SMART METERING TECHNOLOGY
OVERVIEW

Florida Public Service Commission Workshop
September 20, 2012
ITRON BACKGROUND AND PERSPECTIVE

105m
Smart meters & endpoints shipped

Thousands of
Utility customers in 130 countries

80%
Of Electricity delivered in U.S. Touches Itron Systems

35 yrs
Itron Utility Metering Solutions

1977
Itron was Founded

2004
Itron Acquires Schlumberger Electricity Metering (100+ years of exp.)

2012
Global Leader in Advanced Metering Technology
TECHNOLOGY REVIEW: AMR, AMI AND SMART GRID
AUTOMATIC METER READING (AMR)
One-way RF Communication

Key Benefits
» Customer privacy
» Customer service
» Employee safety
» Accurate billing
» Efficient operations
» Fewer utility vehicles on road
AMI AND SMART GRID

Key Benefits

» Consumer Empowerment
» Grid Awareness
» Renewable Energy

Two-way Communication

- Distribution automation
- Renewable energy integration
- Electric vehicle smart charging
- Real-time energy usage data
- Flexible payment systems
- Dynamic Pricing
- Smart appliances
- Home automation and energy management
- Outage detection/restoration notification
- Safety Monitoring
RF AND DATA PRIVACY CONCERNS
AMR/AMI RADIO TRANSMISSIONS ARE SHORT

- Smart Meters radios transmit data in small time slots that last less than two tenths of a second

- The total amount of transmit time in a day adds up to less than one minute (less than one tenth of one percent duty cycle)

Source: Smart Grid Consumer Collaborate
RF EMISSIONS FROM SMART METERS ARE FAR BELOW THE FCC APPROVED LIMIT

- RF exposure is 70 times less than FCC limit even standing in front of a smart meter.

SMART METER RF EMISSIONS VS. OTHER COMMON DEVICES

RF emitted by smart meters is significantly below the levels produced by other common household devices like cell phones and microwaves:

» 250 – 1,250 times less than the exposure from holding a cell phone to your ear.
» far less than standing next to your microwave.

COMPARISON OF ITRON RF LEVELS IN MICROWATTS/cm²

- **Cell Phone - at ear**: Max 5000, Min 1000
- **Microwave Oven - 2 feet**: Max 200, Min 50
- **OpenWay® Meter - 3 feet**: Max 1000, Min 10.0
- **ITRON ERT® Endpoint** - 3 feet**: Max 12, Min 1.0
- **ITRON ERT® Endpoint** - 25 feet**: Max 0.8, Min 0.25
- **WiFi Router - 3 feet**: Max 0.2, Min 0.2
- **OpenWay® Meter - 25 feet**
- **FM Radio/TV Broadcast**

* Source: COST and Itron calculations
** Itron 100 Series endpoints communication module when in mobile (min) or fixed network (max) mode
SECURITY AND DATA PRIVACY

» AMR: same data one would see on meter itself
» AMI: System provides in-depth security: encryption of data, authentication of messages, key management; can extend to protect meter’s optical port
» AMI: No “personally identifiable” info transits the network
  • Consumption data (measured more frequently)
  • Event data (e.g. outage alert, meter tamper, voltage alarm)
  • Meter number
» AMI “threat profile” extremely low relative to other consumer activities (e.g. on-line banking, e-commerce, social media)
» AMI meets all applicable NIST and NERC CIP requirements
» AMI meters do not measure usage by individual devices in home
» Data privacy for consumers is about policy more than technology
## WHY SMART METERS?

### Smart Metering Technology

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<th>Consumer Empowerment</th>
<th>Grid Awareness</th>
<th>Clean Energy Integration</th>
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<td>Access to real-time usage data and costs</td>
<td>Outage and restoration notification</td>
<td>Net metering/submetering for customer-owned PV</td>
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<td>Platform for home energy management/demand response</td>
<td>Voltage/power quality monitoring</td>
<td>Voltage data to support grid stabilization</td>
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<td>New services and payment options</td>
<td>Meter tamper and energy theft detection</td>
<td>Integrated EV smart charging</td>
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<td>Consumers can become generators/suppliers</td>
<td>Distribution automation platform</td>
<td>Demand response platform to mitigate intermittency</td>
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<td>Condition-based maintenance/Capex optimization</td>
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A more efficient, reliable and flexible grid to control costs, support economic growth, and reduce our environmental footprint
THANK YOU