PAP02 Extended Work - Guidance on Use of Wireless in the Smart Grid

Proposed Framework
09May 2011
Objectives

- Provide a fact-based assessment of wireless standards and representative technology implementations of those standards (using specific spectrum) for their ability to satisfy the business needs for the Smart Grid
- Build upon and extend NISTIR 7761
- Accomplished within 6-9 months of voluntary resources
In - Scope

• Wireless standards specifications, and representative technology implementations of those standards
• Spectrum in the range <700 MHz - <6GHz
• AMI networks and Distribution FANs
• “Last Mile” and backhaul networks
• Account for representative real-world deployment areas and their characteristics of: RF propagation factors, endpoint deployments, business application requirements
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Out of - Scope

- Pricing or Costs (CapEx or OpEx)
- Simulation modeling of the wireless standards and technologies
- Detailed base-station and subscriber lat/lon RF propagation network design with associated detail clutter and typo terrain data
Framework Basics

- Use a model Smart Grid area concept described by:
  - Endpoint population and density category characteristics, based on USA-state census track data
  - RF propagation representative characteristics
  - NISTIR 7761 business application requirements
Framework Basics – cont'd

- Wireless standards/technology and spectrum modeling of the model area:
  - Using an advanced spreadsheet tool (with generalized parameter input for design factors)
  - **Alternative** - using the model area characteristics, but allow the SDO/Technology vendor to determine by whatever means it would take to satisfy the model area requirements
  - **Minimum output:** quantity of wireless std/tech/spectrum network gear required by endpoint density category, incremental gear type/count for RF propagation factors & engineering work-arounds for subscribers, and no endpoint coverage conditions
Framework Basics — cont'd

• Deliverables - “Guidelines for use of Wireless in the Smart Grid”, (a separate NISTIR or volume or appendix to NISTIR 7716) containing:
  - Overview of process
  - Description of model Smart Grid Area and Characteristics
  - Description of Wireless Standards (with representative technologies and utilized spectrum bands and amount.
  - Matrix and summary of the assessment results categorized by wireless standard, spectrum band and containing: network gear type/count by density category, with incremental counts by RF propagation factor, noting work around conditions and areas of no coverage provided
## WorkPlan / Timelines

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<td><strong>Data Gathering:</strong> finalize model area characteristics, wireless stds, techs, spectrum, appropriate wireless models</td>
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<td><strong>Design and prototype spreadsheet assessment model</strong>, includes specifying inputs, outputs, format</td>
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<td><strong>Assemble Content and write guidance</strong></td>
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