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.