Florida Public Service Commission
Staff Workshop on Smart Meters
Don Reeves, SVP Smart Grid Services & Operations
9/20/2012
Silver Spring Networks

- Celebrating a decade of success
- The leading provider of open networking technology for the smart energy network
- Global reach with over 12M homes and businesses connected
- HQ in Silicon Valley with offices in Australia, Brazil, UK
Why Do Utilities Select SSN?

- Open Standards
- Secure
- Scalable
- Reliable
- Extensible
- High Performance
- Broad Coverage
- Cost Effective
Who Benefits?

Utilities

Consumers

Economy

Environment
The SSN network is designed to support reliable, timely billing and on-demand messaging. It also provides a foundation for a broad set of future utility and ratepayer/consumer benefits.

Network infrastructure includes Silver Spring Networks Access Points (APs) and Relays that forward data from endpoints across the utility’s backhaul or WAN infrastructure into the back office.
SSN’s Meter Components

The Silver Spring Networks' meter Communications Module is an option board that installs easily and provides internal wireless networking advanced meter reading capability

• Provides full security and encryption to meet rigorous industry standards

• One-watt transmitter provides full, two-way wireless communications

• Provides greater efficiency while improving customer satisfaction with a scalable platform for adding advanced services – both today and tomorrow
Silver Spring Networks Smart Meter Specifications per FCC certification

Silver Spring-enabled smart grid devices not only meet the Federal Communications Commission (FCC) rules, but in actual usage, transmit significantly less frequently

<table>
<thead>
<tr>
<th>FCC Rule:</th>
<th>15.247</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Bands:</td>
<td>RFLAN 902-928 MHZ</td>
</tr>
<tr>
<td></td>
<td>ZigBee 2.4-2.48 GHz</td>
</tr>
<tr>
<td>Transmit Power:</td>
<td>RFLAN 30 dBm (1000 mW) at 902 MHz</td>
</tr>
<tr>
<td></td>
<td>ZigBee 22dBm (160mW) at 2.4 GHz</td>
</tr>
<tr>
<td>Antenna Gain:</td>
<td>RFLAN 4 dBi (2.5 times) at 902 MHz</td>
</tr>
<tr>
<td></td>
<td>ZigBee 1 dBi (1.25 times) at 2.4 GHz</td>
</tr>
<tr>
<td>Duty Cycle (Estimate Max):</td>
<td>RFLAN 4%</td>
</tr>
<tr>
<td>(over 30 minute period)</td>
<td>ZigBee 10%</td>
</tr>
</tbody>
</table>
### Radio Frequency (RF) Power Density

#### Comparison in the Everyday Environment

<table>
<thead>
<tr>
<th>Source</th>
<th>RF Output Compared to Standing Two Feet from a Smart Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standing in front of an active microwave over, two feet from the door</td>
<td>550 times more</td>
</tr>
<tr>
<td>Holding a walkie-talkie to your head</td>
<td>55 – 4,600 times more</td>
</tr>
<tr>
<td>Holding an active cell phone to your head</td>
<td>3.3 – 1,100 times more</td>
</tr>
<tr>
<td>Using a laptop computer</td>
<td>1.1 – 2.2 times more</td>
</tr>
<tr>
<td>Sitting in a Wi-Fi cyber café</td>
<td>1.1 – 2.2 times more</td>
</tr>
</tbody>
</table>

Source: Health Impacts of Radio Frequency from Smart Meters by California Council on Science and Technology, April 2011

Silver Spring Networks monitors regulatory and scientific developments related to human exposure to RF emissions and relies on expert scientific conclusions related to RF exposures and potential health effects.
## Smart Grid Security

**Consumer Question:** Is My Data Protected?

**Short Answer:** Yes!

**Long Answer:** Still Yes!

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Back Office: External Threat</td>
<td>✓</td>
<td>Authentication &amp; Authorization, Access Controls, ...</td>
</tr>
<tr>
<td>Back Office: Internal Threat</td>
<td>✓</td>
<td>Above Plus Physical Protection, Two-Party Controls &amp; more</td>
</tr>
<tr>
<td>Wide-Area Network Snoop</td>
<td>✓</td>
<td>PKI-based Encryption at multiple layers</td>
</tr>
<tr>
<td>Mesh Network Snoop</td>
<td>✓</td>
<td>PKI-based Encryption at multiple layers</td>
</tr>
<tr>
<td>Physical Device Access</td>
<td>✓</td>
<td>HSM, Data Encryption, Layers of Data Validation</td>
</tr>
<tr>
<td>...many more</td>
<td>✓</td>
<td>Proven, modern, IP-based technologies, all independently verified by 3rd-party security experts</td>
</tr>
</tbody>
</table>
What’s at Stake: Proven Benefits

1. Billing Accuracy

2. Access to Data by Consumers

3. Improved Customer Service

4. Faster Power Restoration

5. …and many more benefits in the years to come

➡ Smarter Grid = Better Service and Value to the Consumer
Reference Materials

Benefits:


RF:

http://www.silverspringnet.com/resources/understanding-radio-frequency.html


Security:

Thank You!

Silver Spring Networks

Altogether Brilliant.

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