Telecommunication for Distributed Generation & Micro Grids

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The Problem for Many Utilities…

- Utilities often start by considering **Evolutionary Solutions** for…
  - Metering
  - SCADA
  - Protection

Often applications also reflect "silos" within the utility organization.

- But Micro Grids and Distributed Generation represent **Revolutionary Changes** to "the grid" and the industry itself.
- Take time to look closely at where you want to go.
- Failing to plan is like planning to fail!

New Challenges—New Solutions?

- Using “legacy” solutions for communications can mean:
  - A variety of solutions, some using potentially dated technology.
  - More effort to commission, troubleshoot, operate, and maintain.
  - Artificial “silos” based on traditional utility solution topologies may not be the best fit for emerging utility solution topologies.
- Do legacy solutions have advantages? Sometime yes…
  - Already understood and proven.
  - Processes and Systems may already be in place.
- It is not that legacy telecom solutions have no role, but rather that a careful evaluation and a conscious decision are needed
  - Pick what is best, not what is easiest or what has always been used.

Examples of Applications

- Metering Data
  - Hourly kW Hour Accounting
  - Monthly Revenue Metering
- Analog Data & Status
  - Required by SCADA
  - Sources may include RTUs, meters, or relays.
- Protection
  - Shunt Trip Operation or Transfer Trip
  - Recloser Status/Control

With Distributed Generation, the details of the requirements typically vary by the size of the installation.

Telecom Solutions Overview

- **Fiber Optics**
  - Can have a higher capital cost initially, but typically has reasonably O&M costs.
  - Often already in use by most utilities.
  - Tremendous bandwidth enables additional applications such as video surveillance.
- **Carrier Wireless (Cellular)**
  - Easy to install and low cost.
  - Coverage can be an issue for remote sites.
  - Problems can be difficult to get resolved because much of the infrastructure is outside the utility's span of control.
  - But wireless carriers are focusing more on M2M communications which has helped.
  - Solution cannot always handle the stringent requirement of protection applications.
- **Carrier "Wired"**
  - Many copper based solutions are being retired by carriers resulting in short (3 to 5 years at most) technology refresh cycles for some utilities.
  - Financial analysis during recent work with several different utilities has shown this option can be one of the more expensive ones.
  - Solutions cannot always handle the stringent requirements of protection applications.
- **Private Wireless**
  - Price points have plummeted while ease of installation and reliability have improved.
  - Recent work with several different utilities has shown that finding a solution that reasonably fits a number of applications (instead of single-purpose wireless solutions) can be attractive solution.
  - Some solutions (including "high site" solutions such as Point-to-Multipoint) can have lead times and initial investments that require careful consideration and planning.

As with many things, telecom solutions are not "one size fits all"…

Summary

- Don’t let momentum or “business as usual” get in the way of finding the best telecom solution.
- Choosing to not make a decision is actually a decision itself.
- Look holistically—at Micro Grid and Distributed Generation applications as well as other applications across the business where synergies may exist.
- And, again, failing to plan is like planning to fail.


END OF PRESENTATION
GOOD