTAL COSTS	$		$ 48,036,347	$ 52,424,117	$ 56,011,818	$ 57,467,833	$ 57,970,992	$ 61,928,629	$ 63,528,159	$ 63,916,239	$ 65,341,607	$ 67,392,150	$ 68,922,052	$ 71,252,608	$ 72,379,251	$ 74,386,415	$ 76,830,167	$ 78,279,092	$ 80,590,608	$ 81,012,314	$ 84,755,623	$ 86,482,659

$816,202,905

Independence Power & Light

Path 1 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			60.0	60.0	65.0	65.0	65.0	65.0	70.0	70.0	70.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 3,782,280	$ 3,876,780	$ 4,304,885	$ 4,412,460	$ 4,522,830	$ 4,635,865	$ 5,117,280	$ 5,245,240	$ 5,376,350	$ 5,510,750	$ 6,051,975	$ 6,203,325	$ 6,358,350	$ 6,517,350	$ 7,125,600	$ 7,303,760	$ 7,486,400	$ 7,673,520	$ 8,356,945
IPL OWNERSHIP	%	Dogwood	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	575,638	576,230	580,054	581,410	585,633	596,032	591,605	587,353	587,473	586,059	586,382	588,416	589,031	587,400	586,183	586,195	590,125	588,869	588,983
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,932	457,419	455,697	455,052	454,808	461,660	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,031,425	$ 2,141,493	$ 2,378,630	$ 2,182,817	$ 2,237,387	$ 2,293,322	$ 2,350,655	$ 2,409,421	$ 2,469,657	$ 2,531,398	$ 2,594,683	$ 2,659,550	$ 2,726,039	$ 2,794,190	$ 2,864,045	$ 2,935,646	$ 3,009,037	$ 3,084,263	$ 3,161,370
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 1,933,485	$ 1,983,314	$ 2,034,617	$ 2,105,076	$ 2,161,627	$ 2,248,155	$ 2,291,835	$ 2,333,590	$ 2,387,372	$ 2,443,433	$ 2,514,238	$ 2,584,204	$ 2,658,690	$ 2,713,343	$ 2,774,790	$ 2,839,773	$ 2,883,159	$ 2,965,757	$ 3,023,200
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,819	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,588,151	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	-
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.87	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 1 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	$ 6,689,682	$ 10,582,230	$ 10,854,374	$ 11,321,836	$ 11,668,887	$ 12,031,528	$ 12,503,704	$ 12,681,053	$ 13,030,110	$ 13,338,109
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**									
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**									
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**									
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,997	1,083,007	1,082,996	1,082,995	1,082,999	1,082,995	1,083,005	1,083,001	1,082,996	1,083,004
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	22,253	22,449	21,773	21,840	21,932
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 817,075	$ 852,159	$ 815,263	$ 842,228	$ 866,884
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 36.72	$ 37.96	$ 37.44	$ 38.56	$ 39.53
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	575,638	576,230	580,053	581,410	585,633	596,032	591,605	587,353	587,473
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 15,547,621	$ 16,093,943	$ 16,892,880	$ 17,523,175	$ 18,219,095	$ 19,039,513	$ 19,410,247	$ 19,795,720	$ 20,344,191
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.81	$ 33.70	$ 34.63
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,705,887	$ 28,567,678	$ 30,472,938	$ 33,302,448	$ 30,111,178	$ 30,874,576	$ 29,404,784	$ 31,268,713	$ 30,575,585
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 5,257,448	$ 5,379,074	$ 5,518,802	$ 5,675,242	$ 5,837,155	$ 6,001,082	$ 6,137,770	$ 6,266,034	$ 6,433,101
TOTAL FUEL COSTS	$		$ 20,082,084	$ 23,789,433	$ 24,343,038	$ 25,104,784	$ 25,893,603	$ 26,918,980	$ 27,755,775	$ 28,239,774	$ 28,850,384	$ 29,722,361
TOTAL ENERGY MARKET PURCHASES	$		$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 41,684,808	$ 43,058,740	$ 44,934,886	$ 46,613,059	$ 48,064,649	$ 50,159,345	$ 50,900,087	$ 51,873,895	$ 53,165,658
TOTAL COSTS	$		$ 48,021,832	$ 49,639,337	$ 46,105,236	$ 48,085,140	$ 51,672,104	$ 49,226,132	$ 50,872,768	$ 49,357,265	$ 51,928,981	$ 51,928,098

Data Item	Units	Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	$ 13,702,947	$ 14,118,185	$ 14,381,552	$ 14,894,744	$ 15,187,107	$ 15,531,682	$ 15,844,252	$ 16,793,313	$ 17,028,526	$ 17,871,707
FUEL COST	$	Blue Valley 1b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2										
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2										
FUEL COST	$	H-5	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost										
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,995	1,082,997	1,083,005	1,082,996	1,082,995	1,082,999	1,082,995	1,082,993	1,083,001	1,082,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	21,862	21,753	21,930	21,887	21,975	21,752	21,930	21,190	22,019	21,771
INDEPENDENCE MARKET SALES	$	Independence Market	$ 885,402	$ 902,764	$ 939,516	$ 959,354	$ 993,522	$ 996,178	$ 1,035,726	$ 1,008,589	$ 1,114,601	$ 1,128,168
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 40.50	$ 41.50	$ 42.84	$ 43.83	$ 45.21	$ 45.80	$ 47.23	$ 47.60	$ 50.62	$ 51.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	586,059	586,382	588,416	589,031	587,399	586,183	586,195	590,125	588,869	588,983
DOGWOOD MARKET SALES	$	Dogwood Market	$ 20,837,101	$ 21,397,833	$ 21,925,898	$ 22,621,796	$ 23,045,146	$ 23,594,995	$ 24,166,132	$ 25,349,313	$ 25,963,063	$ 26,964,314
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 35.55	$ 36.49	$ 37.26	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 42.96	$ 44.09	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	455,788	456,006	455,933	457,419	455,697	455,052	454,808	461,661	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 14,639,218	$ 15,035,126	$ 15,413,214	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,815,994	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 32.12	$ 32.97	$ 33.81	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.59	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		$ 31,143,832	$ 33,555,617	$ 33,619,456	$ 33,752,699	$ 37,066,899	$ 35,540,121	$ 39,000,745	$ 36,778,702	$ 37,409,580	$ 38,671,108
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 6,577,175	$ 6,749,538	$ 6,929,156	$ 7,123,797	$ 7,273,457	$ 7,446,664	$ 7,628,949	$ 7,775,760	$ 7,947,194	$ 8,134,894
TOTAL FUEL COSTS	$		$ 30,386,501	$ 31,202,921	$ 31,849,459	$ 32,781,798	$ 33,585,393	$ 34,440,747	$ 35,340,259	$ 36,894,462	$ 37,594,465	$ 39,193,300
TOTAL ENERGY MARKET PURCHASES	$		$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
TOTAL ENERGY MARKET SALES	$		$ 54,048,395	$ 55,671,456	$ 57,170,562	$ 58,708,206	$ 59,739,716	$ 61,074,371	$ 62,123,916	$ 65,817,861	$ 67,120,779	$ 69,638,140
TOTAL COSTS	$		$ 53,356,476	$ 56,175,308	$ 56,705,733	$ 57,480,821	$ 61,883,968	$ 60,917,425	$ 65,583,417	$ 62,435,812	$ 64,874,000	$ 66,664,544

$666,891,211

Independence Power & Light

Path 2 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			35.0	35.0	40.0	40.0	40.0	40.0	45.0	45.0	45.0	45.0	50.0	50.0	50.0	50.0	55.0	55.0	55.0	55.0	60.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 2,206,330	$ 2,261,455	$ 2,649,160	$ 2,715,360	$ 2,783,280	$ 2,852,840	$ 3,289,680	$ 3,371,940	$ 3,456,225	$ 3,542,625	$ 4,034,650	$ 4,135,550	$ 4,238,900	$ 4,344,900	$ 4,898,850	$ 5,021,335	$ 5,146,900	$ 5,275,545	$ 5,899,020
IPL OWNERSHIP	%	Dogwood	12.3%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%	16.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	766,114	766,901	771,990	773,795	779,416	793,255	787,364	781,705	781,864	779,983	780,412	783,119	783,938	781,767	780,148	780,164	785,394	783,723	783,874
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,932	457,419	455,697	455,052	454,808	461,660	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 2,703,612	$ 2,850,100	$ 3,165,705	$ 2,905,098	$ 2,977,726	$ 3,052,169	$ 3,128,473	$ 3,206,685	$ 3,286,852	$ 3,369,024	$ 3,453,249	$ 3,539,580	$ 3,628,070	$ 3,718,772	$ 3,811,741	$ 3,907,034	$ 4,004,710	$ 4,104,828	$ 4,207,449
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 2,573,264	$ 2,639,581	$ 2,707,860	$ 2,801,633	$ 2,876,897	$ 2,992,057	$ 3,050,190	$ 3,105,761	$ 3,177,340	$ 3,251,951	$ 3,346,185	$ 3,439,303	$ 3,538,435	$ 3,611,173	$ 3,692,952	$ 3,779,438	$ 3,837,181	$ 3,947,109	$ 4,023,559
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,819	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,588,151	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.87	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	$ 6,689,682	$ 14,083,829	$ 14,446,025	$ 15,068,167	$ 15,530,055	$ 16,012,692	$ 16,641,109	$ 16,877,141	$ 17,341,699	$ 17,751,613
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**									
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**									
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5									
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**									
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,997	1,083,007	1,082,996	1,082,995	1,082,999	1,082,995	1,083,005	1,083,001	1,082,996	1,083,004
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	22,253	22,449	21,773	21,840	21,932
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 817,075	$ 852,159	$ 815,263	$ 842,228	$ 866,884
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 36.72	$ 37.96	$ 37.44	$ 38.56	$ 39.53
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	766,114	766,901	771,990	773,795	779,416	793,255	787,364	781,705	781,864
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 20,692,240	$ 21,419,337	$ 22,482,638	$ 23,321,494	$ 24,247,690	$ 25,339,579	$ 25,832,988	$ 26,346,011	$ 27,075,968
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.81	$ 33.70	$ 34.63
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		$ 32,676,624	$ 31,973,961	$ 28,832,799	$ 30,776,126	$ 33,499,467	$ 30,283,804	$ 31,022,236	$ 29,526,840	$ 31,364,515	$ 30,644,493
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 5,897,228	$ 6,035,341	$ 6,192,045	$ 6,371,800	$ 6,552,425	$ 6,744,984	$ 6,896,125	$ 7,038,205	$ 7,223,069
TOTAL FUEL COSTS	$		$ 20,082,084	$ 27,291,033	$ 27,934,688	$ 28,851,115	$ 29,754,771	$ 30,900,145	$ 31,893,180	$ 32,435,862	$ 33,161,973	$ 34,135,865
TOTAL ENERGY MARKET PURCHASES	$		$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 46,829,427	$ 48,384,134	$ 50,524,643	$ 52,411,378	$ 54,093,244	$ 56,459,411	$ 57,322,827	$ 58,424,186	$ 59,897,435
TOTAL COSTS	$		$ 48,021,832	$ 48,904,171	$ 45,292,880	$ 47,218,144	$ 50,628,530	$ 48,066,598	$ 49,601,668	$ 48,011,023	$ 50,558,252	$ 50,468,701

Data Item	Units	Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1										
VARIABLE O&M COST	$/MWh	J-2										
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3										
VARIABLE O&M COST	$/MWh	I-4										
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)										
FUEL COST	$	Dogwood	$ 18,237,174	$ 18,789,812	$ 19,140,325	$ 19,823,330	$ 20,212,435	$ 20,671,027	$ 21,087,024	$ 22,350,125	$ 22,663,168	$ 23,785,354
FUEL COST	$	Blue Valley 1b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2										
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2										
FUEL COST	$	H-5	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b										
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1										
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1										
AVERAGE HEAT RATE	MMBtu/MWh	J-2										
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3										
AVERAGE HEAT RATE	MMBtu/MWh	I-4										
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)										
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost										
SUMMARY BY AREA												
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,995	1,082,997	1,083,005	1,082,996	1,082,995	1,082,999	1,082,995	1,082,993	1,083,001	1,082,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	21,862	21,753	21,930	21,887	21,975	21,752	21,930	21,190	22,019	21,771
INDEPENDENCE MARKET SALES	$	Independence Market	$ 885,402	$ 902,764	$ 939,516	$ 959,354	$ 993,522	$ 996,178	$ 1,035,726	$ 1,008,589	$ 1,114,601	$ 1,128,168
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 40.50	$ 41.50	$ 42.84	$ 43.83	$ 45.21	$ 45.80	$ 47.23	$ 47.60	$ 50.62	$ 51.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	779,983	780,412	783,119	783,938	781,767	780,148	780,164	785,393	783,723	783,874
DOGWOOD MARKET SALES	$	Dogwood Market	$ 27,731,979	$ 28,478,254	$ 29,181,052	$ 30,107,220	$ 30,670,653	$ 31,402,445	$ 32,162,567	$ 33,737,256	$ 34,554,093	$ 35,886,651
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 35.55	$ 36.49	$ 37.26	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 42.96	$ 44.09	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	455,788	456,006	455,933	457,419	455,697	455,052	454,808	461,661	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 14,639,218	$ 15,035,126	$ 15,413,214	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,815,994	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 32.12	$ 32.97	$ 33.81	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.59	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS												
TOTAL FIXED COSTS	$		$ 31,185,170	$ 33,568,696	$ 33,603,549	$ 33,707,117	$ 36,990,868	$ 35,432,904	$ 38,861,546	$ 36,606,713	$ 37,204,008	$ 38,431,100
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 7,385,694	$ 7,581,485	$ 7,784,255	$ 8,003,542	$ 8,171,287	$ 8,364,826	$ 8,568,614	$ 8,729,781	$ 8,928,546	$ 9,135,253
TOTAL FUEL COSTS	$		$ 34,920,728	$ 35,874,548	$ 36,608,233	$ 37,710,384	$ 38,610,720	$ 39,580,093	$ 40,583,032	$ 42,451,274	$ 43,229,107	$ 45,106,946
TOTAL ENERGY MARKET PURCHASES	$		$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
TOTAL ENERGY MARKET SALES	$		$ 60,943,273	$ 62,751,877	$ 64,425,717	$ 66,193,629	$ 67,365,224	$ 68,881,821	$ 70,120,352	$ 74,205,805	$ 75,711,809	$ 78,560,477
TOTAL COSTS	$		$ 51,845,682	$ 54,611,539	$ 55,048,543	$ 55,758,147	$ 60,105,587	$ 59,060,266	$ 63,630,220	$ 60,386,713	$ 62,693,392	$ 64,416,204

$650,909,222

Independence Power & Light

Path 2 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0	30.0	30.0	35.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 1,043,730	$ 1,069,815	$ 1,462,080	$ 1,498,640	$ 1,536,100	$ 1,574,500	$ 2,017,325	$ 2,067,775	$ 2,119,450	$ 2,172,450	$ 2,672,100	$ 2,738,910	$ 2,807,400	$ 2,877,570	$ 3,441,095
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
CAPACITY	MW	I-4	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	989,994	982,642	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,098	978,286
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,932	457,419	455,697	455,052	454,808	461,660	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	I-4	$ 544,541	$ 59,666	$ 45,586	$ 36,294	$ 603,538	$ 167,006	$ 41,113	$ 42,857	$ 57,164	$ 46,570	$ 48,546	$ 64,054	$ 190,604	$ 54,991	$ 795,956	$ 208,206	$ 62,291	$ 80,530	$ 67,688	$ 70,560
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 33.59	$ 3.68	$ 2.81	$ 2.24	$ 37.22	$ 10.30	$ 2.54	$ 2.64	$ 3.53	$ 2.87	$ 2.99	$ 3.95	$ 11.76	$ 3.39	$ 49.09	$ 12.84	$ 3.84	$ 4.97	$ 4.17	$ 4.35
TOTAL FIXED COST	$/kW-yr	I-4	$ 35.83	$ 3.93	$ 3.00	$ 2.39	$ 39.71	$ 10.99	$ 2.70	$ 2.82	$ 3.76	$ 3.06	$ 3.19	$ 4.21	$ 12.54	$ 3.62	$ 52.37	$ 13.70	$ 4.10	$ 5.30	$ 4.45	$ 4.64
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,734,131	$ 3,806,682	$ 3,876,035	$ 3,965,367	$ 4,058,483	$ 4,176,088	$ 4,292,300	$ 4,416,019	$ 4,506,796	$ 4,608,858	$ 4,716,794	$ 4,788,858	$ 4,926,050	$ 5,021,461
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,819	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,588,151	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.87	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 2 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,768,348	$ 21,062,919	$ 21,642,694	$ 22,154,273	$ 22,760,260	$ 23,449,961	$ 23,887,406	$ 24,739,807	$ 25,225,415	$ 25,797,745	$ 26,316,915	$ 27,893,284	$ 28,283,966	$ 29,684,470
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,997	1,083,007	1,082,996	1,082,995	1,082,999	1,082,995	1,083,005	1,083,001	1,082,996	1,083,004	1,082,995	1,082,997	1,083,005	1,082,996	1,082,995	1,082,999	1,082,995	1,082,993	1,083,001	1,082,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	22,253	22,449	21,773	21,840	21,932	21,862	21,753	21,930	21,887	21,975	21,752	21,930	21,190	22,019	21,771
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 817,075	$ 852,159	$ 815,263	$ 842,228	$ 866,884	$ 885,402	$ 902,764	$ 939,516	$ 959,354	$ 993,522	$ 996,178	$ 1,035,726	$ 1,008,589	$ 1,114,601	$ 1,128,168
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 36.72	$ 37.96	$ 37.44	$ 38.56	$ 39.53	$ 40.50	$ 41.50	$ 42.84	$ 43.83	$ 45.21	$ 45.80	$ 47.23	$ 47.60	$ 50.62	$ 51.82
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	989,994	982,642	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,098	978,286
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,624,166	$ 32,239,947	$ 32,880,208	$ 33,791,205	$ 34,609,916	$ 35,541,279	$ 36,418,381	$ 37,574,251	$ 38,277,425	$ 39,190,711	$ 40,139,355	$ 42,104,591	$ 43,124,015	$ 44,787,067
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.81	$ 33.70	$ 34.63	$ 35.55	$ 36.49	$ 37.26	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 42.96	$ 44.09	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282	455,788	456,006	455,933	457,419	455,697	455,052	454,808	461,661	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221	$ 14,639,218	$ 15,035,126	$ 15,413,214	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,815,994	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43	$ 32.12	$ 32.97	$ 33.81	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.59	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 32,676,624	$ 32,240,384	$ 29,096,178	$ 31,077,380	$ 33,694,712	$ 30,454,611	$ 31,168,032	$ 29,646,985	$ 31,458,357	$ 30,711,393	$ 31,224,450	$ 33,579,665	$ 33,585,479	$ 33,659,320	$ 36,912,565	$ 35,323,360	$ 38,719,960	$ 36,432,277	$ 36,995,928	$ 38,188,521
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 6,863,634	$ 7,066,646	$ 7,265,937	$ 7,487,058	$ 7,652,616	$ 7,808,480	$ 8,011,096	$ 8,192,225	$ 8,411,388	$ 8,637,252	$ 8,881,126	$ 9,066,911	$ 9,280,732	$ 9,505,970	$ 9,681,458	$ 9,907,487	$ 10,133,155
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 32,588,242	$ 33,606,452	$ 34,871,527	$ 36,020,419	$ 36,621,640	$ 37,462,969	$ 38,538,525	$ 39,443,814	$ 40,534,697	$ 41,355,314	$ 42,626,861	$ 43,623,701	$ 44,706,810	$ 45,812,923	$ 47,994,432	$ 48,849,905	$ 51,006,062
TOTAL ENERGY MARKET PURCHASES	$		$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 56,100,667	$ 58,195,450	$ 60,107,027	$ 62,743,998	$ 63,729,787	$ 64,958,383	$ 66,612,672	$ 67,821,210	$ 69,814,901	$ 71,663,045	$ 73,660,661	$ 74,971,995	$ 76,670,088	$ 78,097,140	$ 82,573,139	$ 84,281,731	$ 87,460,893
TOTAL COSTS	$		$ 48,021,832	$ 48,169,819	$ 44,481,431	$ 46,352,090	$ 49,586,230	$ 46,908,518	$ 48,332,189	$ 46,666,479	$ 49,189,167	$ 49,011,051	$ 50,336,642	$ 53,049,535	$ 53,393,223	$ 54,037,378	$ 58,329,117	$ 57,205,079	$ 61,679,094	$ 58,339,779	$ 60,515,129	$ 62,170,228

$634,945,451

Independence Power & Light

Path 3 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	10.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	20.0	25.0	25.0	25.0	25.0	30.0	30.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 695,820	$ 1,069,815	$ 1,096,560	$ 1,123,980	$ 1,152,075	$ 1,574,500	$ 1,613,860	$ 1,654,220	$ 1,695,560	$ 2,172,450	$ 2,226,750	$ 2,282,425	$ 2,339,500	$ 2,877,570	$ 2,949,510
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
CAPACITY	MW	J-2	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
CAPACITY	MW	H-6	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	989,994	977,008	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,020	978,286
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,595	456,601	457,281	455,787	456,006	455,932	457,419	455,697	455,052	454,808	461,660	455,817	456,698
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	1,474	1,694	1,386	1,430	1,452	1,452	1,320	1,474	1,430	1,496	1,342	1,474	1,078	1,540	1,430
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	1,978	2,001	1,633	1,656	1,679	1,656	1,679	1,702	1,656	1,725	1,656	1,702	1,311	1,725	1,587
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	38,975	44,187	46,279	63,821	52,554	54,610	54,683	54,206	52,591	53,582	54,940	56,518	54,903	57,325	47,600	57,179	54,059
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	90	89	89	88	89	89	89	89	89	88	89	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	90	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	H-6	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	12	14	14	20	16	17	17	17	16	17	17	17	17	18	15	18	17
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	J-2	$ 538,484	$ 53,351	$ 39,004	$ 139,814	$ 596,386	$ 43,580	$ 33,340	$ 34,755	$ 48,718	$ 37,766	$ 39,368	$ 54,487	$ 180,631	$ 185,892	$ 785,118	$ 48,459	$ 50,514	$ 68,254	$ 54,891	$ 57,220
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	H-6	$ 640,135	$ 684,450	$ 138,326	$ 144,006	$ 149,924	$ 156,087	$ 1,351,193	$ 169,194	$ 800,591	$ 183,416	$ 190,974	$ 871,292	$ 344,900	$ 215,593	$ 224,494	$ 233,765	$ 1,765,042	$ 253,486	$ 247,982	$ 258,503
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 44.28	$ 4.39	$ 3.21	$ 11.50	$ 49.04	$ 3.58	$ 2.74	$ 2.86	$ 4.01	$ 3.11	$ 3.24	$ 4.48	$ 14.85	$ 15.29	$ 64.57	$ 3.99	$ 4.15	$ 5.61	$ 4.51	$ 4.71
TOTAL FIXED COST	$/kW-yr	J-2	$ 48.31	$ 4.79	$ 3.50	$ 12.54	$ 53.50	$ 3.91	$ 2.99	$ 3.12	$ 4.37	$ 3.39	$ 3.53	$ 4.89	$ 16.20	$ 16.68	$ 70.44	$ 4.35	$ 4.53	$ 6.12	$ 4.92	$ 5.13
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 28.71	$ 30.70	$ 6.20	$ 6.46	$ 6.73	$ 7.00	$ 60.61	$ 7.59	$ 35.91	$ 8.23	$ 8.57	$ 39.08	$ 15.47	$ 9.67	$ 10.07	$ 10.49	$ 79.17	$ 11.37	$ 11.12	$ 11.60
TOTAL FIXED COST	$/kW-yr	H-6	$ 27.47	$ 29.37	$ 5.94	$ 6.18	$ 6.43	$ 6.70	$ 57.97	$ 7.26	$ 34.35	$ 7.87	$ 8.19	$ 37.38	$ 14.80	$ 9.25	$ 9.63	$ 10.03	$ 75.73	$ 10.88	$ 10.64	$ 11.09
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,734,131	$ 3,787,078	$ 3,876,035	$ 3,965,367	$ 4,058,483	$ 4,176,088	$ 4,292,300	$ 4,416,019	$ 4,506,796	$ 4,608,858	$ 4,716,794	$ 4,788,858	$ 4,924,801	$ 5,021,461
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,768,976	$ 1,810,468	$ 1,853,254	$ 1,908,015	$ 1,948,122	$ 1,995,981	$ 2,045,368	$ 2,102,275	$ 2,148,607	$ 2,203,868	$ 2,257,194	$ 2,296,996	$ 2,347,365	$ 2,409,332
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,028,100	$ 2,071,475	$ 2,129,698	$ 2,177,478	$ 2,231,252	$ 2,290,819	$ 2,354,099	$ 2,402,166	$ 2,459,102	$ 2,522,326	$ 2,588,151	$ 2,623,624	$ 2,692,466
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ 3,420	$ 4,032	$ 3,382	$ 3,575	$ 3,717	$ 3,804	$ 3,551	$ 4,068	$ 4,047	$ 4,338	$ 3,986	$ 4,481	$ 3,363	$ 4,928	$ 4,690
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ 4,589	$ 4,762	$ 3,985	$ 4,140	$ 4,298	$ 4,339	$ 4,517	$ 4,698	$ 4,686	$ 5,003	$ 4,918	$ 5,174	$ 4,090	$ 5,520	$ 5,205
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 308,715	$ 358,797	$ 385,039	$ 544,419	$ 459,350	$ 489,344	$ 502,537	$ 510,620	$ 507,504	$ 529,944	$ 557,137	$ 587,289	$ 584,719	$ 625,993	$ 532,653	$ 655,871	$ 635,742
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.54	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 3 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.76	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26	$ 2.32	$ 2.38	$ 2.44	$ 2.50	$ 2.56	$ 2.62	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.04	$ 3.12	$ 3.20	$ 3.28
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,768,348	$ 21,115,491	$ 21,642,694	$ 22,154,273	$ 22,760,260	$ 23,449,961	$ 23,887,406	$ 24,739,807	$ 25,225,415	$ 25,797,745	$ 26,316,915	$ 27,893,284	$ 28,515,852	$ 29,684,470
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ 70,307	$ 83,035	$ 69,637	$ 73,790	$ 76,493	$ 78,689	$ 73,660	$ 84,213	$ 83,942	$ 89,689	$ 82,735	$ 92,786	$ 71,166	$ 104,046	$ 100,415
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ 93,419	$ 97,255	$ 81,286	$ 84,725	$ 87,500	$ 88,848	$ 92,860	$ 96,340	$ 96,360	$ 102,441	$ 100,810	$ 106,057	$ 85,655	$ 115,436	$ 110,345
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 963,582	$ 1,121,361	$ 1,206,636	$ 1,708,024	$ 1,437,768	$ 1,526,388	$ 1,570,091	$ 1,596,838	$ 1,595,294	$ 1,664,626	$ 1,747,310	$ 1,840,685	$ 1,840,319	$ 1,964,091	$ 1,693,604	$ 2,105,723	$ 2,056,870
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,997	1,083,007	1,082,996	1,082,995	1,082,999	1,082,995	1,083,005	1,083,001	1,082,996	1,083,004	1,082,995	1,082,997	1,083,005	1,082,996	1,082,995	1,082,999	1,082,995	1,082,993	1,083,001	1,082,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	60,408	66,143	68,531	86,270	74,327	76,450	76,615	76,068	74,344	75,512	76,827	78,493	76,655	79,255	68,790	79,198	75,830
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 2,206,847	$ 2,518,309	$ 2,685,041	$ 3,421,332	$ 2,966,746	$ 3,135,635	$ 3,217,908	$ 3,272,862	$ 3,291,483	$ 3,433,475	$ 3,581,274	$ 3,756,559	$ 3,744,669	$ 3,978,645	$ 3,545,377	$ 4,248,965	$ 4,182,082
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 36.53	$ 38.07	$ 39.18	$ 39.66	$ 39.91	$ 41.02	$ 42.00	$ 43.03	$ 44.27	$ 45.47	$ 46.62	$ 47.86	$ 48.85	$ 50.20	$ 51.54	$ 53.65	$ 55.15
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	989,994	977,008	975,579	975,778	973,430	973,966	977,344	978,366	975,656	973,636	973,656	980,183	978,020	978,286
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,624,166	$ 32,122,773	$ 32,880,208	$ 33,791,205	$ 34,609,916	$ 35,541,279	$ 36,418,381	$ 37,574,251	$ 38,277,425	$ 39,190,711	$ 40,139,355	$ 42,104,591	$ 43,203,425	$ 44,787,067
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.94	$ 32.88	$ 33.70	$ 34.63	$ 35.55	$ 36.49	$ 37.26	$ 38.41	$ 39.23	$ 40.25	$ 41.23	$ 42.96	$ 44.17	$ 45.78
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	408,434	408,239	408,492	409,319	408,114	408,119	408,202	409,552	407,868	408,148	407,749	409,369	408,297	408,372
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,662,387	$ 12,860,215	$ 13,114,949	$ 13,425,101	$ 13,697,473	$ 14,030,621	$ 14,336,492	$ 14,735,043	$ 14,979,084	$ 15,377,260	$ 15,648,066	$ 16,456,092	$ 16,795,804	$ 17,444,138
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.00	$ 31.50	$ 32.11	$ 32.80	$ 33.56	$ 34.38	$ 35.12	$ 35.98	$ 36.73	$ 37.68	$ 38.38	$ 40.20	$ 41.14	$ 42.72
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,596	456,602	457,282	455,788	456,006	455,933	457,419	455,697	455,052	454,808	461,661	455,818	456,698
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,762,112	$ 14,039,977	$ 14,371,221	$ 14,639,218	$ 15,035,126	$ 15,413,214	$ 15,803,524	$ 16,037,027	$ 16,349,778	$ 16,714,179	$ 17,815,994	$ 17,967,293	$ 18,688,119
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.21	$ 30.75	$ 31.43	$ 32.12	$ 32.97	$ 33.81	$ 34.55	$ 35.19	$ 35.93	$ 36.75	$ 38.59	$ 39.42	$ 40.92
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 31,651,624	$ 32,187,853	$ 34,499,377	$ 36,518,550	$ 37,945,650	$ 35,247,969	$ 36,578,783	$ 34,706,868	$ 36,499,079	$ 35,782,994	$ 36,695,658	$ 38,636,414	$ 38,399,563	$ 38,755,330	$ 40,972,098	$ 40,135,143	$ 43,835,092	$ 41,522,736	$ 42,603,770	$ 43,323,431
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 7,172,349	$ 7,425,443	$ 7,650,976	$ 8,031,477	$ 8,092,363	$ 8,297,824	$ 8,513,633	$ 8,702,845	$ 8,918,892	$ 9,167,197	$ 9,438,262	$ 9,654,200	$ 9,865,451	$ 10,131,963	$ 10,214,111	$ 10,562,109	$ 10,768,897
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 33,551,824	$ 34,727,813	$ 36,078,163	$ 37,728,443	$ 38,111,980	$ 38,989,357	$ 40,108,616	$ 41,040,653	$ 42,129,991	$ 43,019,941	$ 44,374,170	$ 45,464,385	$ 46,547,130	$ 47,777,014	$ 49,688,036	$ 51,187,513	$ 53,062,932
TOTAL ENERGY MARKET PURCHASES	$		$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 57,588,816	$ 59,934,478	$ 61,974,993	$ 65,313,171	$ 65,764,095	$ 67,251,790	$ 68,963,696	$ 70,208,670	$ 72,203,621	$ 74,157,004	$ 76,282,581	$ 77,735,032	$ 79,418,578	$ 81,040,059	$ 85,109,927	$ 87,495,505	$ 90,514,807
TOTAL COSTS	$		$ 46,996,832	$ 48,117,288	$ 49,884,630	$ 51,577,407	$ 53,578,297	$ 51,425,585	$ 53,426,211	$ 51,622,139	$ 53,952,214	$ 53,804,255	$ 55,527,849	$ 57,820,363	$ 57,907,919	$ 58,815,914	$ 62,053,586	$ 61,693,409	$ 66,441,392	$ 63,119,706	$ 65,901,428	$ 66,943,835
			$684,715,679																			

Independence Power & Light

Path 4 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	110.0	110.0	110.0	115.0	115.0	115.0	115.0	120.0	120.0	120.0	120.0	125.0	125.0	125.0	125.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 7,654,020	$ 7,845,310	$ 8,041,440	$ 8,617,180	$ 8,832,575	$ 9,053,375	$ 9,279,695	$ 9,925,320	$ 10,173,360	$ 10,427,760	$ 10,688,400	$ 11,412,125	$ 11,697,500	$ 11,989,875	$ 12,289,625
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,480	973,500	980,183	978,020	978,364
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,466	456,450	457,281	456,117	456,038	455,932	457,419	455,633	455,179	455,027	461,660	463,115	456,547
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	89	89	89	88	89	89	89	89	89	88	88	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	90	89	88	88	88	88	90	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	92	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1															
CAPACITY FACTOR	%	H-6	4	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)																				
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)																				
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,708,228	$ 3,787,078	$ 3,878,367	$ 3,965,367	$ 4,072,149	$ 4,176,826	$ 4,303,485	$ 4,416,019	$ 4,506,957	$ 4,608,127	$ 4,716,045	$ 4,788,858	$ 4,924,801	$ 5,022,740
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,802,733	$ 1,822,445	$ 1,853,713	$ 1,908,015	$ 1,948,156	$ 2,003,851	$ 2,085,272	$ 2,102,275	$ 2,149,394	$ 2,207,535	$ 2,265,926	$ 2,296,996	$ 2,347,554	$ 2,413,341
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,026,696	$ 2,070,791	$ 2,129,698	$ 2,178,212	$ 2,232,245	$ 2,290,819	$ 2,354,099	$ 2,401,835	$ 2,459,787	$ 2,523,538	$ 2,588,151	$ 2,663,704	$ 2,691,352
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 4 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)																				
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,548,306	$ 21,115,491	$ 21,490,126	$ 22,154,273	$ 22,679,048	$ 23,286,380	$ 23,886,527	$ 24,739,807	$ 25,025,485	$ 25,601,849	$ 26,117,803	$ 27,893,284	$ 28,515,852	$ 29,449,553
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)																				
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,997	1,083,007	1,082,996	1,082,995	1,082,999	1,082,995	1,083,005	1,083,001	1,082,996	1,083,004	1,082,995	1,082,997	1,083,005	1,082,996	1,082,995	1,082,999	1,082,995	1,082,993	1,083,001	1,082,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	21,433	21,956	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 718,698	$ 779,281	$ 602,871	$ 630,997	$ 629,819	$ 647,553	$ 666,690	$ 681,261	$ 699,029	$ 718,882	$ 738,116	$ 757,098	$ 771,925	$ 793,294	$ 813,534	$ 847,278	$ 871,054
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 33.53	$ 35.49	$ 32.07	$ 33.65	$ 33.58	$ 34.53	$ 35.46	$ 36.33	$ 37.27	$ 38.33	$ 39.26	$ 40.37	$ 41.16	$ 42.30	$ 43.27	$ 45.18	$ 46.45
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,479	973,500	980,183	978,020	978,364
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,410,007	$ 32,122,773	$ 32,867,982	$ 33,791,205	$ 34,667,763	$ 35,490,744	$ 36,547,224	$ 37,574,251	$ 38,233,360	$ 39,101,220	$ 40,052,028	$ 42,104,591	$ 43,203,425	$ 44,729,185
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.95	$ 32.88	$ 33.65	$ 34.63	$ 35.48	$ 36.41	$ 37.28	$ 38.41	$ 39.17	$ 40.17	$ 41.14	$ 42.96	$ 44.17	$ 45.72
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,934,906	$ 12,994,557	$ 13,174,210	$ 13,425,101	$ 13,740,577	$ 14,118,605	$ 14,651,468	$ 14,735,043	$ 15,062,046	$ 15,455,438	$ 15,757,555	$ 16,456,092	$ 16,882,454	$ 17,564,570
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.05	$ 31.61	$ 32.25	$ 32.80	$ 33.67	$ 34.45	$ 35.18	$ 35.98	$ 36.90	$ 37.79	$ 38.49	$ 40.20	$ 41.33	$ 42.91
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,467	456,450	457,282	456,117	456,039	455,933	457,419	455,634	455,180	455,028	461,661	463,116	456,547
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,746,025	$ 14,074,647	$ 14,371,221	$ 14,722,634	$ 15,112,011	$ 15,413,214	$ 15,803,524	$ 16,079,876	$ 16,431,412	$ 16,803,470	$ 17,815,994	$ 18,232,418	$ 18,734,428
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.18	$ 30.83	$ 31.43	$ 32.28	$ 33.14	$ 33.81	$ 34.55	$ 35.29	$ 36.10	$ 36.93	$ 38.59	$ 39.37	$ 41.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 29,053,102	$ 30,834,541	$ 30,995,017	$ 36,331,556	$ 35,092,236	$ 35,732,735	$ 36,763,953	$ 37,472,364	$ 38,145,548	$ 38,862,368	$ 40,010,755	$ 40,800,279	$ 41,556,740	$ 42,358,800	$ 43,637,481	$ 44,517,837	$ 45,367,110	$ 46,264,486
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 6,863,634	$ 7,066,646	$ 7,257,929	$ 7,486,118	$ 7,636,219	$ 7,802,871	$ 8,003,081	$ 8,198,518	$ 8,412,922	$ 8,679,575	$ 8,872,393	$ 9,058,186	$ 9,275,449	$ 9,505,509	$ 9,674,004	$ 9,936,059	$ 10,127,433
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 32,588,242	$ 33,606,452	$ 34,707,801	$ 35,730,138	$ 36,553,303	$ 37,167,769	$ 38,374,533	$ 39,198,439	$ 40,222,169	$ 41,301,815	$ 42,446,558	$ 43,213,346	$ 44,323,835	$ 45,433,861	$ 47,837,612	$ 48,996,750	$ 50,528,069
TOTAL ENERGY MARKET PURCHASES	$		$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 56,100,667	$ 58,195,450	$ 59,892,823	$ 62,581,195	$ 63,545,424	$ 64,845,413	$ 66,412,478	$ 67,801,435	$ 69,725,500	$ 71,886,230	$ 73,439,423	$ 74,817,317	$ 76,516,156	$ 77,966,160	$ 82,378,084	$ 84,445,594	$ 87,312,637
TOTAL COSTS	$		$ 44,946,832	$ 46,961,600	$ 44,438,355	$ 46,109,251	$ 46,886,535	$ 52,827,932	$ 52,127,977	$ 52,851,857	$ 54,306,924	$ 55,800,208	$ 57,038,433	$ 58,110,646	$ 59,584,138	$ 61,210,539	$ 62,708,892	$ 64,006,192	$ 66,348,071	$ 66,456,120	$ 68,897,865	$ 69,910,734

$677,846,232

Independence Power & Light

Path 5 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
ANNUAL PEAK LOAD	MW	Independence Power & Light	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5	304.5
ANNUAL ENERGY REQUIREMENTS	GWh	Independence Power & Light	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083	1,083
POWER SUPPLY LABOR	$	Independence Power & Light	$ 9,282,933	$ 8,246,339	$ 7,152,113	$ 7,330,916	$ 7,514,189	$ 5,864,056	$ 4,126,720	$ 4,229,888	$ 4,335,635	$ 4,444,026	$ 4,555,127	$ 4,669,005	$ 4,785,730	$ 4,905,373	$ 5,028,008	$ 5,153,708	$ 5,282,550	$ 5,414,614	$ 5,549,979	$ 5,688,729
MARKET CAPACITY DEFICIT	MW			10.0	10.0	15.0	15.0	70.0	75.0	75.0	75.0	75.0	80.0	80.0	80.0	80.0	85.0	85.0	85.0	85.0	90.0	90.0
MARKET CAPACITY PRICE	$/kW-Yr		$ 61.50	$ 63.04	$ 64.61	$ 66.23	$ 67.88	$ 69.58	$ 71.32	$ 73.10	$ 74.93	$ 76.81	$ 78.73	$ 80.69	$ 82.71	$ 84.78	$ 86.90	$ 89.07	$ 91.30	$ 93.58	$ 95.92	$ 98.32
MARKET CAPACITY COST	$		$ -	$ 630,380	$ 646,130	$ 993,435	$ 1,018,260	$ 4,870,740	$ 5,349,075	$ 5,482,800	$ 5,619,900	$ 5,760,375	$ 6,298,000	$ 6,455,440	$ 6,616,880	$ 6,782,240	$ 7,386,330	$ 7,570,950	$ 7,760,245	$ 7,954,300	$ 8,632,710	$ 8,848,530
IPL OWNERSHIP	%	Dogwood	12.3%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%	20.4%
IPL OWNERSHIP	%	Blue Valley 1b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 2b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley 3b	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Blue Valley GT1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Iatan 2	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
IPL OWNERSHIP	%	J-1	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	J-2	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	Nebraska City 2	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%
IPL OWNERSHIP	%	H-5	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	H-6	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-3	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	I-4	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
IPL OWNERSHIP	%	36MW - Reciprocating Engine (18MW Engines)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
CAPACITY	MW	Dogwood	76	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
CAPACITY	MW	Blue Valley 1b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 2b	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley 3b	51	51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Iatan 2	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
CAPACITY	MW	J-1	12	12	12	12	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	J-2	11	11	11	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	Nebraska City 2	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
CAPACITY	MW	H-5	22	22	22	22	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	H-6	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-3	16	16	16	16	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	I-4	15	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CAPACITY	MW	36MW - Reciprocating Engine (18MW Engines)	0	0	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37
GENERATION	MWh	Dogwood	403,279	956,121	957,104	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,480	973,500	980,183	978,020	978,364
GENERATION	MWh	Blue Valley 1b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 2b	4,458	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley 3b	12,051	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Blue Valley GT1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Iatan 2	397,059	408,684	407,700	408,444	408,146	409,297	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
GENERATION	MWh	J-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	J-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	Nebraska City 2	414,993	456,539	456,012	456,690	457,431	457,875	456,919	455,466	456,450	457,281	456,117	456,038	455,932	457,419	455,633	455,179	455,027	461,660	463,115	456,547
GENERATION	MWh	H-5	7,476	1,782	1,276	1,276	1,408	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	H-6	8,117	2,001	1,587	1,403	1,794	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	I-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GENERATION	MWh	36MW - Reciprocating Engine (18MW Engines)	0	0	0	38,975	44,187	46,279	64,078	52,554	54,646	54,683	54,500	52,701	53,692	54,940	56,702	55,123	57,582	47,600	57,179	54,059
CAPACITY FACTOR	%	Dogwood	61	87	87	88	88	88	89	89	89	88	89	89	89	89	89	88	88	89	89	89
CAPACITY FACTOR	%	Blue Valley 1b	3	0																		
CAPACITY FACTOR	%	Blue Valley 2b	3	0																		
CAPACITY FACTOR	%	Blue Valley 3b	3	0																		
CAPACITY FACTOR	%	Blue Valley GT1																				
CAPACITY FACTOR	%	Iatan 2	86	88	88	88	88	88	90	89	88	88	88	88	90	88	88	88	88	88	88	88
CAPACITY FACTOR	%	J-1	0	0	0	0	0															
CAPACITY FACTOR	%	J-2	0	0	0	0	0															
CAPACITY FACTOR	%	Nebraska City 2	82	90	90	91	91	91	91	90	90	90	90	90	90	90	90	90	90	91	92	91
CAPACITY FACTOR	%	H-5	4	1	1	1	1															
CAPACITY FACTOR	%	H-6	4	1	1	1	1															
CAPACITY FACTOR	%	I-3	0	0	0	0	0															
CAPACITY FACTOR	%	I-4	0	0	0	0	0															
CAPACITY FACTOR	%	36MW - Reciprocating Engine (18MW Engines)			0	12	14	14	20	16	17	17	17	16	17	17	18	17	18	15	18	17
TOTAL FIXED COST	$	Dogwood	$ 2,029,965	$ 3,374,147	$ 3,556,967	$ 3,950,846	$ 3,625,605	$ 3,716,246	$ 3,809,152	$ 3,904,381	$ 4,001,990	$ 4,102,040	$ 4,204,591	$ 4,309,706	$ 4,417,448	$ 4,527,884	$ 4,641,082	$ 4,757,109	$ 4,876,036	$ 4,997,937	$ 5,122,886	$ 5,250,958
TOTAL FIXED COST	$	Blue Valley 1b	$ 611,822	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 2b	$ 586,197	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley 3b	$ 1,379,211	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Blue Valley Common	$ 105,598	$ 109,862	$ 114,297	$ 118,912	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Iatan 2	$ 3,129,839	$ 4,572,195	$ 3,287,724	$ 3,930,388	$ 4,468,455	$ 4,580,167	$ 4,694,671	$ 4,812,037	$ 4,932,338	$ 5,055,647	$ 5,182,038	$ 5,311,589	$ 5,444,379	$ 5,580,488	$ 5,720,000	$ 5,863,000	$ 6,009,575	$ 6,159,815	$ 6,313,810	$ 6,471,655
TOTAL FIXED COST	$	J-1	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	J-2	$ 25,984	$ 27,086	$ 28,235	$ 29,433	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	Nebraska City 2	$ 4,977,783	$ 4,214,186	$ 4,420,926	$ 4,640,464	$ 4,896,319	$ 5,018,727	$ 5,144,195	$ 5,272,800	$ 5,404,620	$ 5,539,736	$ 5,678,229	$ 5,820,185	$ 5,965,689	$ 6,114,832	$ 6,267,702	$ 6,424,395	$ 6,585,005	$ 6,749,630	$ 6,918,371	$ 7,091,330
TOTAL FIXED COST	$	H-5	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	H-6	$ 127,635	$ 132,872	$ 138,326	$ 132,968	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-3	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	I-4	$ 32,041	$ 33,400	$ 34,817	$ 36,294	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TOTAL FIXED COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ 5,424,737	$ 5,441,170	$ 5,458,014	$ 5,475,279	$ 5,492,976	$ 5,511,116	$ 5,529,708	$ 5,548,766	$ 5,568,300	$ 5,588,323	$ 5,608,846	$ 5,629,882	$ 5,651,444	$ 5,673,545	$ 5,696,198	$ 5,719,418	$ 5,743,219	$ 5,767,614
TOTAL FIXED COST	$/kW-yr	Dogwood	$ 26.84	$ 26.85	$ 28.31	$ 31.44	$ 28.86	$ 29.58	$ 30.32	$ 31.07	$ 31.85	$ 32.65	$ 33.46	$ 34.30	$ 35.16	$ 36.04	$ 36.94	$ 37.86	$ 38.81	$ 39.78	$ 40.77	$ 41.79
TOTAL FIXED COST	$/kW-yr	Blue Valley 1b	$ 30.59	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 2b	$ 29.31	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley 3b	$ 27.04	$ -																		
TOTAL FIXED COST	$/kW-yr	Blue Valley Common																				
TOTAL FIXED COST	$/kW-yr	Iatan 2	$ 59.21	$ 86.50	$ 62.20	$ 74.35	$ 84.53	$ 86.65	$ 88.81	$ 91.03	$ 93.31	$ 95.64	$ 98.03	$ 100.48	$ 103.00	$ 105.57	$ 108.21	$ 110.92	$ 113.69	$ 116.53	$ 119.44	$ 122.43
TOTAL FIXED COST	$/kW-yr	J-1	$ 2.14	$ 2.23	$ 2.32	$ 2.42	$ -															
TOTAL FIXED COST	$/kW-yr	J-2	$ 2.33	$ 2.43	$ 2.53	$ 2.64	$ -															
TOTAL FIXED COST	$/kW-yr	Nebraska City 2	$ 86.45	$ 73.19	$ 76.78	$ 80.60	$ 85.04	$ 87.17	$ 89.34	$ 91.58	$ 93.87	$ 96.21	$ 98.62	$ 101.09	$ 103.61	$ 106.20	$ 108.86	$ 111.58	$ 114.37	$ 117.23	$ 120.16	$ 123.16
TOTAL FIXED COST	$/kW-yr	H-5	$ 5.73	$ 5.96	$ 6.20	$ 5.96	$ -															
TOTAL FIXED COST	$/kW-yr	H-6	$ 5.48	$ 5.70	$ 5.94	$ 5.71	$ -															
TOTAL FIXED COST	$/kW-yr	I-3	$ 1.98	$ 2.06	$ 2.15	$ 2.24	$ -															
TOTAL FIXED COST	$/kW-yr	I-4	$ 2.11	$ 2.20	$ 2.29	$ 2.39	$ -															
TOTAL FIXED COST	$/kW-yr	36MW - Reciprocating Engine (18MW Engines)			$ 147.81	$ 148.26	$ 148.72	$ 149.19	$ 149.67	$ 150.17	$ 150.67	$ 151.19	$ 151.72	$ 152.27	$ 152.83	$ 153.40	$ 153.99	$ 154.59	$ 155.21	$ 155.84	$ 156.49	$ 157.16
VARIABLE O&M COST	$	Dogwood	$ 1,443,896	$ 3,211,471	$ 3,294,236	$ 3,379,450	$ 3,496,479	$ 3,590,409	$ 3,708,228	$ 3,787,078	$ 3,878,367	$ 3,965,367	$ 4,072,149	$ 4,176,826	$ 4,303,485	$ 4,416,019	$ 4,506,957	$ 4,608,127	$ 4,716,045	$ 4,788,858	$ 4,924,801	$ 5,022,740
VARIABLE O&M COST	$	Blue Valley 1b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 2b	$ 12,739	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley 3b	$ 28,605	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Blue Valley GT1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Iatan 2	$ 1,483,526	$ 1,567,366	$ 1,599,389	$ 1,640,681	$ 1,680,768	$ 1,731,291	$ 1,802,733	$ 1,822,445	$ 1,853,713	$ 1,908,015	$ 1,948,156	$ 2,003,851	$ 2,085,272	$ 2,102,275	$ 2,149,394	$ 2,207,535	$ 2,265,926	$ 2,296,996	$ 2,347,554	$ 2,413,341
VARIABLE O&M COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	Nebraska City 2	$ 1,548,208	$ 1,748,653	$ 1,790,216	$ 1,837,584	$ 1,882,162	$ 1,936,228	$ 1,975,157	$ 2,026,696	$ 2,070,791	$ 2,129,698	$ 2,178,212	$ 2,232,245	$ 2,290,819	$ 2,354,099	$ 2,401,835	$ 2,459,787	$ 2,523,538	$ 2,588,151	$ 2,663,704	$ 2,691,352
VARIABLE O&M COST	$	H-5	$ 15,325	$ 3,742	$ 2,743	$ 2,820	$ 3,182	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	H-6	$ 16,640	$ 4,202	$ 3,412	$ 3,101	$ 4,054	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
VARIABLE O&M COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 308,715	$ 358,797	$ 385,039	$ 546,610	$ 459,350	$ 489,673	$ 502,537	$ 513,385	$ 508,567	$ 531,033	$ 557,137	$ 589,195	$ 587,064	$ 628,799	$ 532,653	$ 655,871	$ 635,742
VARIABLE O&M COST	$/MWh	Dogwood	$ 3.58	$ 3.36	$ 3.44	$ 3.51	$ 3.62	$ 3.69	$ 3.77	$ 3.88	$ 3.97	$ 4.06	$ 4.17	$ 4.29	$ 4.39	$ 4.51	$ 4.62	$ 4.73	$ 4.84	$ 4.89	$ 5.04	$ 5.13
VARIABLE O&M COST	$/MWh	Blue Valley 1b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 2b	$ 2.86																			
VARIABLE O&M COST	$/MWh	Blue Valley 3b	$ 2.37																			
VARIABLE O&M COST	$/MWh	Blue Valley GT1																				
VARIABLE O&M COST	$/MWh	Iatan 2	$ 3.74	$ 3.84	$ 3.92	$ 4.02	$ 4.12	$ 4.23	$ 4.33	$ 4.43	$ 4.54	$ 4.66	$ 4.77	$ 4.89	$ 5.01	$ 5.13	$ 5.27	$ 5.40	$ 5.53	$ 5.61	$ 5.75	$ 5.90

Independence Power & Light

Path 5 - F3 Market - Low Gas - Low Load

Data Item	Units	Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
VARIABLE O&M COST	$/MWh	J-1																				
VARIABLE O&M COST	$/MWh	J-2																				
VARIABLE O&M COST	$/MWh	Nebraska City 2	$ 3.73	$ 3.83	$ 3.93	$ 4.02	$ 4.11	$ 4.23	$ 4.32	$ 4.45	$ 4.54	$ 4.66	$ 4.78	$ 4.89	$ 5.02	$ 5.15	$ 5.27	$ 5.40	$ 5.55	$ 5.61	$ 5.75	$ 5.90
VARIABLE O&M COST	$/MWh	H-5	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	H-6	$ 2.05	$ 2.10	$ 2.15	$ 2.21	$ 2.26															
VARIABLE O&M COST	$/MWh	I-3																				
VARIABLE O&M COST	$/MWh	I-4																				
VARIABLE O&M COST	$/MWh	36MW - Reciprocating Engine (18MW Engines)				$ 7.92	$ 8.12	$ 8.32	$ 8.53	$ 8.74	$ 8.96	$ 9.19	$ 9.42	$ 9.65	$ 9.89	$ 10.14	$ 10.39	$ 10.65	$ 10.92	$ 11.19	$ 11.47	$ 11.76
FUEL COST	$	Dogwood	$ 6,689,682	$ 17,576,825	$ 18,028,851	$ 18,805,294	$ 19,381,736	$ 19,984,075	$ 20,548,306	$ 21,115,491	$ 21,490,126	$ 22,154,273	$ 22,679,048	$ 23,286,380	$ 23,886,527	$ 24,739,807	$ 25,025,485	$ 25,601,849	$ 26,117,803	$ 27,893,284	$ 28,515,852	$ 29,449,553
FUEL COST	$	Blue Valley 1b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 2b	$ 161,450	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley 3b	$ 447,713	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Blue Valley GT1	`	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Iatan 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	J-1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	J-2	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	Nebraska City 2	**This data is company confidential and has been redacted.**																			
FUEL COST	$	H-5	$ 286,058	$ 75,214	$ 55,331	$ 58,129	$ 65,467	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	H-6	$ 307,588	$ 83,259	$ 68,234	$ 63,083	$ 82,918	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-3	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	I-4	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
FUEL COST	$	36MW - Reciprocating Engine (18MW Engines)	$ -	$ -	$ -	$ 963,582	$ 1,121,361	$ 1,206,636	$ 1,715,518	$ 1,437,768	$ 1,527,259	$ 1,570,091	$ 1,606,970	$ 1,598,867	$ 1,668,273	$ 1,747,310	$ 1,847,517	$ 1,848,617	$ 1,974,159	$ 1,693,604	$ 2,105,723	$ 2,056,489
AVERAGE HEAT RATE	MMBtu/MWh	Dogwood	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 1b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 2b	15.2																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley 3b	15.5																			
AVERAGE HEAT RATE	MMBtu/MWh	Blue Valley GT1																				
AVERAGE HEAT RATE	MMBtu/MWh	Iatan 2	9.6	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
AVERAGE HEAT RATE	MMBtu/MWh	J-1																				
AVERAGE HEAT RATE	MMBtu/MWh	J-2																				
AVERAGE HEAT RATE	MMBtu/MWh	Nebraska City 2	9.7	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.6
AVERAGE HEAT RATE	MMBtu/MWh	H-5	15.5	15.6	15.6	15.6	15.6															
AVERAGE HEAT RATE	MMBtu/MWh	H-6	15.3	15.4	15.4	15.4	15.4															
AVERAGE HEAT RATE	MMBtu/MWh	I-3																				
AVERAGE HEAT RATE	MMBtu/MWh	I-4																				
AVERAGE HEAT RATE	MMBtu/MWh	36MW - Reciprocating Engine (18MW Engines)				8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
TRANSACTION OWNERSHIP	%	Marshall County Wind	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
TRANSACTION OWNERSHIP	%	IPL Utility Solar	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TRANSACTION OWNERSHIP	%	Smoky Hills WF ALL	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
TRANSACTION CAPACITY	MW	Marshall County Wind	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
TRANSACTION CAPACITY	MW	IPL Utility Solar	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
TRANSACTION CAPACITY	MW	Smoky Hills WF ALL	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
TRANSACTION ENERGY	MWh	Marshall County Wind	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
TRANSACTION ENERGY	MWh	IPL Utility Solar	18,735	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754	18,754	18,801	18,754	18,754
TRANSACTION ENERGY	MWh	Smoky Hills WF ALL	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
TRANSACTION ENERGY CURTAILED	MWh	Marshall County Wind	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	IPL Utility Solar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION ENERGY CURTAILED	MWh	Smoky Hills WF ALL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TRANSACTION PPA PRICE	$/MWh	Marshall County Wind	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80	33.80
TRANSACTION PPA PRICE	$/MWh	IPL Utility Solar	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50	81.50
TRANSACTION PPA PRICE	$/MWh	Smoky Hills WF ALL	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
TRANSACTION PPA COST	$	Marshall County Wind	2,815,328	2,823,632	2,815,328	2,815,327	2,815,327	2,823,632	2,815,328	2,815,328	2,815,328	2,823,632	2,815,328	2,815,328	2,815,328	2,823,633	2,815,327	2,815,327	2,815,328	2,823,632	2,815,328	2,815,328
TRANSACTION PPA COST	$	IPL Utility Solar	1,526,886	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444	1,528,444	1,532,252	1,528,444	1,528,444
TRANSACTION PPA COST	$	Smoky Hills WF ALL	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742	2,784,742	2,798,781	2,784,742	2,784,742
LEVELIZED FIXED COST	$	Additional Dogwood Purchase Levelized Fixed Cost	**This data is company confidential and has been redacted.**																			
SUMMARY BY AREA																						
INDEPENDENCE MARKET PURCHASES	MWh	Independence Market	1,082,997	1,083,007	1,082,996	1,082,995	1,082,999	1,082,995	1,083,005	1,083,001	1,082,996	1,083,004	1,082,995	1,082,997	1,083,005	1,082,996	1,082,995	1,082,999	1,082,995	1,082,993	1,083,001	1,082,996
INDEPENDENCE MARKET PURCHASES	$	Independence Market	$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
INDEPENDENCE MARKET PURCHASES	$/MWh	Independence Market	$ 25.18	$ 28.23	$ 28.51	$ 29.48	$ 30.85	$ 31.79	$ 33.61	$ 33.68	$ 34.55	$ 35.42	$ 36.29	$ 37.25	$ 38.30	$ 39.27	$ 40.35	$ 41.15	$ 42.23	$ 43.22	$ 45.28	$ 46.45
INDEPENDENCE MARKET SALES	MWh	Independence Market	55,295	22,584	21,617	60,408	66,143	65,079	82,832	71,308	73,400	73,484	73,253	71,455	72,446	73,741	75,455	73,877	76,336	66,401	75,933	72,813
INDEPENDENCE MARKET SALES	$	Independence Market	$ 2,193,530	$ 739,956	$ 702,996	$ 2,206,847	$ 2,518,309	$ 2,470,837	$ 3,210,000	$ 2,781,302	$ 2,941,994	$ 3,017,714	$ 3,081,930	$ 3,092,267	$ 3,217,484	$ 3,360,036	$ 3,528,766	$ 3,531,255	$ 3,749,503	$ 3,350,322	$ 3,981,642	$ 3,924,384
INDEPENDENCE MARKET SALES	$/MWh	Independence Market	$ 39.67	$ 32.77	$ 32.52	$ 36.53	$ 38.07	$ 37.97	$ 38.75	$ 39.00	$ 40.08	$ 41.07	$ 42.07	$ 43.28	$ 44.41	$ 45.57	$ 46.77	$ 47.80	$ 49.12	$ 50.46	$ 52.44	$ 53.90
DOGWOOD MARKET SALES	MWh	Dogwood Market	403,279	956,121	957,103	963,455	965,707	972,722	983,083	977,008	976,690	975,778	977,227	974,622	980,387	978,366	976,139	973,479	973,500	980,183	978,020	978,364
DOGWOOD MARKET SALES	$	Dogwood Market	$ 11,246,860	$ 25,824,219	$ 26,731,646	$ 28,058,661	$ 29,105,566	$ 30,261,472	$ 31,410,007	$ 32,122,773	$ 32,867,982	$ 33,791,205	$ 34,667,763	$ 35,490,744	$ 36,547,224	$ 37,574,251	$ 38,233,360	$ 39,101,220	$ 40,052,028	$ 42,104,591	$ 43,203,425	$ 44,729,185
DOGWOOD MARKET SALES	$/MWh	Dogwood Market	$ 27.89	$ 27.01	$ 27.93	$ 29.12	$ 30.14	$ 31.11	$ 31.95	$ 32.88	$ 33.65	$ 34.63	$ 35.48	$ 36.41	$ 37.28	$ 38.41	$ 39.17	$ 40.17	$ 41.14	$ 42.96	$ 44.17	$ 45.72
IATAN MARKET SALES	MWh	Iatan Market	397,059	408,684	407,700	408,444	408,146	409,298	416,545	411,086	408,461	409,319	408,121	409,856	416,426	409,552	408,132	408,941	409,440	409,369	408,509	409,354
IATAN MARKET SALES	$	Iatan Market	$ 9,876,915	$ 10,661,725	$ 11,008,790	$ 11,476,373	$ 11,849,919	$ 12,260,235	$ 12,934,906	$ 12,994,557	$ 13,174,210	$ 13,425,101	$ 13,740,577	$ 14,118,605	$ 14,651,468	$ 14,735,043	$ 15,062,046	$ 15,455,438	$ 15,757,555	$ 16,456,092	$ 16,882,454	$ 17,564,570
IATAN MARKET SALES	$/MWh	Iatan Market	$ 24.88	$ 26.09	$ 27.00	$ 28.10	$ 29.03	$ 29.95	$ 31.05	$ 31.61	$ 32.25	$ 32.80	$ 33.67	$ 34.45	$ 35.18	$ 35.98	$ 36.90	$ 37.79	$ 38.49	$ 40.20	$ 41.33	$ 42.91
MARSHALL MARKET SALES	MWh	Marshall Market	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294	83,294	83,539	83,294	83,294
MARSHALL MARKET SALES	$	Marshall Market	$ 1,761,259	$ 1,946,553	$ 2,019,389	$ 2,083,854	$ 2,168,872	$ 2,163,851	$ 2,334,917	$ 2,370,099	$ 2,406,333	$ 2,449,756	$ 2,424,191	$ 2,490,167	$ 2,643,318	$ 2,703,492	$ 2,750,016	$ 2,803,983	$ 2,770,845	$ 3,001,285	$ 3,088,318	$ 3,191,926
MARSHALL MARKET SALES	$/MWh	Marshall Market	$ 21.15	$ 23.30	$ 24.24	$ 25.02	$ 26.04	$ 25.90	$ 28.03	$ 28.45	$ 28.89	$ 29.32	$ 29.10	$ 29.90	$ 31.73	$ 32.36	$ 33.02	$ 33.66	$ 33.27	$ 35.93	$ 37.08	$ 38.32
NEBRASKA MARKET SALES	MWh	Nebraska City Market	414,993	456,540	456,012	456,691	457,431	457,876	456,920	455,467	456,450	457,282	456,117	456,039	455,933	457,419	455,634	455,180	455,028	461,661	463,116	456,547
NEBRASKA MARKET SALES	$	Nebraska City Market	$ 10,128,053	$ 11,314,748	$ 11,747,450	$ 12,259,120	$ 12,730,110	$ 13,134,479	$ 13,581,033	$ 13,746,025	$ 14,074,647	$ 14,371,221	$ 14,722,634	$ 15,112,011	$ 15,413,214	$ 15,803,524	$ 16,079,876	$ 16,431,412	$ 16,803,470	$ 17,815,994	$ 18,232,418	$ 18,734,428
NEBRASKA MARKET SALES	$/MWh	Nebraska City Market	$ 24.41	$ 24.78	$ 25.76	$ 26.84	$ 27.83	$ 28.69	$ 29.72	$ 30.18	$ 30.83	$ 31.43	$ 32.28	$ 33.14	$ 33.81	$ 34.55	$ 35.29	$ 36.10	$ 36.93	$ 38.59	$ 39.37	$ 41.04
SMOKY MARKET SALES	MWh	Smoky Hills Market	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883	61,883	62,195	61,883	61,883
SMOKY MARKET SALES	$	Smoky Hills Market	$ 1,366,121	$ 1,474,206	$ 1,486,172	$ 1,503,961	$ 1,561,702	$ 1,469,915	$ 1,689,337	$ 1,682,151	$ 1,674,687	$ 1,708,505	$ 1,565,010	$ 1,814,945	$ 1,912,124	$ 1,884,996	$ 1,934,921	$ 1,952,178	$ 1,788,969	$ 2,186,589	$ 2,191,700	$ 2,221,474
SMOKY MARKET SALES	$/MWh	Smoky Hills Market	$ 22.08	$ 23.70	$ 24.02	$ 24.30	$ 25.24	$ 23.63	$ 27.30	$ 27.18	$ 27.06	$ 27.47	$ 25.29	$ 29.33	$ 30.90	$ 30.31	$ 31.27	$ 31.55	$ 28.91	$ 35.16	$ 35.42	$ 35.90
SUMMARY OF COSTS																						
TOTAL FIXED COSTS	$		$ 29,601,624	$ 31,032,166	$ 34,477,839	$ 36,275,711	$ 36,453,031	$ 39,023,555	$ 38,088,978	$ 38,685,210	$ 39,296,381	$ 39,948,930	$ 40,958,474	$ 41,626,435	$ 42,311,161	$ 43,039,040	$ 44,166,754	$ 44,914,895	$ 45,681,799	$ 46,494,055	$ 47,753,163	$ 48,591,005
TOTAL VARIABLE (EXCL. FUEL) COSTS	$		$ 4,561,678	$ 6,535,435	$ 6,689,996	$ 7,172,349	$ 7,425,443	$ 7,642,967	$ 8,032,729	$ 8,095,569	$ 8,292,544	$ 8,505,618	$ 8,711,903	$ 8,921,489	$ 9,210,609	$ 9,429,529	$ 9,647,382	$ 9,862,514	$ 10,134,308	$ 10,206,658	$ 10,591,929	$ 10,763,176
TOTAL FUEL COSTS	$		$ 20,082,084	$ 30,784,029	$ 31,517,514	$ 33,551,824	$ 34,727,813	$ 35,914,437	$ 37,445,656	$ 37,991,071	$ 38,695,029	$ 39,944,623	$ 40,805,409	$ 41,821,036	$ 42,970,088	$ 44,193,868	$ 45,060,863	$ 46,172,452	$ 47,408,020	$ 49,531,216	$ 51,102,473	$ 52,584,558
TOTAL ENERGY MARKET PURCHASES	$		$ 27,274,183	$ 30,571,377	$ 30,874,186	$ 31,923,501	$ 33,413,870	$ 34,423,469	$ 36,400,679	$ 36,475,024	$ 37,417,745	$ 38,362,708	$ 39,297,363	$ 40,338,687	$ 41,478,223	$ 42,530,733	$ 43,697,936	$ 44,564,264	$ 45,737,381	$ 46,804,750	$ 49,043,540	$ 50,303,382
TOTAL ENERGY MARKET SALES	$		$ 36,572,737	$ 51,961,406	$ 53,696,444	$ 57,588,816	$ 59,934,478	$ 61,760,789	$ 65,160,198	$ 65,696,907	$ 67,139,854	$ 68,763,502	$ 70,202,104	$ 72,118,738	$ 74,384,833	$ 76,061,344	$ 77,588,985	$ 79,275,486	$ 80,922,369	$ 84,914,872	$ 87,579,958	$ 90,365,968
TOTAL COSTS	$		$ 44,946,832	$ 46,961,600	$ 49,863,092	$ 51,334,568	$ 52,085,679	$ 55,243,640	$ 54,807,843	$ 55,549,967	$ 56,561,844	$ 57,998,377	$ 59,571,044	$ 60,588,909	$ 61,585,247	$ 63,131,826	$ 64,983,950	$ 66,238,638	$ 68,039,138	$ 68,121,806	$ 70,911,148	$ 71,876,153

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