Energy in New York: Current State and Future Potential

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Energy in New York Today
Generation Profile


Source: Energy Information Administration, Electric Power Monthly

http://programs.dsireusa.org/system/program?state=NY
The New York Independent System Operator (NYISO) has jurisdiction over the entire state of New York.

NYISO manages wholesale power markets for electricity, capacity, transmission congestion contracts, ancillary services, and more.

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<th>NY-ISO At A Glance</th>
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<td>Generating Capacity</td>
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<td>Peak Demand</td>
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<td>Transmission Lines (mi)</td>
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<td>GWh of Annual Energy</td>
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Wholesale electricity is auctioned every five minutes. The price of electricity at a specific location is called the Locational Based Marginal Price.

Generators are compensated for Installed Capacity to ensure peak demand is met.

Ancillary services include: Regulation, Voltage Support, Black-Start.
**KeySpan Long Island is a Natural Gas utility; the Long Island Power Authority (1.1 M customers) serves Long Island**

Sustainability Policies and Projects
The Regional Greenhouse Gas Initiative (RGGI) - CT, DE, ME, MD, MA, NH, NY, RI, VT:

- Supports the EPA’s Clean Power Plan
- Cap & Trade & Invest
  - Cap - Emissions cap gradually decreases over time
  - Trade - Emissions allowances can be bought by the states or from other allowance holders
  - Invest - States invest most of the proceeds in consumer benefit programs, i.e., energy efficiency

http://www.dec.ny.gov/energy/rggi.html
Energy Targets

Reforming the Energy Vision (REV) - New York’s Comprehensive Energy Strategy

2030 Targets:
● 40% reduction in greenhouse gas emissions from 1990 levels
● 50% of energy from renewable sources
● 23% reduction in energy consumption of buildings from 2012 levels

40+ Initiatives:
● Increase emphasis on Net Zero and Passive House buildings
● Clean energy financing
● Energy highway
● Low-cost power for economic development
● Demonstration projects
### NYISO Demand Response Programs:

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<td>DSASP</td>
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Con Edison Demand Response Program:

Two-part payments based on pledged capacity and actual performance
Renewable Energy Projects

Active Large-Scale Projects
- Landfill Gas Projects - 60.1 MW
- Biomass Projects - 69.3 MW
- Hydroelectric Projects - 57.5 MW
- Wind Projects - 1,951 MW
- Fuel Cells - 2.0 MW
- Anaerobic Digesters - 11.8 MW
- Total - 2,152 MW

Projected 2015 Customer Capacity (as of 2012)
- Solar PV - 410 MW
- Fuel Cells - 8.6 MW
- Anaerobic Digesters - 31.9 MW
- Wind - 25.5 MW
- Solar Heat - 35.1 MW
- Total - 511 MW
Future Challenges and Opportunities
DER Opportunities - Wind (NREL)


http://www.nrel.gov/gis/images/80m_wind/awstwspd80onoffbigC3-3dpi600.jpg
DER Opportunities - Solar (NREL)

Chronic transmission congestion leading into New York and Long Island. Underinvestment in transmission is due to poor market design\(^2\).

Immediate transmission enhancements can be made with new control and information technologies\(^2\). This is cheaper than adding new transmission.

Source: NYISO Power Trends 2015
Potential Challenges and Solutions

Northeast Blackout

- **Time** – August 14, 2003, just after 4:10 p.m. EDT.
- **Location** – Northeastern and Midwestern United States and the Canadian province of Ontario
- **Impact**
  - 10 million people in Ontario and 45 million people in eight U.S. states (including NY)
  - More than 508 generating units at 265 power plants shut down during the outage.
- **Recovery** – Within 2 days most of the power has been restored to the consumers.
Enhance Resilience

Resilience is derived from the Latin word “resilio,” which refers to the ability of an object to rebound to its original shape after being stressed. In power systems perspective, it refers to the ability of a power system to recover quickly following a disaster.

• Several definitions of resilience can be found in literature, of which majority focus on ability to anticipate, absorb, and rapidly recover from an external, high-impact, low-probability shock.

• Multidisciplinary and National Center for Earthquake Engineering Research developed/defined a generic resilience framework which consists of 4R’s:
  - Robustness
  - Redundancy
  - Resourcefulness
  - Rapidity
The End

Thank You