New Jersey Energy Master Plan

Strategy Template

2005-2020

Advanced Metering Infrastructure

SUBMITTED BY	
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Objective

1. Eliminate transmission congestion by 2020 to equalize wholesale electricity Locational Marginal Prices.
2. Attain technically feasible electricity efficiency and conservation gains of 19.95 million MWhs by 2020
3. Electricity prices per unit in New Jersey should remain no more than +5% of the regional average.
4. Provide New Jersey with Secure, Safe, and Reasonably Priced Energy Supplies and Services.
5. By 2008, the Office of Clean Energy will develop educational materials and programs about how government and businesses can promote efficiency, renewables and innovative energy policies, such as car-pooling, telecommuting, load management, and other related topics.
6. Achieve a 20 % reduction in the statewide duration of regulated electric utility outages measured as a CAIDI rating by 2020 compared to a three year benchmark CAIDI computed from 2003-2005.
7. Greenhouse Gas emissions reduction

Strategy

Install an Advanced Metering Infrastructure (AMI) for all electric and gas meters on a state-wide basis. The AMI will enable two-way communications among customers, their energy suppliers and utilities on a real time basis. This infrastructure will enable the utilities and energy service providers, in cooperation with the Board to implement products and services such as:

1. Rates that better reflects the real time characteristics of energy prices. These rate structures will provide the pricing signals and usage information that customers can use to better manage their energy usage patterns. Proposed new default rate structures include:

- Time of Use/Critical Peak Price (TOU/CPP) to all residential customers and small business customers with a peak load of less than 150kW.
- Real time hourly price for all business customers with a peak load of >150kW.

2. The implementation and upgrade of direct load control programs that can directly measure and verify all load reductions in real time.
3. The creation of a variety of pricing and service opportunities by competitive energy suppliers for all customers.
4. Future installation of in-home equipment that can automatically respond to price signals communicated via the AMI system.
5. Utilities may be able to provide additional services such a pre-pay meters for some customers. The board would also be able to consider real time pricing options for additional customer groups, which may create additional savings in energy and peak load.

The AMI will also provide operational benefits to utilities. Utilities will be able to ensure accurate meter readings and timely bills to customers.

Responsible Party

In order that utilities have sufficient incentives to deploy networks that support the wide diversity of interests represented by all stakeholders, the investments should be ratebased and recovery approved on a prospective and instantaneous basis to include ratebase rate of return at current rates, depreciation and O&M.

Primary responsibility will fall to the electric utilities of the State. Responsibility for implementation of new default rate structures that leverage this infrastructure will fall to the Board of Public Utilities in cooperation with the utilities.

The suggestions in this document all require very significant capital investment on the part of the utility to provide the vehicle driving the societal benefits for the State in lowering state-wide peak electrical demands and lowering energy usage at non-peak periods. Traditional rate base rate of return regulation relies on a return on and a return of the investment, as well as recovery of the operating and maintenance costs annually. Obviously this new investment will lower annual throughput, suppressing the recovery of previously existing investment, and slow the recovery of this investment.

This new environment requires that the traditional recovery mechanism of throughput needs to be reconsidered, or an algorithm developed to be applied to the consumer's bills to afford the utility's appropriate recovery of existing and future investment as throughput declines. One method to assure appropriate rates is to decouple the utility investment recovery from throughput.

Timeline of action

Once the Board has given its approval for the development of the infrastructure, selection of equipment and systems required could occur within 6 to 18 months. Once all suppliers have been selected, implementation could take from 36 to 60 months, depending on the availability of labor resources and equipment.

Strategy outcome

PSE&G has estimated that default rates could, over time, spur peak load reductions on the order of 1,250 MW/year and behavioral conservation on the order of 200 GWhr/year on a state-wide basis. Such electricity savings would result in natural gas fuel savings on the order of 3 million MMBtu/year and the annual elimination of 175,000 tons of CO_2.

Load control programs will be able to be directly measured and verified.

Reduction in peak load and peak load growth will lower congestion cost to NJ customers.

Customer satisfaction will be improved through the elimination of all estimated meter reads and the improved accuracy of meter reads. Currently, complaints due to estimated or inaccurate meter reads are among the leading complaints received by utilities.

Implementation cost

State-wide cost of infrastructure deployment can be expected to be in the range of $600 to $800M. More accurate estimates will be dependent on specific AMI technologies chosen and functionality of the equipment and communication network. The benefit to society through the value of the peak load reduction and the energy savings has the potential to cover most of the cost for an AMI deployment. When considered with potential operational benefits, this investment would provide net positive benefits to society.

Source of Funding

All utilities would fund the initial investment out of internal funds. The investments should be ratebased and recovery approved on a prospective and instantaneous basis to include ratebase rate of return at current rates, depreciation and O&M. Pre-approval of the regulatory treatment will provide the security needed for timely deployment and development of a robust network design to serve utility and non-utility interests alike.

Indicators

Suggested indicators include:

- Peak load response for all customer classes, and changes in load profiles
- Measured demand response from load control programs
- Tons of CO2 reduction
- Reduction of natural gas for power generation

A. Current state of indicator*:*

Currently, peak load growth is forecasted to be in the range of 1% - 2% on a state-wide basis.

Current direct load control programs lack the ability to directly verify program demand reductions.

Residential and small business BGS customers are currently billed fixed supply prices, providing no incentive to modify usage in response to near term changes in underlying costs.

B. Indicator Projection to 2020

Indicator	**Annual value in 2020**
Peak load reduction	1,250 MW
Energy reduction	200 GWhr
Fuel savings	3 million MMBtu
CO_2 removal	175,000 tons