



IP-Enabled Smart Grid Product Applications

SmartSynch's Smart Grid devices are IP-enabled electrical meters and boxes with embedded and enhanced data-gathering and reporting functionality. These solutions make deployment and maintenance simple for utilities. Contrary to complex, proprietary systems with laborious installation requirements, each IP-enabled SmartSynch device can be installed easily with our "plug-n-play" deployment process. The following real-world examples highlight some of the available utility applications for which SmartSynch's Smart Grid technology has been used to provide real-time data via two-way wireless communication over public wireless networks.

Steam Monitoring

Con Edison, New York, NY

GOAL: Monitor critical parameters of the widely distributed metropolitan steam distribution system and provide actionable data to the command center. Remotely monitor steam system conditions under city streets by communicating temperature and water-level data from manholes.

SOLUTION: Direct Connect eXternal (DCX) units were encased in NEMA 6P watertight enclosures and mounted in steam trap manholes throughout Manhattan.

RESULTS: SmartSynch's web application enables readings from DCX units to be displayed every 60 seconds on monitors at the Lower Manhattan steam control center. Steam control center supervisors know when and where water is accumulating in manholes and can identify problem steam traps, resulting in quick dispatch of technicians to address problems in real time.

Generator Control

Progress Energy Florida, St. Petersburg, FL

GOAL: Ensure a sufficient power supply during peak demand periods. Control backup generators of larger C&I customers during the summer, when load hits a critical point. Give customers discounted rates in return. Use generators to shave peak as needed.

SOLUTION: Installed the DCX solution on generators of varying sizes at C&I customer locations throughout the service territory.

RESULT: The starting and stopping of generators and reading the amount of power they produce are now handled remotely and more efficiently. Progress can shave peak loads remotely, during critical periods, and avoid brown-outs. DCX-controlled generators have become virtual power plants, as Progress now has hundreds of megawatts of instant power at their fingertips.

Smart Grid Devices

SmartMeters – C&I



Elster A3 ALPHA®



GE kv2c®



Itron SENTINEL®

SmartMeters – Residential



Elster A3® Collector



GE I-210+c®



Itron CENTRON®



Itron OpenWay®
CENTRON®

SmartBoxes



Direct Connect eXternal™ (DCX)

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Outage Notification

LADWP, Los Angeles, CA

GOAL: Ensure a sufficient power supply during peak demand. Minimize service interruptions during power outages. Analyze pre- and post-peak consumption traits to gauge demand by accessing more granular usage data. Collect delivered and received load profile information on all solar installations. Provide immediate outage notification, where real-time awareness is critical (hospitals, schools, buildings, etc.).

SOLUTION: A3 and CENTRON SmartMeters, SSI Data Acquisition System, and the GPRS network.

RESULT: LADWP retrieves load profile data, including usage and instrumentation profiling and power quality data as needed. Solutions provide real-time alerts, such as outage notifications, enabling minimal service interruptions for customers.

Power Quality Monitoring

Florida Power & Light (FP&L)

GOAL: Ensure efficient use of power by select C&I customers. Research energy consumption traits during peak and non-peak periods. Provide power quality and outage management notifications to customers.

SOLUTION: A3 SmartMeter, SmartSynch Data Acquisition System, and the GPRS network. SmartSynch created an interactive Power Quality feature for the A3, which includes low- and high-voltage events, three-phase outage reporting and MIVs events.

RESULT: FP&L retrieves daily load profile and power quality data, including usage and instrumentation profiling, for its largest C&I accounts on an as-needed basis. Solutions provide real-time alerts, such as outage notifications, enabling minimal service interruptions for customers. Customers may conduct real-time reads via e-mail interface with SmartSynch's Data Acquisition System. Power Quality functionality is a revenue source that FP&L actively markets to customers.

Street Level Sensor

Con Edison, New York, NY

GOAL: Low-cost and quick deployment of Real-Time Steam Monitoring project by providing a battery-powered SmartLAN enabled node.

SOLUTION: The Street Level Sensor uses SmartSynch's high-performance 802.15.4 radio and Self-Structuring Antenna Technology to create a wireless sensor node which operates at street level beneath a DOT-approved composite material manhole cover. The Street Level Sensor provides input for up to 4 thermocouples and 4 level switch inputs.

RESULT: The Street Level Sensor will enable Con Edison to deploy real-time monitoring to all 3,000 desired locations without requiring extensive excavation at each site. Today approximately \$30,000-\$40,000 is being spent in excavation costs alone per site.

Real-Time Power Quality

Con Edison, New York, NY

GOAL: Collect real-time power quality data from high-tension and secondary networks using standard kV2c C&I meters for use by Distribution Engineering Team.

SOLUTION: DCX units connected to kV2c C&I meters have been installed at customer premises in NEMA6P enclosures for underground installations. The DCX interrogates the kV2c at 5-minute intervals and sends the data back to a web-enabled collection application and database.

RESULT: Con Edison now has real-time feedback from secondary and high-tension feeder networks to prevent a cascading failure as experienced during the Long Island City incident of 2006.

Optical Pulse Module

Con Edison, New York, NY

GOAL: An AMI-compatible interface kit for the approximately 275,000 Tin Case Gas Meters currently in service.

SOLUTION: Con Edison solicited responses from approximately 20 companies, and only SmartSynch had a viable response for interfacing the Tin Case Gas Meter population with existing AMI systems. SmartSynch has developed a nonintrusive optical sensor and pulse module that passively records the rotation of the lowest-resolution meter dial. This module adheres to the face of the existing meter register and produces a pulse that is compatible with a number of existing AMI systems.

RESULT: The SmartSynch OPM provides a cost-effective solution allowing the Tin Case Gas meters to be integrated into the Con Edison AMI strategy.

Voltage Monitoring

Xcel Energy, SmartGridCity™, Boulder, CO

GOAL: Map energy usage trends to help C&I customers optimize consumption. Provide Demand Response incentives to customers to reduce energy usage during peak demand. Help Xcel to capture tax incentives by reducing their carbon footprint. Support their large-scale intermittent renewable generation initiatives (solar panels, etc.). Enable real-time notifications of power outages to Xcel Energy dispatch teams to ensure on-site power quality. Monitor voltage levels in power provided to customers to ensure that they meet regulatory standards.

SOLUTION: A3, SENTINEL, and kV2c SmartMeters, SSI Data Acquisition System, and the GPRS network.

RESULT: The SmartSynch solution is being deployed on the University of Colorado campus, on municipal buildings, and on select C&I buildings in the city. This will enable Xcel to extend the benefits of SmartGridCity to their larger customers and give them the opportunity to manage their energy consumption, reduce CO₂ emissions and take advantage of pricing benefits. Xcel can also receive power-outage notifications and ensure that voltage quality standards are met for these customers in real-time.

About SmartSynch: Headquartered in Jackson, Miss., SmartSynch has been developing successful Smart Grid Intelligence solutions for the utility industry since 2000. The company's clean-tech innovations in the two-way delivery of real-time energy usage data over public wireless networks, in lieu of private network build-outs, have to date simplified SmartMeter deployments for 100 major North American utilities, while enabling green-energy initiatives and delivering significantly higher Returns on Resources.

Unlike proprietary, closed-architecture solutions, SmartSynch's SmartMeters represent future-proof investments in technology. The standards-based IP connectivity enabled in every SmartMeter deployed makes them adaptable and remotely upgradable to support today's sensor and communications needs, as well as tomorrow's opportunities, better than any alternative.