ISO New England Overview and Regional Update

Vermont System Planning Committee
October 2018 Quarterly Meeting

Molly Connors

EXTERNAL AFFAIRS REPRESENTATIVE

ISO REPORTS AND UPCOMING ACTIVITIES

ISO-NE Reports and Activities

Available Now:

- ISO New England Elects Slate of Board Members
  - **Michael Curran** replaced Roberta Brown, who retired from the Board
  - **Philip Shapiro (Chair)** and **Kathleen Abernathy** were reelected
- Battery storage is "charging" ahead in New England
- Consumer Liaison Group Explores Electrification of Heating

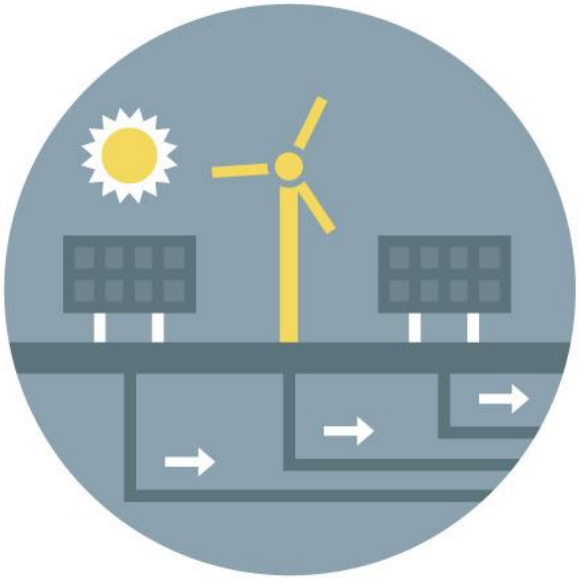
ISO-NE Reports and Activities

Coming Soon:

- **Consumer Liaison Group Coordinating Committee Election**
  - December 6, at the CLG's quarterly meeting in Boston
  - The newly elected committee will serve until **December 2020**
  - Any CLG member is **eligible** to run who:
    - Is an electricity **end-user** or directly represents **ratepayers**
    - Is a **member** of a consumer organization
    - Is a **government consumer** or ratepayer advocate
  - Any expression of interest, with supporting documentation, must be sent to Massachusetts Attorney General's office by **November 2**

- **Distributed Generation Forecast Working Group**
  - December 10, Holyoke, MA

ISO-NE Reports and Activities



Of Interest:

- ISO-NE Helps Pave Way for Market Integration of Microgrids
  - **Otis Air National Guard Base** in Massachusetts recently unveiled its new microgrid
  - Consists of a 1.5 megawatt (MW) wind turbine, a 1.6 MW diesel generator, and a **1.6 MW battery**
  - Base administrators are exploring opportunities for the battery to participate in the **New England Regulation Market**

ISO'S PROPOSED 2019 BUDGET

ISO New England Has Developed Its Proposed Operating and Capital Budgets for 2019

- ISO New England is a **not-for-profit** corporation that collects revenue from wholesale electricity market participants to fund its operational expenses
- These revenues are collected under Section IV of the ISO Tariff, commonly known as the **Self-Funding Tariff**
- Each year, the ISO develops an operating budget and capital budget to fund the administrative services and capital projects it has planned for the **next calendar year**
- These administrative services include major ISO responsibilities, such as operating the bulk power system and administering the competitive wholesale electricity markets for the region

ISO New England Presented Its Proposed 2019 Budget to New England State Agencies in August

- The **proposed capital budget** for 2019 is projected to be $28 million, the same as the 2018 capital budget
- The **proposed operating budget** for 2019, before depreciation and true up, is projected to be $169.8 million, which is $5.6 million or 3.4% higher than the 2018 operating budget
- After depreciation and true up, the **Revenue Requirement** for 2019 is projected to be $190 million, which is $5.5 million or 2.8% less than the 2018 Revenue Requirement
- If the ISO's projected Revenue Requirement for 2019 was fully passed through to end-use customers, their cost would average **$0.99 per month** (based on average consumption)

ISO New England Plans to File Its Proposed 2019 Budget with Federal Regulators in October

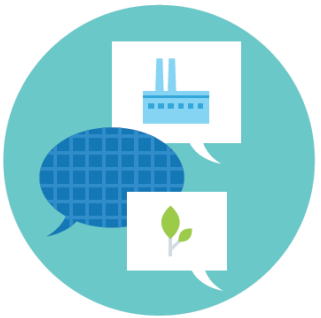
- Under the formal budget review process, the New England states have the opportunity to submit **questions** and **comments** on the proposed budget following the August presentation
- In **September**, the ISO's Board of Directors reviewed the budget, along with stakeholder feedback and the states' comments
- In **October**, the ISO's Board of Directors will vote on the proposed budget
- The ISO plans to file the budget with the **Federal Energy Regulatory Commission** for review on or about October 16, requesting approval by January 1, 2019

FUEL SECURITY UPDATE

Fuel-security risk: The risk that resources in the region will not have, or be unable to obtain, the fuel they need to produce the power required to meet system demand and maintain required reserves, particularly during extended periods of cold weather or other stressed system conditions.

ISO New England Is Pursuing Short- and Long-Term Solutions to Address Fuel-Security Challenges

- **Short-term**: Working with stakeholders, the ISO filed a proposal with the Federal Energy Regulatory Commission (FERC) to **retain** resources seeking retirement on the basis of a fuel-security reliability need
  - Proposal filed in response to **July 2 FERC order** calling for interim tariff changes to address demonstrated fuel-security concerns in the near term
  - Proposed tariff changes provide for the filing of a short-term, **cost-of-service agreement** with FERC by resources retained for fuel-security reasons
  - Changes would be **in effect** for the 13th, 14th, and 15th Forward Capacity Auctions



ISO New England Is Pursuing Short- and Long-Term Solutions to Address Fuel-Security Challenges, *continued*

- **Long-term**: Working with stakeholders, the ISO plans to develop a market-based mechanism to address long-term fuel-security challenges facing the region
  - Filing with FERC due by July 1, 2019

- The ISO has identified **three broad objectives** for improving winter energy security over the long term:
  1. **Risk Reduction.** Minimize the heightened risk of unserved electricity demand during New England's cold winter conditions.
  2. **Cost Effectiveness.** Efficiently use the region's existing assets and infrastructure to achieve this risk reduction in the most cost-effective way possible.
  3. **Innovation.** Provide clear incentives for new resources and innovative technologies that can reduce this risk effectively over the long term.

OPERATING PROCEDURE NO. 4 EVENT

Labor Day, Monday, September 3, 2018

ISO New England Implemented Actions of Operating Procedure No. 4 on Labor Day

- Due to hotter-than-forecasted weather and unplanned generator outages (roughly 1,900 MW in total), power system **operating reserves** ran short in New England on Monday, September 3, 2018
- ISO New England implemented **five out of eleven actions** of Operating Procedure No. 4 – *Action During a Capacity Deficiency* to manage the shortage of reserves
  - These actions enabled the ISO to purchase emergency energy from New York and New Brunswick and to ask market participants to reduce energy consumption at their own facilities
- One of the actions declares a **Power Watch** to signal the seriousness of system conditions
  - While the ISO did not issue a request for voluntary conservation from the public, that was an option if conditions had deteriorated

For more information: https://www.iso-ne.com/static-assets/documents/2018/09/september-2018-op4-coo-report.pdf

ISO New England Implemented Actions of Operating Procedure No. 4 on Labor Day, *continued*

- Demand for electricity peaked at about **22,956 MW** during the hour from 5 to 6 p.m., about 2,400 MW higher than expected when the day began, based on forecasted weather conditions for the day*
  - Prices rose as high as about **$2,677/MWh** during the hour from 5 to 6 p.m.*

- Due to deficiencies in 30-minute and 10-minute operating reserves, administrative adders called Reserve Constraint Penalty Factors (RCPFs) were added to the real-time price of electricity to signal the **high value of reserves** (at $1,000/MWh and $1,500/MWh, respectively)

* Figures are preliminary and subject to reconciliation.

ISO New England Implemented Actions of Operating Procedure No. 4 on Labor Day, *continued*

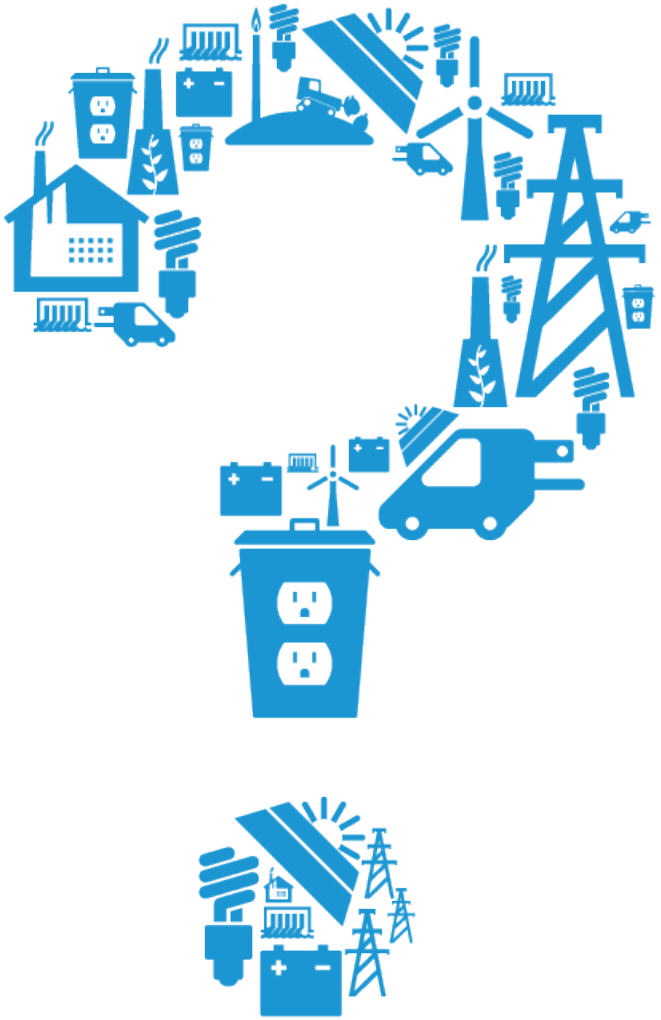
- While the price spikes were severe, it is important to note that the real-time market price applies to a **small proportion** of the total load
- Utilities and other power suppliers buy most of the power they need for the next day in the **day-ahead energy market**, and that is the price they pay for the power they have committed to buy
  - If they use more than they purchased in the day-ahead market, they pay the real-time price for the difference
  - On September 3, the day-ahead energy price was about **$60.85/MWh** for the hour from 5 to 6 p.m.*

* Figures are preliminary and subject to reconciliation.

Capacity Scarcity Conditions Were Triggered Under the ISO's Pay-for-Performance (PFP) Program

- The PFP design allows for transfers of capacity revenue from under-performing resources to over-performing resources during scarcity conditions, providing **strong incentives** for resources to perform when needed
  - Charges for underperformance are paid by the underperforming resources, not electricity ratepayers
- Underperforming resources are penalized at a rate of **$2,000/MWh** for failing to meet their obligation during energy shortfalls, while resources that over-perform, including resources that have no obligation, receive $2,000/MWh of additional revenue
- The performance payment rate is scheduled to increase to **$5,455/MWh** over the next six years

Questions



FOR MORE INFORMATION…

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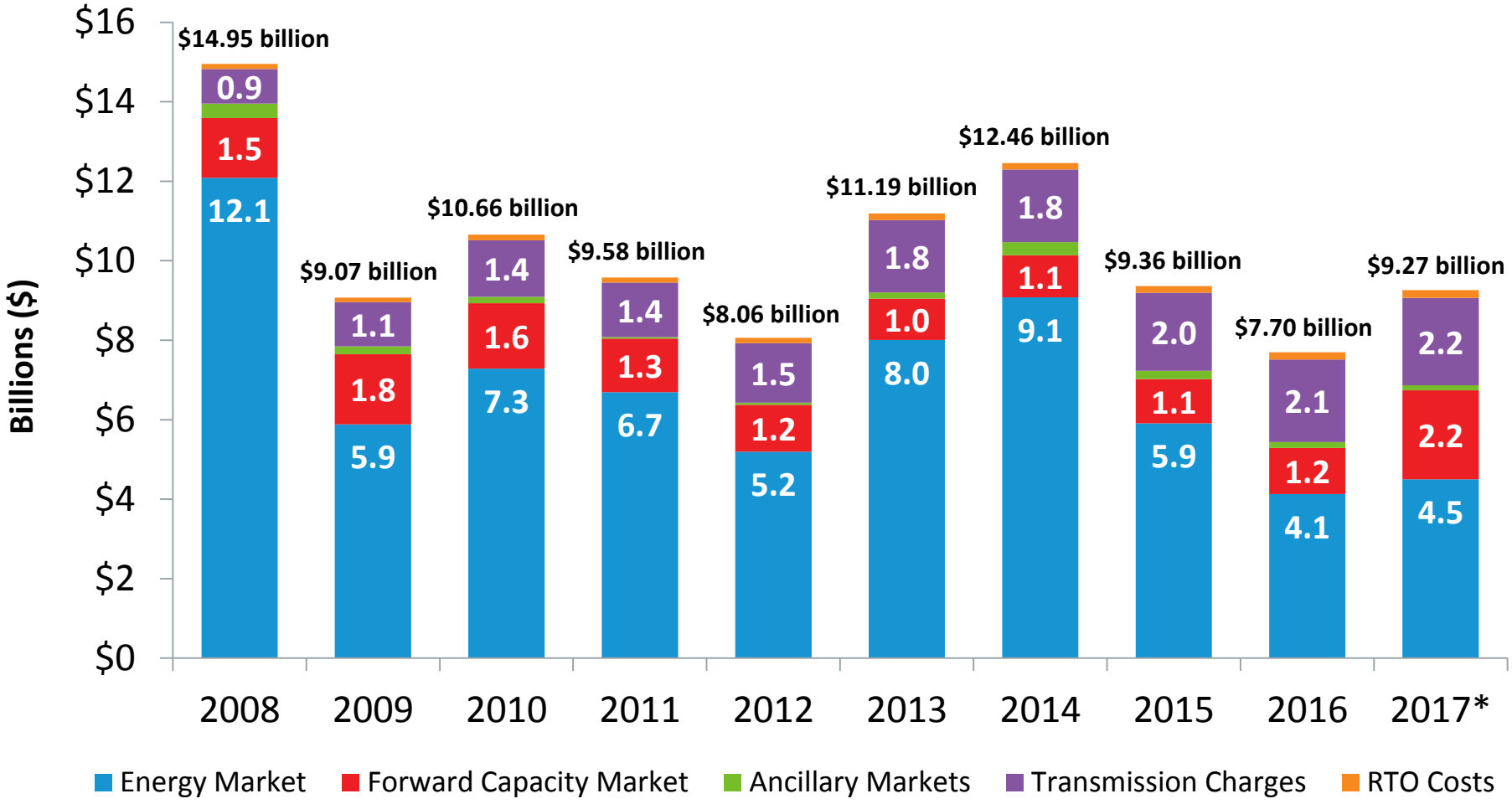
APPENDIX: ADDITIONAL INFORMATION

New England Wholesale Electricity Costs

Annual wholesale electricity costs have ranged from $7.7 billion to $15 billion



Source: *2017 Report of the Consumer Liaison Group*; * 2017 data is subject to adjustment

Note: Forward Capacity Market values shown are based on auctions held roughly three years prior to each calendar year.

New England Wholesale Electricity Costs[a]

	2013		2014		2015		2016		2017*	
	$ Mil.	¢/kWh	$ Mil.	¢/kWh	$ Mil.	¢/kWh	$ Mil.	¢/kWh	$ Mil.	¢/kWh
Wholesale Market Costs										
Energy (LMPs)[b]	$8,009	6.0	$9,079	6.9	$5,910	4.5	$4,130	3.2	$4,498	3.5
Ancillaries[c]	$152	0.1	$331	0.3	$210	0.2	$146	0.1	$132	0.1
Capacity[d]	$1,039	0.8	$1,056	0.8	$1,110	0.8	$1,160	0.9	$2,245	1.8
Subtotal	*$9,200*	*6.9*	*$10,466*	*8.0*	*$7,229*	*5.5*	*$5,437*	*4.2*	*$6,875*	*5.4*
Transmission Charges[e]	$1,822	1.4	$1,828	1.4	$1,964	1.5	$2,081	1.6	$2,199	1.7
RTO Costs[f]	$167	0.1	$165	0.1	$165	0.1	$180	0.1	$193	0.2
Total	**$11,189**	**8.4**	**$12,459**	**9.5**	**$9,358**	**7.1**	**$7,698**	**5.9**	**$9,267**	**7.3**

(a) Average annual costs are based on the 12 months beginning January 1 and ending December 31. Costs in millions = the dollar value of the costs to New England wholesale market load servers for ISO-administered services. Cents/kWh = the value derived by dividing the dollar value (indicated above) by the real-time load obligation. These values are presented for illustrative purposes only and do not reflect actual charge methodologies. *** The wholesale values for 2017 are subject to adjustment.**

(b) Energy values are derived from wholesale market pricing, and represent the results of the Day-Ahead Energy Market plus deviations from the Day-Ahead Energy Market reflected in the Real-Time Energy Market.

(c) Ancillaries include first- and second-contingency Net Commitment-Period Compensation (NCPC), forward reserves, real-time reserves, regulation service, and a reduction for the Marginal Loss Revenue Fund.

(d) Capacity charges are those associated with the transitional Installed Capacity (ICAP) Market through May 2010 and the Forward Capacity Market (FCM) from June 2010 forward.

(e) Transmission charges reflect the collection of transmission owners' revenue requirements and tariff-based reliability services, including black-start capability, voltage support, and FCM reliability. In 2017, the cost of payments made to these generators for reliability services under the ISO's tariff was $35.4 million. Transmission charge totals for years 2010 forward reflect the refund of Schedule 1 TOUT charges to regional network load.

(f) RTO costs are the costs to run and operate ISO New England and are based on actual collections, as determined under Section IV of the *ISO New England Inc. Transmission, Markets, and Services Tariff*.