INDEPENDENCE
MISSOURI

Landis+Gyr
manage energy better

Introductions

TJ LaPorte
Account Executive
Landis+Gyr
TJ.LaPorte@LandisGyr.com

Eric Lange
Account Executive
Landis+Gyr
Eric.Lange@LandisGyr.com

Andy Schade
Solutions Director
Landis+Gyr
Andy.Schade@LandisGyr.com

Bill Weber
Smart Grid Solutions Specialist
Fletcher Reinhardt
Bill.Weber@fr-electric.com

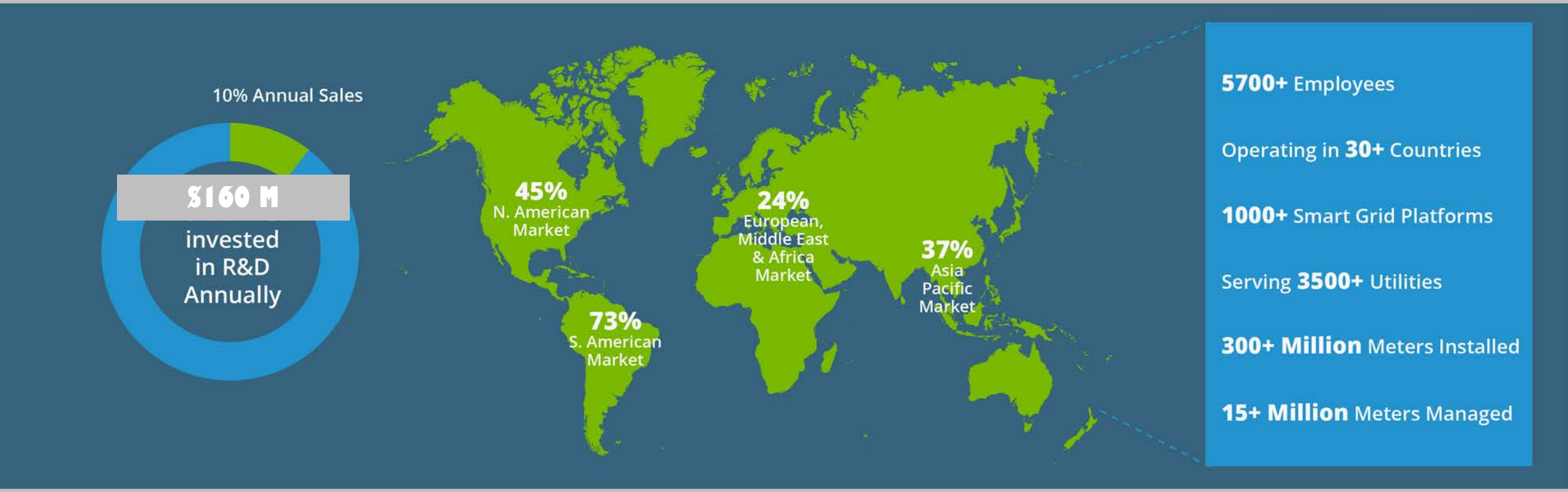
 © Landis+Gyr 2018

Agenda

- Brief Introduction: Landis+Gyr
- High Level Overview of Discussion Topics
- Overview of AMI System - Telecom and Meter Technology
- Explanation of Best and Final offer Pricing
- Q&A
- Wrap Up

 © Landis+Gyr 2018

Brief Introduction: Landis+Gyr



Trusted by Global Customer Base | Migration Forward - a Top Priority | Focused on Value Into the Future

High Level Overview of Discussion Items (1/3)

City of Independence Question	Landis+Gyr Response
Mesh or Point to MultiPoint design	Gridstream is a low power, RF Mesh based design
Licensed or Unlicensed Spectrum	Gridstream operates using the 902-928 MHz unlicensed spectrum
Proposed Backhaul technology	Gridstream supports any TCP/IP backhaul communication, including Fiber and Cellular
Electric meter transmitter power (Mw)	Transmit Power = 425 Mw
Electric meter power density at 2 ft (mW/cm2) compared to FCC limit (0.6mW/cm2)	0.107 W/CM^2

High Level Overview of Discussion Items (2/3)

City of Independence Question	Landis+Gyr Response
Electric and Water Meter Transmission Times (Number of times per day and overall minutes per day)	Electric Meter: - 1 Consumption read/day - 6 Interval data packets/day - < 100 seconds/day Water Module: - 4 interval data packets/day - < 50 seconds/day
Meter Accuracy - Electric and Water	Electric Meter - 0.2% Load Accuracy Water Module - +/-1.5% Accuracy

 © Landis+Gyr 2018

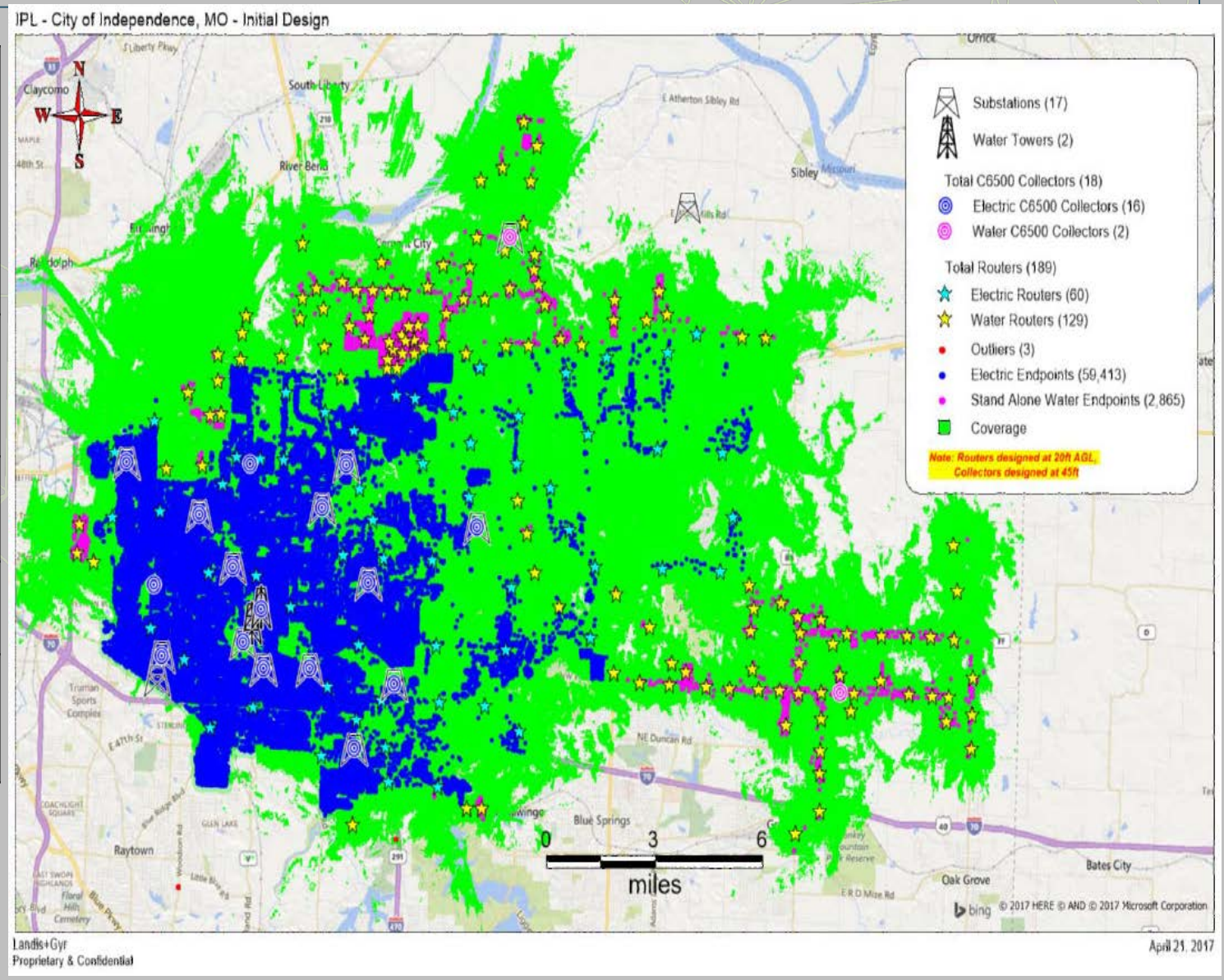
High Level Overview of Discussion Items (3/3)

City of Independence Question	Landis+Gyr Response
Number of Proposed collector base stations	18
Meter temperature sensing (Hot Socket) features	Built-in temperature sensor in each electric meter. Immediately sends an alarm to the AMI head-end system upon reaching temperature threshold set.
Cyber Security Features	End to end encryption using recommended industry standards insuring confidentiality, integrity and availability.

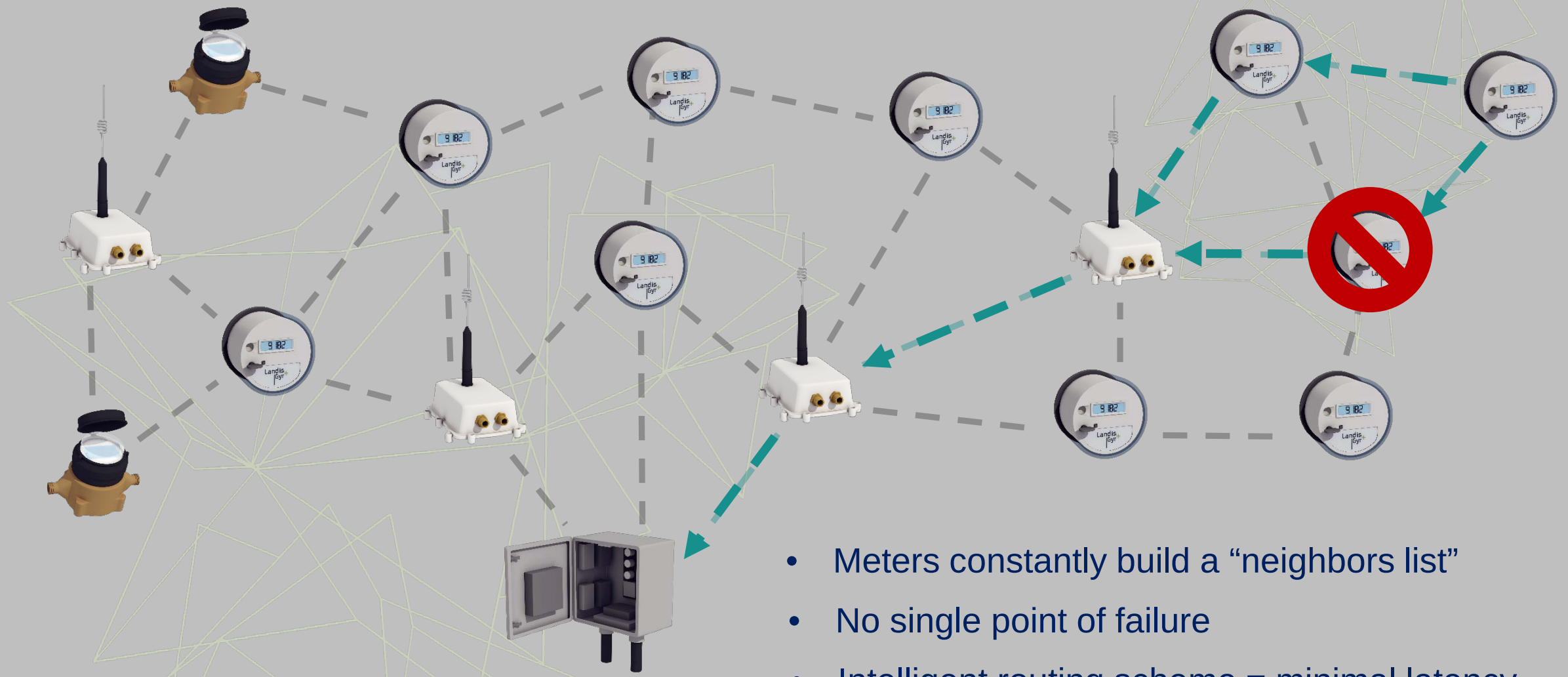
 © Landis+Gyr 2018

Number of Proposed Routers & Collectors

Collectors - 14 in substations - 3 mounted on poles - 1 mounted on water tower	18
Routers @20 ft - Pole Mount	189
Electric Meters	59,413
Water Meters	56,576
Stand Alone Water	2865



Overview of Gridstream RF AMI System



- Meters constantly build a “neighbors list”
- No single point of failure
- Intelligent routing scheme = minimal latency
- Read success rate = **99.9%**

 © Landis+Gyr 2018

Landis+Gyr

Proposed Backhaul Technology

- Gridstream RF Collectors have the capability of using any form of TCP/IP backhaul communication method.
- Some of the more common backhaul communication options include fiber (where available) and cellular.

 © Landis+Gyr 2018

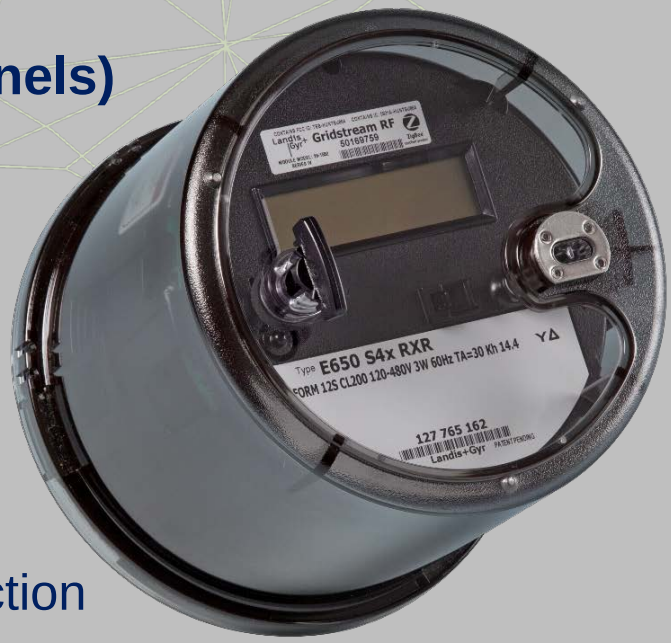
Residential Meter: FOCUS AXe-SD

- Transmitter power = 425 mW
- **Electric meter power density at 2 ft (mW/cm2): .1071249**
- Accuracy: 0.2% Load Accuracy class type
- **Standard Product – kWh, kW, TOU, Load Profile**
  - 8 channels (1, 5, 15, 30, 60)
- **Reactive energy (optional)**
- **Full two-way communication, over-the-air upgradable in seconds**
- **Connect/Disconnect, Demand Reset, On Demand Reads**
  - Meter/module firmware, meter program, alarms & events
- **Temperature Alarm (Configurable)**
- **Enhanced Security**
  - Reverse Rotation, Tilt/Vibration, Magnetic Detection
- **UL2735 & UL94 certified**

Landis+Gyr

Commercial & Industrial Meter: S4x

- **Electric meter transmitter power = 425 mW**
- **Electric meter power density at 2 ft (mW/cm2): .1071249**
- **Accuracy: 0.2% Load Accuracy class type**
- **Standard Product – kWh, kW, Reactive, TOU, Load Profile (16 channels)**
  - Up to 480V
  - Optional second independent load profile recorder (32 channels)
- **Full two-way communication, over-the-air upgradable in seconds**
  - Demand Reset, Power Factor, On Demand Reads
- **Temperature Alarm (Configurable)**
- **Enhanced security**
  - Tilt Switch, Vibration, Magnetic Detection, Cover Removal, Tamper detection
- **10KV surge protection**
- **UL2735**



 © Landis+Gyr 2018

Landis+Gyr

Gridstream RF Water Solution

Pit Module

Interpreter

Wall Module

Default Configuration:

- 15 minute interval data (Supports, 5, 15, 30, 60)
- Pushes interval data every 6 hours (4X daily) - Configurable
- Last 24 hours of interval reads (redundancy)
- Stores 56 days of 15 minute interval data
- Gap Reconciliation
- 20 year batter life

Alarms & Events:

- Leak Detection
- Reverse Flow
- Tamper
- Zero Flow
- Low Battery
- Cut Cable
- Smart Meter Events

 © Landis+Gyr 2018

Gridstream RF Water Solution

Pit Module

Wall Module

RF Interpreter Register

Compatibility with most major water meter manufacturers

 © Landis+Gyr 2018

Electric and Water Meter Transmission Times

- **Electric Meters: (Configurable Over the Air)**
  - **Residential:** 1 Consumption read per day, 15-minute Interval data sent 6 times per day (every 4 hours); < 100 seconds/day
  - **Commercial:** 1 Consumption read per day, 15-minute Interval data sent 24 times/day (hourly); < 100 seconds/day
  - **Opt Out Policy Option**
    - Option to configure meter/modules for a singular consumption read/day; < 15 seconds/day
- **Water Meters: (Configurable Over the Air)**
  - Transmits 15-minute Interval data every 6 hours
  - Passive syncs are sent throughout the day to see if parent electric meter has a request; < 100 seconds/day

 © Landis+Gyr 2018

Meter Temperature Sensing (Hot Socket) Feature

- Built-in temperature sensor in each electric meter
- Immediately sends an alarm to the AMI head-end system upon reaching temperature threshold set
- The head-end system can send email alerts to the City's personnel
- Meters can be configured to push temperature readings into the head end at user-configurable intervals
- The head-end-system user can request an instantaneous Temperature reading over-the-air

 © Landis+Gyr 2018

Cyber Security Features

People and Process

- Role based access control
- Security administrator
- Auditing & Logging

Data Protection

- Encrypted messaging
- Backhaul protections
- Data at rest

Systematic Protection

- Signed messaging
- Signed firmware
- Certificates for tool usage

Compliance and Auditability

- Proof of secure best practices
- Auditable policy enforcement

Resistance and Local Security

- Forensics – proof of crime
- Identity management
- Runtime security checks

Holistic Security Solution

 © Landis+Gyr 2018

Landis+Gyr

Landis+Gyr Key Differentiators

1. **Market Leader - AMI, Water, DA experience**

   300+ U.S. Smart Meter Customers, 700 Awarded Patents, 300+ Million Meters installed worldwide (60 Million Smart Meters)

2. **Guaranteed Network Design & One Multi-purpose Network**

   One Network for AMI, Water, DA, and other applications

3. **Proven, Simple, Easy to Manage Solution**

   Local Referenceable Accounts

4. **Guaranteed System Longevity and Support**

   15 Year System Life Expectancy Clause

5 **Local Support & Unmatched Project Delivery Services**

   Fletcher Reinhardt

© Landis+Gyr 2018

Fletcher-Reinhardt Key Differentiators

55 Years Serving Customers: Dependability + Reliability + Experience + Knowledge (Local Support)

1. **Regional Sales Engineer** – Scott Muskopf
   - Face to Face Every 2-3 Weeks
   - Handle all Material Returns
2. **Meter/System Engineer** – Jay Turner
   - Meter Programs
   - System Operational Guidance, Monitoring, and Tech Support
   - Landis+Gyr Liaison/Escalation
3. **Smart Grid Solutions Engineer/Analyst** – Bill Weber
   - 30+ Years Solutions/Deployment/Operations Experience
   - Business Processes, Opt Out, Prepay, Disconnect, etc.

© Landis+Gyr 2018

Landis+Gyr BFAO Pricing Review

 © Landis+Gyr 2018

Landis+Gyr BFAO Pricing Review

Project Area	Total Cost
Project Management	$157,295
Electric Meters	$5,913,368
Electric Meter Installation	$2,096,063
Water Meters	$9,763,836
Water Meter Installation	$3,216.376
AMI Communication Network	$537,291
AMI Head End System - Labor	$977,571
System Integration	$103,530
Acceptance Testing	$102,588
Training	$67,900
Other (field tools, prepay implementation fee)	$437,100
Total Capital Cost	$23,272,727

Landis+Gyr BFAO Pricing Review

Saas Solution Operating Expenses	Total SaaS Expenses – 10 Years
MDMS	$2,358,250
Consumer E-Portal	$888,439
AMI Head End System	$1,648,701
Pre-Pay Portal	$960,757
Total Saas Operating Expenses	$5,856,148

Managed Services Solution – Operating Expenses	Managed Services Cost – Over 3 Years
MDMS	$218,824
Total	$218,824

Add-On Cost Items	
MDMS (Forecasting & Rate & Revenue Analysis)	$181,459
Total	$181,459

Q&A

 © Landis+Gyr 2018

Landis+Gyr