



Energy Insights -- June Update

Briefing on New England Energy Issues and Trends

Region's wholesale electricity markets performed competitively

A review of the region's capacity, energy and ancillary service markets by ISO New England has found that they performed competitively in 2016.

One key finding was the average price for wholesale electricity was the lowest since 2003. The total wholesale cost in 2016 was \$7.6 billion, 18% -- or \$1.7 billion -- lower than 2015, driven by low natural gas prices and unusually mild weather in the first quarter of 2016. Annual electricity demand was also down 2% over 2015 levels - the lowest level in the past 17 years.

The 2016 Annual Markets Report assessed the state of competition in the wholesale electricity markets based on market data and performance criteria.

Source: ISO New England's Internal Market Monitor, 2016 Annual Markets Report, May 30, 2017

U.S. electricity generation sector emissions decline

A recent study by M.J. Bradley & Associates shows the nation's largest electricity producers continue to substantially reduce emissions of key air pollutants. Based on 2015 data from the U.S. Energy Information Administration, an analysis of the nation's 100 largest electric power producers (accounting for 85% of the nation's electricity production) shows:

- SO₂ and NO_x emissions were 87 percent and 79 percent lower respectively than in 1990;
- Mercury emissions were 69 percent lower than in 2000, and will decline further as 2015 federal limits on mercury from coal-fired power plants are implemented;
- CO₂ emissions declined 20 percent between 2005 and 2015, with preliminary data suggesting another 5 percent decline in 2016,

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Did You Know:

Eversource Energy and National Grid were ranked the most energy efficient utilities in the nation?

The American Council for an Energy Efficient Economy's (ACEEE) first-ever scorecard of U.S. utilities ranked the nation's largest energy companies on energy efficiency programs, practices and innovations.

Eversource MA and National Grid MA both earned identical top scores in commitment to efficiency through a wide range of long-term

which would reduce the sector's emissions to 1990 levels.

The study also ranked CO2 emissions from power plants on a state-by-state basis. Texas, Florida and Pennsylvania had the highest total CO2 power plant emissions. Vermont had the lowest. Five of the six New England states are among the top ten lowest.

Source: "Benchmarking Air Emissions, Of the 100 Largest Electric Power Producers in the U.S., June 2017 (www.mjbradley.com)

programs and policies. Both achieved more than 3% savings as a percentage of retail sales in 2015.

Source: [2017 ACEEE's Utility Energy Efficiency Scorecard](#)

Retiring nuclear plants will increase U.S. carbon emissions

A fleet of 99 nuclear plants currently supplies one-fifth of the nation's electricity without generating any carbon emissions. When they retire, the plants, in all likelihood, will be replaced with a combination of renewable, natural gas and coal resources - which will cause carbon emissions to increase.

Since 2013, five nuclear plants have retired (including Vermont Yankee) with six more (including Pilgrim), announcing their closure between now and 2025. Several more are at risk of premature closure because they can't compete against plants fueled by low-cost natural gas which is driving down wholesale electricity prices, by 40 to 50% between 2008 and 2015.

Recent analysis conducted by Bloomberg New Energy Finance shows the U.S. nuclear sector is losing \$2.9 billion annually as plants come under pressure from low-cost natural gas and increasingly-affordable renewables - with almost three dozen plants losing money.

A recent MIT study found that if all the U.S. "at risk" nuclear plants shut down before the end of their operating license and are replaced with natural gas plants, carbon emissions in the electricity generation sector would increase by approximately 5%. If replaced by renewables (wind), the withdrawal of nuclear generation would be carbon-neutral, but the cost would be greater in most locations.

To maintain nuclear power generation, policymakers in several states including Ohio, New Jersey, Pennsylvania and Connecticut are exploring policies - or wholesale market rule changes - to prevent the premature retirement of the most at-risk plants.

Source: "How retiring nuclear power plants may undercut U.S. climate goals", New York Times, June 13, 2017;

"More than half of America's nuclear reactors are losing money", Bloomberg.

Report shows shift to renewables not a threat to grid reliability

A report by the Analysis Group finds no evidence that the shift in the nation's fuel mix to cleaner fuels for electricity generation is harming the reliability of the power grid.

Funded by the Advanced Energy Economy and American Wind Energy Association, the report concludes that market forces - primarily low-cost natural gas and flat demand for electricity - are causing some coal and nuclear power plants to retire, not state and federal renewable energy policies.

While factors such as rapid growth in deployment of advanced energy technologies and state policies supporting such technologies were found to contribute to reducing the profitability of less economic generation - those factors were considered secondary.

The report also found that while the declining financial viability of certain conventional power plant technologies (like coal and nuclear) is a concern, there is no evidence that electric system reliability is being jeopardized. In fact, a recent reliability review by the National Electric Reliability Council (NERC) shows that the changes in regional wholesale markets are not leading to lower bulk-power system reliability metrics.

The analysis was conducted in anticipation of a similar study the U.S. Department of Energy is expected to release shortly addressing clean energy policies and their impact on coal and nuclear plant closures and electricity grid reliability.

Source: Electricity Markets, Reliability and the Evolving U.S. Power System, Analysis Group, June 2017

NERC finds improved grid resilience to severe weather, but increased cyber and physical security risks

The latest North American Reliability Corporation's (NERC) State of Reliability report -- which reviews performance of the nation's bulk power electricity system -- found that while resilience to extreme weather continues to improve, cyber and physical security risks are increasing. While there were no reported cyber or physical security incidents that

resulted in a loss of load in 2016, such threats are increasing and becoming more serious over time.

The annual report examined the state of system design, planning and operations and the ongoing efforts by NERC and industry to continually improve system reliability and resiliency. The report helps determine the effectiveness of mitigation efforts and provides recommendations to maintain a reliable and secure grid.

Source: State of Reliability 2017, The North American Electric Reliability Corporation (www.nerc.com).

ISO New England prepares for August solar eclipse

ISO New England is preparing for the partial solar eclipse which will take place on August 21. According to NASA, the eclipse will occur between 1:20pm and 4:00pm with the peak expected around 2:45pm when about 65% of the sun will be blocked. If it is a sunny day, ISO expects that output from the region's 2,000 megawatts (MW) of solar photovoltaic (PV) systems will decrease - but anticipates having sufficient resources available to meet the resulting rise in electricity demand.

More specifically, if the eclipse occurs with the maximum obscuration of 65% on a clear, sunny day, ISO expects solar output will be reduced by about 1,300 MW, leaving approximately 700 MW to continue producing electricity over the peak.

In April 2024, a total eclipse is expected to occur in portions of northern New England.

Source: "ISO-NE prepared to operate grid through partial solar eclipse in August", ISO New England, June 12, 2017.

Massachusetts appoints new DPU Commissioner

Cecile Fraser was recently appointed as a Commissioner for the MA Department of Public Utilities. Prior to her appointment, she served with the Department as counsel in the Division of Regional and Federal Affairs and the Consumer Division.

Cecile is an attorney with over a decade of experience in the energy and utilities industry. Prior to joining the DPU, she worked in private law practice and as an in-house counsel engaged in a range of matters involving utility rates and regulation, infrastructure siting, consumer service issues and related activities. As counsel with the Department, Cecile has worked on issues involving New England's

wholesale electric markets and transmission system as well as consumer issues.

About the New England Energy Alliance, Inc.

The New England Energy Alliance is a coalition of energy companies advocating to ensure the availability, reliability and affordability of future energy supplies which are vital to the region's economic growth and prosperity. Formed in 2005, the Alliance works to balance public debate about solutions to New England's energy infrastructure by providing information on the region's energy needs and the resources, technologies and policies needed to meet those needs.

Please visit www.newenglandenergyalliance.org for more information on the Alliance. Follow on twitter @NEEAlliance

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