Discover the Secrets Behind Successful Smart Grid Deployments

eMeter

May 24, 2010

Introduction

Some utilities are facing sizable challenges in deployment of their smart meter programs. Aside from internal organizational, technical and process challenges, consumers in some states are up in arms about what they perceive to be meters that don't work, have little to no benefit to them and ultimately result in higher bills. State senators have become involved looking to certify that the meters are accurate and, in some cases, there are class-action lawsuits and petitions attempting to halt deployment of meters.

While these challenges are quite public in California and Texas, there are other areas of the country and world that are seeing steady success with smart meter rollouts. For example, in Canada, Toronto Hydro has successfully rolled out meters and is doing interval billing for Time of Use pricing to over 500,000 customers. Rather than seeing irate customers, the utility is winning awards for a grassroots communications campaign and reliable meter rollout. In Florida, JEA has had smart electric and water meters for years and enjoys high customer satisfaction. Pepco has rolled out a pilot program, PowerCentsDC, with meters and software in Washington, DC and has seen remarkable satisfaction rates among customers when combined with new pricing programs and customer energy management software. Vattenfall, one of the largest electricity providers in Europe, has had smart meters operating in Scandinavia for years, and is able to benefit from advanced applications to measure network loss and take action to improve efficiency.

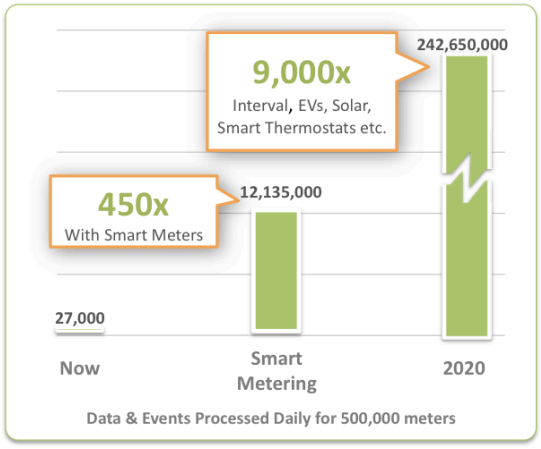
Consumer engagement software provided to PowerCentsDC participants

What separates the successful smart grid deployments from the challenged ones? It comes down to smart choices in technology, marketing, and planning. This report focuses on smart technology choices and in particular, software, and how some utilities are leveraging this for their success.

Choosing an open, flexible software platform is a key to success

Successful utilities that are billing off their smart meters and operating their smart grids effectively tend to have an open, flexible software platform upon which to develop or purchase applications such as MDM/Meter to Cash, connect/disconnect automation or a web portal.

So why does a platform matter? A number of utility vendors provide meter-to-cash applications that enable utilities to take smart meter data, validate and estimate it, and then prepare it for billing. This core functionality is required for accurate, reliable billing. However, most vendors do not provide a scalable platform that will ensure billing remains reliable as the number of meters increases significantly for mass-market rollouts or the intervals increase from daily to hourly.



With the smart grid, meters will transmit detailed customer usage data to you every day and sometimes even in near-real time – a massive volume of data compared with the one piece of data per customer per month you traditionally receive. To turn that data into usable information and to use it as the basis of a customer relationship, you need a robust solution to collect and manage the data, integrate it with other systems you already use, turn it into intelligence and apply it to capabilities you never could have when you had just one touchpoint with customers per month.

Without a battle-tested platform that can scale from pilot to production and can efficiently process data in real time and automatically handle the inevitable exceptions and events such as meter provisioning, tampering, theft, switches, outages and data gaps, you can end up with a mess, and be scrambling to continually patch it.

Critical requirements for Smart Grid platforms

To ensure short and long-term success, make sure your smart grid software platform has the following:

- **Scalable architecture** that enables reliable, accurate data processing and exception handling for the extreme growth in data from smart meters and devices connected to the grid. While today it might be about the data from smart meters, utilities must also consider how to handle data and events from other grid connected devices including electric vehicles, solar and wind generation, distributed storage, smart thermostats etc. And when combined with demand response programs this data will begin to increase dramatically.
- **Real-time transaction** capabilities to enable a new level of customer and operational responsiveness to requests, alerts, exceptions and other events. Utilities must be able to deliver more responsive service and harness the real-time nature of the Smart Grid. For example: high priority events such as a meter reset or a tamper event can be published instantly to initiate meter investigations.
- **Device independence** to enable your grid to work with any AMI system or grid-connected device preventing vendor lock in. The smart meter landscape and technology change will continue to move ahead very quickly and it is critical to maintain the ability to identify and secure the best technologies and prices by flexibly supporting all AMI networks and grid-connected devices.
- **Web services** integration layer to enable communication to enterprise systems without upgrading or customizing the system themselves. Utilities need to extend legacy investments by insulating them from one-off integrations and ever-evolving technical and regulatory changes.
- **A data model** that integrates and leverages all of your enterprise data so that the key information exchanged are successfully managed across discrete enterprise systems such as billing, workforce and outage management. Utilities must seek out a model that will extend these enterprise solutions by unlocking the data silos for process automation across the organization. The secret is to make all data, from your enterprise systems to your AMI and on-premise networks, available to a new generation of smart grid management applications.
- **Standards-driven open APIs** to enable utilities or third parties to easily write innovative applications that function with high performance. It is important that you can adapt to evolving needs by developing and extending maintainable applications so that when a new AMI system is updated or installed you can be assured that it will still operate successfully. Whether it be a new estimation technique or new rate structure, make sure it can be quickly programmed and implemented using standard skill sets and best practices.
- **A suite of applications** that take you beyond meter-to-cash to realize the full benefits of the smart grid such as a consumer portal to foster utility-consumer collaboration to reduce peak demand and encourage energy efficiency and applications to streamline all aspects of smart meter operations from deployment, to meter process automation and distribution analysis, for the residential mass market as well as commercial and industrial (C&I) environments.

A critical choice

Utilities face a critical choice - whether to go down a standalone or thin MDM path or select a scalable platform with mission-critical metering, operations and consumer engagement solutions that's also open and designed for custom third-party applications.

Deploying a smart grid around a thin meter data management solution creates a foundation that lacks the key elements to enable it to scale and to tie to your current enterprise applications. This often results in costly software patches for your enterprise apps that must change every time you add a new type of meter or device to the grid. It means exceptions are handled manually and events are processed with primitive batch processing that delays your response to events such as meter exchanges, data communication errors, theft, tampering that can inundate the utility. Ultimately this approach limits your ability to adapt to new technology or regulatory change and doesn't bring you the necessary insight to run an intelligent utility. Utilities that chose standalone MDMs are either failing or re-evaluating their choices to go from pilot to full production.

What does this mean?

Simply put, you need an integration platform. The infrastructure that enabled utilities to interact with consumers on a monthly basis won't cut it anymore – instead, an underlying integration platform is required that supports on-demand, two-way communications and data transactions, supported by information processed in real-time.

As many in the utility business understand, the smart grid is not just about automating data collection for billing purposes. Rather, it opens the door to a whole new way of engaging directly with customers, increasing energy and water usage efficiency, enabling demand response programs, providing customer self-service tools, reducing outages and more.

As a result, it is critical you can integrate your back-office systems, provision meters, certify accuracy, offer applications such as consumer portal capabilities to customers early in the process--even off of old meters, to give customers value and be supportive of smart meter initiatives.

Smart Grid Software Check List

In order to have a successful deployment, a software solution must meet the following key criteria:

- ☐ **Be an open, scalable platform**
- ☐ **Provide real-time transactions**
- ☐ **Communicate with any grid connected device**
- ☐ **Integrate with your enterprise systems**
- ☐ **Enable 3rd party applications**
- ☐ **Adapt to evolving business processes**
- ☐ **Have proven deployments at scale**
- ☐ **Provide pre-built suite of applications that go beyond MDM**

Follow best practices

While this report focuses mainly on technology, we'll also cover some best practices in one of the case studies. Here you will see how important it is to proactively educate the customer on smart meters through a variety of channels, including a consumer portal, and programs that not only cover why this new technology is important but illustrate the real benefits to the customer.

With new technology, it's essential to have an open, scalable platform that will grow as your business grows. Not only to handle data and events from smart meters but from new grid connected devices such as electric vehicles and distributed power systems. You need to be able to take advantage of new meters and technology without billing disruption and be confident that it will adapt seamlessly to work with your existing back office systems without the need for custom one-off solutions that quickly become unmaintainable and are often the cause of the many problems utilities are facing today.

The case studies included in this report show how some of our customers are using best practices and rely on the key capabilities of eMeter technology to ensure their smart grid success and pave the way to new business opportunities and collaborative partnerships between suppliers and consumers.

Centerpoint Energy

Quick deployment, operational efficiencies, major savings

CenterPoint becomes the first to provide residential interval data for TOU wholesale market settlement

CenterPoint Energy is an $8B energy delivery company based in Houston, Texas, serving more than 5 million electric and gas customers. CenterPoint's service area includes the competitive Texas electric market as well as natural gas sales and delivery in Arkansas, Louisiana, Minnesota, Mississippi Oklahoma, and Texas

Getting the Smart Grid ready for operational efficiencies and TOU pricing to optimize generation

CenterPoint's Automation and Intelligent Grid Project to pilot distribution management required an interface between information systems with AMI data. Subsequently, CenterPoint received approval from the Texas Public Utility Commission (PUC) to install over 2 million electric smart meters, related communication equipment, and back office systems. This expansion meant CenterPoint's system interface requirements expanded to include supporting multiple Retail Electric Providers (REPs), meter suppliers, and networks that are inherent to Texas' deregulated market. This functionality is essential to strategically positioning the company to support future smart grid needs.

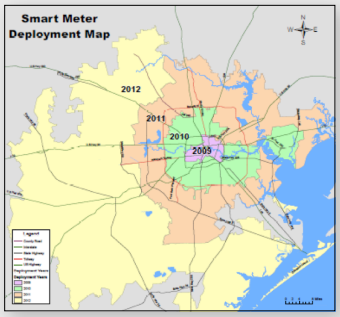
EnergyIP platform connects systems, manages data and brings smart grid benefits to REPs

In August of 2009, CenterPoint successfully deployed eMeter's EnergyIPTM Platform and Operations Applications as a foundational component of their Advanced Metering System (AMS). Powered by EnergyIP, CenterPoint's AMS is able to automate both meter reading and electric service connection and disconnection. With its real-time transaction processing and open platform, EnergyIP allows CenterPoint's system to enable REPs to offer new products and services to their customers such as time-of-use rates, which encourage shifting electricity demand from peak to off-peak times when costs are lower, thereby helping to offset the need to build new power plants.

The first utility in the world to begin providing residential interval data for wholesale market settlement

CenterPoint is using EnergyIP to process and validate 15-minute interval usage data, providing a platform that enables REPs to offer innovative pricing models and services such as time-of-use pricing. In the future, EnergyIP will also route load control and pricing signals to smart in-home devices, bringing more innovation to the competitive Texas marketplace.

CenterPoint Energy



- $8B Investor-owned utility based in Houston, Texas
- Distributes wholesale energy to over 90 retail electric providers (REPs)
- Serves more than 5 million electric and gas customers
- Smart meters deployed and operational: 310,000
- Targeted deployments by 2012: over 2,100,000

> *"We selected eMeter for our rollout based on the excellent performance of their software in supporting our smart meter pilot deployment. In proving their capabilities, eMeter has shown they can support our ambitious plan to provide interactive meters to all of our customers"*

Don Cortez
Division VP, Regulated Operations Technology, CenterPoint Energy

Goals

- Scale to manage 15 min. AMI data from 3.1 million meters.
- Interface between AMI networks and enterprise information systems.
- Optimize operations through remote connect/disconnect and route HAN commands.
- Serve multiple Retail Electric Providers, meter suppliers, and networks.

Through EnergyIP, eMeter's applications automate handling of electric service connection and disconnection, eliminating the need for expensive truck rolls (and their associated carbon emissions) and reducing the time required for customers to have new electric service connected or to switch REPs. CenterPoint also plans to use eMeter applications to provide outage and restoration event services to support CenterPoint's Outage Management System.

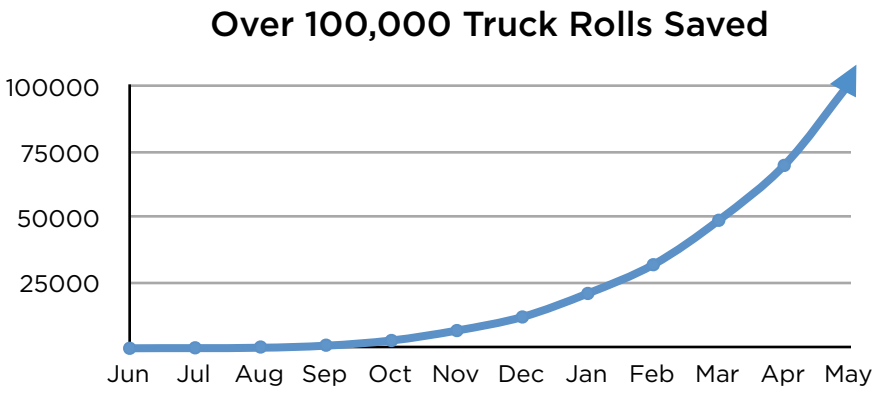
eMeter's software plays a critical role in CenterPoint's upgrade to a complete Smart Grid. It will encourage greater energy conservation by giving Houston-area electric consumers the ability to better monitor and manage their electric use and cost in near real-time.

Results bring major benefits to CenterPoint, REPs, consumers, environment

CenterPoint's aggressive approach to selection, pilot and rollout is a model for the industry and reinforces how the right strategy, design, technology and platform-orientation deliver results across the enterprise and down the supply chain. CenterPoint's implementation has resulted in the following benefits:

- Operational/ROI: Automating the execution of connect and disconnect service order saves CenterPoint an average of 1,100 truck rolls daily and over 100,000 to date.
- Consumers: Several Retail Electric Providers (REPs) are already piloting or offering Time-of-use (TOU) pricing plans
- Environment/ROI: Enabling REPs to extend TOU pricing increases the efficiency of existing generation and delays the expense of building new power plants. If 250,000 Houstonians reduced their peak summer usage by 25 percent, two to four fewer peaking power plants would need to be built.
- Scalability: Providing bill-quality 15-minute-interval data for over 200,000 service delivery points

As CenterPoint is able to integrate to future AMI devices and network needs and add powerful applications to their EnergyIP platform, the company is well positioned to serve REPs and their customers efficiently in the future.



> *"CenterPoint Energy is committed to providing REPs with the tools they need to offer an array of advanced metering services to their customers. eMeter's software provides metering and operational information that we need for a successful AMS deployment, and we are beginning to see improvements in meter-related automation and a reduction in truck rolls."*
>
> **Kenny Mercado**
> Division Senior VP, Smart Grid Deployment for CenterPoint Energy

eMeter Products

- EnergyIP Smart Grid Data Integration Platform with real-time VEE (validation, estimation and editing)

EnergyIP Extensions:

- Automated Device Provisioning & Asset Tracking

Application Modules:

- Meter Operations
  - Remote Connect/Disconnect Automation
  - Deployment Planning and Management
- Outage Event Management
- Device integration: Itron
- Enterprise integration: CIS, OMS

Results

- 100,000 truck rolls saved over 8 months.
- The first using residential AMI data for wholesale market settlement.
- Increased generation efficiency.

Wabash Valley Power

Bringing the Smart Grid to challenging environments – the Generation & Transmission Co-Op

A flexible platform integrates multi-organizational co-ops

Wabash Valley Power provides electric G&T services for 28 member co-ops serving approximately 430 wholesale delivery points and 380,000 retail electricity consumers. As part of its charter, Wabash Valley continually seeks ways to manage energy costs while providing its Members advanced services. A number of Wabash Valley members have embraced smart metering, having deployed a range of smart meters in their networks, including both AMR and AMI. To gain the maximum benefit from co-op members' smart meter investment, Wabash Valley is deploying a smart grid data management solution from Siemens and eMeter with a platform that will integrate member meters with backend IT systems for end-to-end Smart Grid management capabilities.

The Siemens/eMeter solution is built on the EnergyIP platform and brings a wide range of current and future smart grid capabilities and benefits to Wabash Valley and its Member co-ops that were never before possible. The system will provide greatly enhanced visibility to consumption and load patterns, enabling Wabash Valley to more effectively manage energy costs while providing Members and their customers advanced services. With a common data repository and process hub, the solution provides Wabash Valley economies of scale and system oversight as they collect, validate, manage and distribute data to each Member. Additionally automated workflows to support member business processes can be centrally defined, implemented and maintained.

Leveraging Demand Response in the wholesale market

Wabash Valley will use Demand Response as an asset in its portfolio to better manage power supply cost. By using the system to collect hourly consumption information from those who participate in the Demand Response program, Wabash Valley can reliably verify its MW reduction. which can then be entered into the MISO and PJM wholesale markets as a resource. The analytics of the Siemens/eMeter solution provide the ability for Demand Response events to be measured and verified for wholesale market interaction.

Empowering members to engage consumers in DR

From a centralized system serving its Member co-ops, Wabash Valley can power web-based consumer engagement portals for each Member's unique end customers.

This system enables the co-op to provide their customers with timely usage and associated cost data as well as tips, tools, alerts and messages to help them take control of energy consumption and lower their monthly bills. Consumer engagement can be used to promote demand response programs by increasing customer participation. In addition, automated alerts and messages can be used to motivate users to conserve during peak periods. These web-based applications can help the co-op both communicate and collaborate with consumers to actively manage demand as well as increase customer satisfaction.

Wabash Valley Power
energy smart

- Generation & transmission wholesale electricity provider
- Serves 28 distribution cooperatives and their 380,0000 customers
- Provides power to distribution cooperatives in Indiana, Illinois, Michigan, Missouri and Ohio

> *"The fact that EnergyIP was written from day one with a multi-org focus was a big plus for us. While Wabash Valley has specific plans for how we anticipate using the system at the G&T level, we work with 28 distribution cooperatives that can also benefit from the system's functionality."*
>
> **Cathy Ellis**
> V.P. Technical Services
> Wabash Valley Power

Smart Grid ready architecture to integrate diverse AMI/AMR and distributed enterprise systems

Wabash Valley currently supports 28 members, each with varied business requirements and 4-5 AMR and AMI metering systems and multiple customer information systems including NISC and SEDC. By employing Siemens best-in-class PMI-certified project implementation processes, EnergyIP is seamlessly integrated into these systems, which eliminates the cost complexity of custom built point-to-point integration and maintenance. As technology needs change, the system can evolve without re-tooling. In addition to multiple technologies the EnergyIP platform can support multiple business processes and data views, each tailored to authorized users, eliminating the expense and complexity of deploying and managing multiple systems at each co-op Member Site.

A scalable platform to reduce IT complexity and adapt to change

By deploying EnergyIP, an adaptive, real-time integration platform, Wabash Valley brings visibility and event-driven management to their grid, driving down cost and managing demand while increasing Member and end consumer satisfaction. As a flexible and open platform, EnergyIP reduces IT complexity and helps "future proof" Wabash Valley against changes in technology and business operations.

eMeter Products

- EnergyIP serves as common data repository and process hub
- Integrates data from 4-5 AMI/AMR systems
- Brings Smart Grid capabilities to Wabash Valley, extends to Member co-ops

> *"We were looking for solutions that offered demand response measurement and verification tools, both of which are considered vital to the success of our program. The Siemens/eMeter MDM does just that, in addition to offering a vast array of other functions that our Member cooperatives are eager to begin using. Siemens/eMeter has developed a product that satisfies both the needs of the G&T and its Member Systems, and that's incredibly powerful."*
>
> **Andrew Horstman**
> Manager of Load Response
> Wabash Valley Power

JEA

Making the jump from AMR to operating Smart Grid

JEA leveraged their AMI investment into major gains-- from operations to customer service

JEA is the largest community-owned utility in Florida and the eighth largest in the United States. It traces its origins to the electric system established in 1895 by the City of Jacksonville. JEA currently serves more than 417,000 electric customers in Jacksonville and parts of three adjacent counties. JEA's water system serves more than 305,000 water customers and 230,000 sewer customers in Northeast Florida.

Expanding from AMR to a smart grid platform with multiple applications

As a pioneer in the utility industry, JEA embarked in 2004 on a search for ways to extend the value of its smart metering investments beyond automated meter reading. After a thorough review and prioritization of business needs JEA management decided on requirements to address the following critical areas:

- Improve customer service and billing exception handling by providing customer care consultants with easy access to current usage history.
- Automate meter operations in order to reduce field service costs associated with physical disconnects, manual meter reading and meter re-reads.
- Significantly enhance outage management capabilities
- Provide multi-vendor support for meter reads from Landis + Gyr AMR network, Itron MV90 and Itron handhelds.
- JEA also set disciplined budgets for the initiative and aimed to minimize impact on existing IT infrastructure.

A platform to bring it all together

At the conclusion of the RFP process, JEA selected eMeter to help realize its vision. JEA deployed the EnergyIP platform to serve as a centralized usage data repository (MDMS) and foundation for applications for the smart grid. EnergyIP integrates with JEA's enterprise systems including customer information (CIS), mobile work management (WMS), outage management (OMS), handheld meter reading, transformer load management and distribution planning.

JEA's system also encompasses equipment, asset and administrative data storage; automated data, and service management processes as well as tools to enable utility business process improvements.

- Community-owned municipal power, water and sewer utility.
- Distributes power to 417,000 residential and C&I customers.
- Operates in Jacksonville and parts of three adjacent counties.

Goals

- Optimize operations by reducing field service costs
- Enhance customer service with online access to online data
- Support for multiple meter vendors
- Support for both water and electric

> *"We are extremely pleased about implementing this new data and system management functionality with the experienced team of eMeter personnel. A system such as this is absolutely necessary to get the greatest value out of our fixed network AMR system."*
>
> **Jim Dickenson**
> Chief Executive Officer
> JEA

An open platform brings applications to customer service

In order to increase customer service and satisfaction, JEA built a Customer Service Portal application to interface with the EnergyIP platform so JEA representatives can quickly and conveniently access all the relevant information for any customer at any time. Capabilities extend to both electric and water daily consumption for the last 14 months including graphs to compare month-over-month consumption.

Features of the MDM Customer Service Portal include:

- Daily or interval data for electric and water consumption
- Historical views of customer usage activity
- Real-time meter reading for validation and current usage status
- Meter event tracking including outages, theft indications and read used on bill

Reports for making good decisions

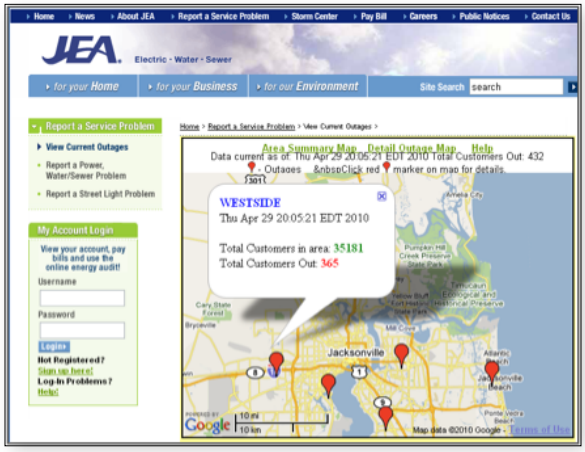
With EnergyIP providing centralized interval and daily read data to critical systems, JEA management is able to make better, more accurate decisions that extend into virtually all areas of operations. Examples of the visibility EnergyIP brings JEA include:

- Revenue protection reporting
- Meter performance exception reporting
- Excessive consumption reporting

EnergyIP unlocks the data and offers visibility to all departments at JEA, bringing critical and timely reporting to manager's desktops.

Getting it right the first time: confirming restoration and verification with one truck roll

Managing outages and restoration efficiently begins with knowing where they are--quickly. While minimizing outage duration is critical, costs can skyrocket without the right systems to confirm restoration and reduce time back in the field.



JEA customers have continuous Web access to the latest outage status.

For example, when a crew restores a transformer, JEA is able to verify restoration down to the meter by sending a request from EnergyIP to

eMeter Products

- EnergyIP Smart Grid Data Integration Platform with real-time VEE (validation, estimation and editing)

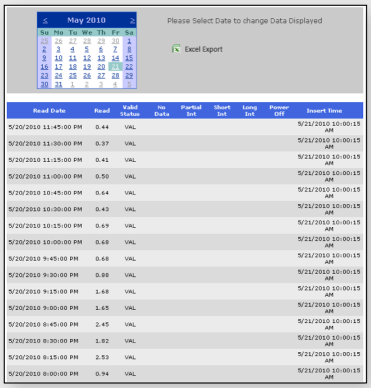
EnergyIP Extensions:

- Data Aggregation

Application Modules:

- MDM/Meter-to-Cash
  - Advanced Billing Determinants
- Meter Operations
  - Remote Connect/Disconnect Automation
  - Deployment Planning and Management
- Outage Event Management
- Device integration: Itron, Landis +Gyr
- Enterprise integration: Oracle CIS CGI FMS/OMS/WMS, custom-developed TLM

Interval Data Reporting and Management Tools



Premise summary screen shot showing interval data for electricity

confirm restoration. Since this real-time verification happens while the crew is in the field, they are able to confirm the restoration and eliminate the need for a return truck roll for a fix that was unsuccessful.

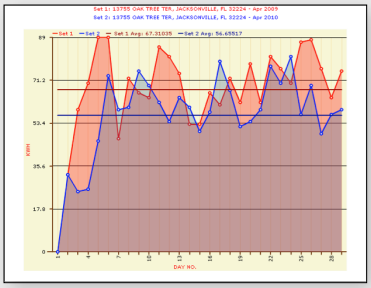
Getting results in all areas of the business

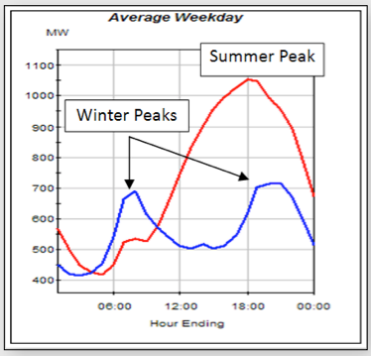
While AMI meter data is often considered a burden to tame and manage, JEA's approach to building out the Smart Grid was from a perspective of designing a system to leverage this critical information to benefit as many areas of the enterprise as possible. JEA's deployment began in 2001 and to date they've experienced the following performance gains:

- Lowered bill investigation costs.
- Higher customer satisfaction from improved zero-defect billing status, quicker response to inquiries, increased service flexibility, and on-line billing estimates.
- Reduced field service costs associated with physical disconnects, manual reads and re-reads.
- Increased effectiveness of service risk management through meter tamper flags, usage alerts, and on-demand reads.
- Increased utilization of distribution assets.

With compelling results thus far, JEA continues to innovate on their vision for the smart grid, with development proceeding on a self-service customer portal as a series of additional operational refinements made possible by their investments in the grid.

Interval Data Charting & Analytics Capabilities





Results

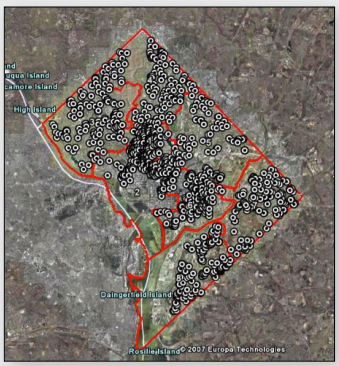
- Reduced bill investigation and field service costs
- Improved customer satisfaction
- Increased effectiveness of service risk management
- Increased asset utilization

Pepco's PowerCentsDC

An award-winning pilot validates the combination of fast implementation, dynamic pricing and web-based consumer engagement result in load reduction and high customer satisfaction.

Pepco delivers electric service to more than 778,000 homes and businesses in the District of Columbia and its Maryland suburbs. In July 2008, Pepco launched the first pilot in the electric utility industry of a fully integrated smart meter and smart thermostat program, including critical peak pricing, peak time rebates, and hourly pricing.

PowerCentsDC was an ambitious pilot program conducted in the D.C. area to demonstrate the many benefits of a smart grid and validate consumers' response to dynamic pricing. The program was sponsored by Smart Meter Pilot Program, Inc. (SMPPI), a non-profit organization comprised of the Consumer Utility Board, the District of Columbia Office of the People's Counsel, the District of Columbia Public Service Commission, the International Brotherhood of Electrical Workers and Pepco.



- Project composed of Pepco, Smart Meter Pilot Program, Inc., eMeter, and subcontractors providing smart meters, smart thermostats, and services (Sensus, Comverge, and Honeywell)
- Involved ~900 households in Washington D.C.
- Deployed smart metering, thermostats and web-based consumer engagement
- Tested various dynamic pricing plans
- Measured effects on electricity usage

Can dynamic pricing and consumer engagement affect consumer behavior?

PowerCentsDC equipped a sample of residential customers throughout Washington, D.C. with smart meters, smart thermostats and different smart energy pricing plans in order to measure the impact of these technologies and pricing programs on their behavior and energy usage.

Specific goals of the program were to measure and evaluate the following:

- Understand the affect of different dynamic pricing programs on consumer behavior
- Determine what combination of software and hardware enables effective peak demand reduction
- Gauge customers' acceptance of various pricing plans

Empowering the Consumer

eMeter partnered with Pepco and SMPPI to deliver, operate, and manage a fully-integrated solution that included smart meters that wirelessly reported hourly power consumption every day and smart thermostats that automatically managed air conditioning and heating to reduce peak demand and total energy usage. Consumers were billed on different

> *"We chose Energy Engage over other options because of its compelling, consumer-oriented experience that pushes the envelope in terms of empowering our customers to make positive changes. We believe PowerCentsDC is an important step forward as it demonstrates the potential benefits of dynamic pricing for the consumer."*
>
> **Rick Morgan**
> DC Public Service Commissioner
> and SMPPI chairman

pricing plans such as Critical Peak, Peak-Time Rebates, and Hourly Pricing that provide financial incentives that enable consumers to save money by reducing energy use during high-cost peak demand periods.

eMeter's consumer engagement software solution, Energy Engage™, shown above, was deployed so customers had easy access to relevant, up-to-date information regarding their electricity usage, costs and their carbon footprint. Energy Engage fostered greater consumer awareness and engagement through both the online energy 'dashboard.'

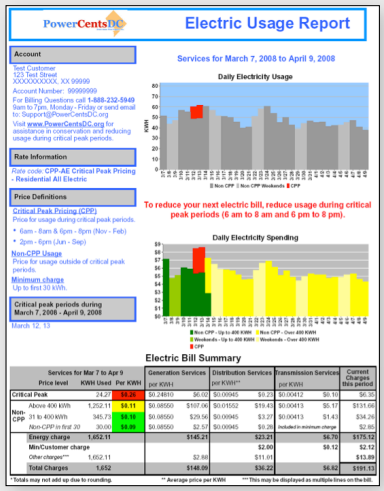
Energy Engage was implemented through eMeter's SmartStart methodology, which is designed to speed deployment and effectively transfer skill through implementations within as little as 10 weeks. Furthermore, the flexible architecture of the eMeter platform allows utilities to seamlessly add capabilities, scale performance, and integrate the latest technologies to capitalize on new business opportunities and respond to regulatory change.

SMPPI selected eMeter to be the overall program manager. This comprised all program aspects, including marketing the pricing plans and online services to consumers, helping to educate and speed adoption within the participant community.

PowerCentsDC Pilot Results

Consumers responded decisively to the PowerCentsDC program with behavioral changes that cut peak and overall usage while reporting high satisfaction with Energy Engage and increased satisfaction with Pepco, their energy provider.

- Consumers reduced summer peak demand in response to the dynamic pricing options. The critical peak pricing group, which



Monthly energy usage reports provided to each participant

Refrigerator magnets provided per participant's rate plan

> *"We were thrilled to see results of the eMeter software in such a short period of time. eMeter's best practices and ability to implement quickly allowed our utilities to deliver a compelling user experience that enables their customers to make informed decisions and changes in their consumption habits to reduce peak demand."*
>
> **Rick Morgan**
> DC Public Service Commissioner
> and SMPPI chairman

allowed customers to be notified the day prior to critical peak price cut their overall energy consumption between 22 and 34 percent. Participants with smart thermostats achieved demand reductions of up to 50 percent.

- In addition to reducing peak demand on critical peak days, participants also saved an average of 8 percent on their electric bills during the testing period.
- When polled, 91 percent of customers indicated they were very satisfied or satisfied with the Energy Engage application and 63 percent said they became more satisfied with their energy provider as a result. Ninety percent of participants preferred their new dynamic pricing plan over older pricing plans.
- Sixty-three percent of respondents indicated that the program helped motivate them to use less electricity overall and 68 percent indicated it made them more aware of their environmental impact of their energy usage.
- In December 2009, the D.C. Public Service Commission approved the rollout of smart meters to all customers in the District, and, in April 2010, Pepco proposed an associated dynamic pricing rate plan to the D.C. Public Service Commission that was formulated from the experience gained from the PowerCentsDC program.

The PowerCentsDC program won the "Best Pricing and Demand Response Program" award from the Association for Energy Service Professionals (AESP).

PowerCentsDC

"Energy Engage enhanced the PowerCentsDC program by enabling consumers to take better control their power usage and manage it to best save money or protect the environment. By placing usage and cost in the context of targeted energy savings tips, Energy Engage encourages cost savings. Its notification services maximize convenience – and its Web 2.0 features, especially community, make it fun."

Sam Klepper
Chief Marketing Office
eMeter

eMeter Products

- EnergyIP Smart Grid Data Integration Platform with real-time VEE (validation, estimation and editing)

Application Modules:

- Energy Engage
  - Consumer Web Presentment, Advanced Analytics

Deployed through SmartStart quick implementation methodology

Results

- Critical peak pricing reduced 22% to 34%
- Smart thermostats reduced usage up to 50%
- 90% preferred dynamic pricing
- Average of 8% reduction in energy costs
- High 91% satisfaction with Energy Engage
- Increased satisfaction with Pepco among 63%
- Results used to formulate new Pepco pricing plans

Smart Grid success depends on making the right choices

While some Smart Grid initiatives have encountered challenges and undesirable publicity, others have quietly progressed into production and delivered on the promise of higher customer satisfaction and improved operating efficiencies. The utilities profiled above fall into the latter category and demonstrate Smart Grid success under a variety of regulatory contexts in multiple countries. These industry innovators have delivered novel new information services to their customers, reduced operating costs and proven that consumers respond favorably to well-planned and executed demand response programs.

One of the common key factors that made the utilities profiled in this report successful is that they relied on EnergyIP, a platform designed to satisfy the crucial requirements for the smart grid. As highlighted in the introduction, smart metering can generate anywhere from 450 to 9000 times the data of analog metering--a truly staggering amount of data. Standalone or 'thin' MDM solutions may support data management in pilot environments, but they can't scale to deployment, don't provide flexibility to support the ever-expanding list of grid devices and won't provide the deep integration with utility enterprise systems that enable a utility's smart grid to become more than just automated meter collection and billing. While the meter data management system is a small portion of the overall cost of a smart meter deployment, it sits in a strategic position in your grid and the type of MDM can have major, lasting impacts on utilities and their customers.

As stated in the introduction, utilities face a critical choice - whether to go down a standalone or thin MDM path or select a scalable platform with mission-critical metering, operations and consumer engagement solutions that's also open and designed for custom third-party applications.

Unlike a standalone MDM approach, the alternative choice is a solution that features an open, scalable platform along with the MDM that makes the massive amounts of new data actionable. This approach ensures data is processed in real time so you can be more responsive to the needs of the business and your customers, manage, exception handling automatically, and you have maximum flexibility as the market and technology evolves.

The secret is the right technology plus the right timing

Investing in the right smart grid technology opens the door to a whole new way of engaging directly with customers, increasing energy and water usage efficiency, enabling demand response programs, providing customer self-service tools, reducing outages and more. But investing in a platform up front has significant benefits versus pursuing this route at deployment or later.

Successful utilities like the ones profiled in this report invest early and started right with complete end-to-end solution. The value of avoiding mistakes when dealing with hundreds of thousands or millions of customers is inestimable. With the billions being spent on smart meters, government officials and regulators are closely monitoring rollouts and looking for the promised consumer benefits of improved customer service, energy conservation and efficiency, peak demand reductions, and information to manage energy bills. Successful smart meter adopters have emphasized the consumer from the beginning, with a dual focus on operational deployment and implementation and on educating and delivering smart meter programs to consumers.

EnergyIP - The only scalable smart grid integration platform, proven worldwide

The EnergyIP is the platform of choice among utilities worldwide since it was designed to meet the needs of today's utilities and the wide range of utility technology and regulatory environments. EnergyIP is the industry's leading integration platform for real-time Smart Grid data management and is purpose-built for mass-market deployment in heterogeneous and evolving technology environments. EnergyIP brings proven scalability, adaptability and flexibility to the utility enterprise.

Successful Smart Grid deployment is clearly a combination of good planning, smart marketing and wise technology choices. All of the utilities profiled chose eMeter software, but more importantly, they chose a software platform that:

- Is **open** to support rapid, flexible development of innovative applications and business processes using open APIs.
- Delivers **real-time transaction processing** of data and events enabling more responsive customer service & outage resolution.
- Maintains the flexibility to **support any grid-connected device** without impacting software applications.
- Offers **flexible integration** with current enterprise systems, extending the reach of data for new applications, while minimizing impact on existing legacy systems.
- Provides **proven scalability**, enabling them smoothly roll to full production.
- **Future-proofed** with **maintainable applications** so utilities can quickly adapt as grid device technologies and regulatory requirements evolve.
- Accelerated ROI with a **complete suite of well-integrated applications** addressing meter-to-cash, consumer engagement and operations.

Complete Suite of Applications

eMeter's suite of real-time applications provide added operational benefits to the EnergyIP platform and include:

- **MDM/Meter-to-Cash** transforms the traditional meter-to-cash process from a batch-oriented, multiple day process to a real-time, automated on-demand process. eMeter provides the industry's only real-time validation, estimation and editing (VEE) engine and supports time-of-use and critical peak pricing.
- **Consumer Engagement** fosters utility-consumer collaboration to save energy, with custom-tailored programs that drive customer satisfaction, encourage conservation and reduce peak demand.
- **Operations** streamlines all aspects of smart meter operations from deployment, to meter process automation and distribution analysis, for the residential mass market as well as commercial and industrial (C&I) environments.

Make the right choices for the smart grid journey

The smart meter road down which utilities are traveling is complex, rapidly changing, and, above all, new. Success requires experience and understanding of technology, business processes, consumer behavior, and regulatory strategy. Installing large meter quantities--for all its challenges--is the easy part. The tough part and where utilities are advised to invest early to gain as much knowledge as possible, is investing in the right data integration platform, developing end-to-end processes and applications and planning customer programs. Selecting the right technology platform early on in the process delivers a system that every utility needs as part of its smart meter solution. The right platform will support any smart meter hardware and communications decision the utility makes for the near term and the future.

Learn more about eMeter products and services at: www.emeter.com

or contact us at (650) 227-7770 x 141

Leading Utilities Worldwide Depend on eMeter