



Powertech

WiGRID SmartGrid Use Cases

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Overview

- Utilities have deployed a mix of wireless technologies including WiMAX to support a number of SmartGrid applications. Utilities have long recognized the benefits of private networks to provide high performance without being dependent on a specific carrier, especially in times of disasters. The following are examples of WiMAX deployments within a Canadian utility environment at 1.8 GHz;
 - Smart Metering
 - Protection
 - Monitoring
 - Remote Site Communications

Smart Metering

- Mesh technology is used to transport meter data from a smart meter to regional meter collector; thereafter a co-located WiMAX CPE is used to backhaul the information to the WiMAX base station and hence back to the head end server. The benefits of using WiMAX are that of it being a secure conduit for the data.
- The WiMAX CPE also enable the following features;
 - Monitoring of the regional meter collector.
 - Firmware upgrades.
 - Access for field staff.

Protection

- WiMAX CPEs are co-located with a network of SmartGrid reclosers, the WiMAX network comprising CPES and base stations is used to allow the reclosers to broadcast their information to other reclosers in a localized network, this allows the fault areas to be deduced with greater accuracy, minimize the number of customers without power and provide higher public safety due to the reduced number of reclosing.
- The reclosers within the feeder network have a number of programmed scenarios depending on the recloser indicating a fault event. When a fault occurs the following actions happen;
 - The recloser opens and reports its status to the other reclosers.
 - The other reclosers act based on the fault report received.
 - If possible the reclosers will act to isolate the fault and restore service as best as possible.
 - The fault and its probable location are reported to the distribution monitoring system.

Monitoring

- A WiMAX network is used to backhaul information from a feeder meter aggregation point to a substation to monitor the status of the feeder in terms of current, voltage, temperature and sag for operational and maintenance purposes. The benefits being to provide better fault localization, identify theft and optimize the use of the feeder based on the load requirements and the conditions of the feeder.

Remote Site Communications

- A WiMAX network is used provide localized communications at substations and or remote sites for telemetry and field operational maintenance personnel. The benefits being to provide secure and high bandwidth communications. Examples are:
 - Site alarm reporting.
 - On site corporate access
 - Backhaul of mobile radio systems.



Thank You

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