

New York's Advanced Metering Initiative



New York Independent System
Operator
Environmental Advisory Council
Meeting
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Background

- There are approximately 10 million electric meters in service today in New York State
- The meter is the “cash register” of the electric system
 - Most electric customers receive monthly bills based upon average prices and monthly meter readings or estimated charges
 - Using older electromechanical meters means the actual consumption in each hour or day must be inferred from a class-average load shape assumed to be correct for all customers without interval meters
 - With advanced metering, the customer can be billed on actual consumption in each hourly or daily interval
- The Commission's goal is to empower customers with information and the ability to control their energy costs by responding to peak prices
 - The infrastructure to support time-based rate options must include advanced meters as well as expanded back-office information systems that can manage exponentially greater amounts of usage information, and bill customers on time-sensitive rates

Metering Technology Overview

- Electric meters have evolved technologically to solid-state, multifunction meters that are now employed for many customers
- Automated Meter Reading (AMR) is a relatively simple technology that eliminates the need for each meter to be visually read, thereby decreasing utility personnel costs
 - Radio frequency (RF) technologies transmit meter readings to handheld or drive-by receivers
 - fixed RF networks consist of a series of antennas, towers, collectors, repeaters, or other permanently installed infrastructure
 - Other technologies based on telephone platforms (land-line or cellular) or power line carrier (PLC)
- AMR meters can be upgraded to provide interval meter information through Advanced Metering Infrastructure (AMI)
 - AMI involves hourly or other interval transfer of AMR metered data to a central database, typically over a fixed RF network or PLC
 - The stored data can be used for time-sensitive rates, load profiling, demand forecasting, outage detection, and a variety of other uses

Advanced Metering in New York

- NYS adoption is limited, so far, to installation of interval meters for the State's largest commercial and industrial customers and select installation of AMR meters
 - Hourly meters are currently used for all large use customers, which varies by utility (greater than 500 kW to 1500 kW demand)
 - Large use customers are billed based on day-ahead hourly prices
 - Participation is mandatory, representing over 2,200 customers and over 5,300 MW of load or over 15% of the NYISO's peak load
 - The intention is to move to progressively smaller customers as feasible
- AMR meters have been piloted by several utilities
 - National Grid has fully converted to an AMR system
 - Con Edison is implementing a saturated AMR installation in its Westchester territory

The Commission's Advanced Metering Initiative

- In an August 2006 Order (Cases 01-E-0165, *et al.*), the Commission noted recent developments in electricity markets (e.g., price increases and volatility, need for significant T&D investment and associated environmental impacts) and determined that a change in policy regarding the development of advanced metering was needed
- Electric utilities were directed to file comprehensive plans for the development and deployment of advanced metering systems, where feasible and cost effective, for the benefit of all customers

Plan Filings in Brief

- NYSEG/RG&E is seeking fast-track approval to launch a system-wide replacement of solid state meters capable of AMI features
- Con Edison/O&R propose pilots in Queens (Long Island City), Westchester, Bronx, Manhattan, and O&R, totaling 500,000 meter points
- National Grid plans a pilot (possibly in Albany) to start in 2008. The company is already developing a US/Grid-wide Meter Data Repository platform
- Central Hudson wants the PSC to hold collaboratives to develop statewide standards and develop technical and rate design solutions. In the meantime, it proposes to conduct a small scale (5,000 meter point pilot), beginning later this year

Demand Response/Environmental Benefits

- It is expected that advanced metering would produce more elastic retail demand, which would show up in wholesale demand
 - Potential for increased interest in time of use rate structures
 - Demand response capability typically between 3% to 7% of peak demand
 - Low advanced metering penetration presents a barrier to greater expansion of price responsive demand response, particularly amongst mass market customers
 - AMI may allow the NYISO to “see” loads smaller than 1 MW so that smaller customers can bid into the DR programs (this would be a significant benefit)
 - Benefits associated with demand response can improve advanced metering cost-effectiveness – important for Commission approval
- Positive environmental benefits
 - Lowered consumption
 - Peak reduction
 - Avoiding construction of new peakers
 - Hastening retirement of older, marginally economic, dirtier plants

Other Wholesale Market Benefits

- To determine what each LSE is ultimately charged by the NYISO, all of the individual meter readings for each retail customer within the LSE's customer base must be read and totalized
 - It often takes months before retail customers' meter readings are obtained
 - NYISO utilizes an estimation process based on forecasted load to render a monthly invoice for wholesale market purchases, with an opportunity to "true-up" purchases to metered consumptions sometime later
 - Among NYISO's strategic objectives is to reduce the settlement period (up to 9 months, 25 days)
- Settlement period reductions would be facilitated by new metering policies and technologies
 - If all customers were equipped with interval-based, telemetry metering, the NYISO could shorten its settlement cycle to a near real-time basis
 - Shortening process for allocating losses would also have to be addressed
- FERC has an interest in allowing demand-side resources to offer ancillary services such as Operating Reserves and Regulation Services
 - Providing these ancillary services would require advanced metering

Issues and Problems

- Difficulty in demonstrating positive net benefits
 - Offsetting savings mostly result from reduced meter reading and other utility O&M costs
 - In general, system-wide implementation would not be cost effective without consideration of customer/societal benefits, which are harder to quantify.
 - Some of the utilities have attempted to identify and quantify these benefits in their meter filings
 - Research is needed on cost-effectiveness and how to measure demand reductions
- Limited capability of utility “back-office” systems required to process meter data and prepare customer bills
 - Billing customers based on hourly usage (versus monthly) adds exponentially to the amount of data required for processing
 - To date, there have been limited trials of meter data management systems capable of handling the volume of hourly readings that would result from taking hourly readings of mass market customers’ consumption
- Some customers may be unwilling or unable to change their usage patterns, and would face higher bills on a time-differentiated rate
 - Utilities in New York are not permitted by law to mandate time sensitive rate structures for residential customers
 - Further limits the potential benefits of price response and demand reductions that could be derived from wide-scale deployment of “smart” meters
- Disconnect between ESCO retail pricing and market settlement
 - ESCOs will not offer real-time pricing if balancing/settlement is based on deemed load shapes

Next Steps

- Staff is currently meeting with each utility to review and discuss each advanced metering plan
 - Given the huge investment required for utilities to deploy advanced metering on a mass basis, better benefit-cost analyses are required
 - Greater efforts to incorporate harder to quantify societal benefits are needed
 - Plans may need more substantial customer education components to educate and inform customers on the benefits of new metering technologies
- After analyzing each plan, staff will make recommendations to the Commission to approve, modify or reject the individual utility advanced metering plans
 - make any necessary provisions for cost recovery

Questions?

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