Incorporating Energy Efficiency in Long Term System Planning

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Roles of the NYISO

Reliable operation of the bulk electricity grid
- Managing the flow of power over nearly 11,000 circuit-miles of transmission lines from more than 300 generating units

Administration of open and competitive wholesale electricity markets
- Bringing together buyers and sellers of energy and related products and services

Planning for New York’s energy future
- Assessing needs over a 10-year horizon and evaluating projects proposed to meet those needs

Advancing the technological infrastructure of the electric system
- Developing and deploying information technology and tools to make the grid smarter
New York’s Energy Efficiency Portfolio Standard

- In 2008, the New York State Public Service Commission authorized the Energy Efficiency Portfolio Standard (EEPS)*
  - Set goals for NYSERDA & State’s Investor Owned Utilities, plus significant contributions from NYPA & LIPA
  - Increased funding for Evaluation, Measurement and Verification
  - Acknowledged importance of EM&V for NYISO’s resource adequacy assessments
  - Created an Evaluation Advisory Group
    - [www.dps.state.ny.us/EEPS_Evaluation.html](http://www.dps.state.ny.us/EEPS_Evaluation.html)
  - Funding & goals authorized through 2011
- In 2011, the PSC will issue new goals for 2012 and beyond.

* NY PSC 07-M-0548
NY Energy Efficiency Goal

15% Energy Reduction by 2015

NY Energy Efficiency Goals - GWh

- NYSERDA & Other Agencies: 8775 GWh
- Building Codes & Standards: 8575 GWh
- Investor Owned Utilities: 5310 GWh
- State Power Authorities: 4225 GWh

Total Goal: 26,885 GWh
NYISO’s System Planning Forecast

- Econometric Forecast
- Energy Efficiency Forecast
  - Guided by program goals, recognizing past program performance
  - Reliance on cost & performance data provided by EE Program Administrators
- System Forecast = Econometric Forecast less Forecasted EE Impacts
Stakeholder Participation

- NYISO reviews current progress and future projections with its Electric System Planning Working Group
  - Composed of all market sectors & state regulatory staff
  - Stakeholders approve forecast used for NYISO’s biennial Reliability Needs Assessment
- NYISO consults regularly with individual utilities, state agencies & power authorities
- NYISO participates in the state’s Evaluation Advisory Group
Forecasting EE Impacts

- **Bottom-Up Approach**
  - **Segment by geography & Program Administrator**
    - Participation rates differ by geography
      - Multi-family housing units concentrated downstate
      - Lower air-conditioning saturations upstate
  - **Segment by measure type**
    - Peak impacts differ by measure type
  - **Avoid double-counting of impacts**
    - CFLs & appliance or motor rebate programs will offset impacts of new building codes & appliance standards
Energy Efficiency Forecast Equations

\[
\text{GWH per Yr} = \frac{(\text{Budget } \$\text{M/yr}) \times (\text{fraction spent})}{(\text{Cost } \$\text{M/MWh}) \times (\text{Net-to-Gross ratio}) \times (1 \text{ GWh} / 1000 \text{ MWh})}
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\[
\text{MW per Yr} = \frac{(\text{GWh/Yr})}{(8,760 \text{ hrs per year}) / \text{Load Factor}}
\]
Data Requirements

- Annual budget projections
  - By region, program and program administrator
  - Program-specific projections require more data but may result in more realistic projections.
  - OK to group programs with similar costs & load factors
  - Must separate CFL & other lighting programs, for both cost and load factor reasons

- Current percentage of funds spent to program budgets
  - So as to determine the remaining budget available.

- Current cumulative and cost per MWh for programs
  - Both direct program costs as well as admin and overhead

- The overall MWh goal for the program

- The summer and winter ratios of peak to energy
2010 Reliability Needs Assessment

Projection of Cumulative EE Impacts on Energy Forecast - GWh

2010 Reliability Needs Assessment

Projection of Cumulative EE Impacts on Summer Peak - MW
2010 Reliability Needs Assessment Energy Forecasts - GWh
With and Without Projected Energy Efficiency Impacts

Forecast for planning system reliability.

Energy efficiency goal.

Weather-Adjusted Econometric Base Case 15x15 Goal

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The New York Independent System Operator (NYISO) is a not-for-profit corporation responsible for operating the state's bulk electricity grid, administering New York's competitive wholesale electricity markets, conducting comprehensive long-term planning for the state's electric power system, and advancing the technological infrastructure of the electric system serving the Empire State.