



ISO New England Update

Consumer Liaison Group Meeting

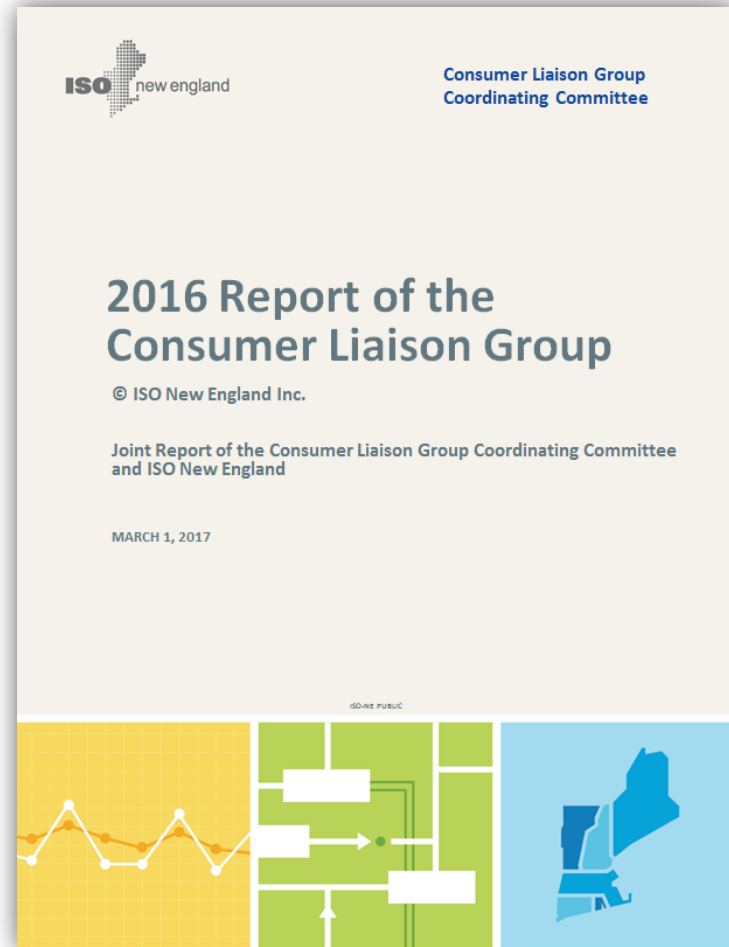
Mary Louise “Weezie” Nuara

EXTERNAL AFFAIRS REPRESENTATIVE



ISO New England and the CLG Coordinating Committee Publish *2016 Report of the Consumer Liaison Group*

- The *2016 Report of the Consumer Liaison Group* summarizes the activities of the CLG in 2016:
 - <http://www.iso-ne.com/committees/industry-collaborations/consumer-liaison>
- The report also provides an update on ISO activities and initiatives, as well as wholesale electricity costs and retail electricity rates in New England

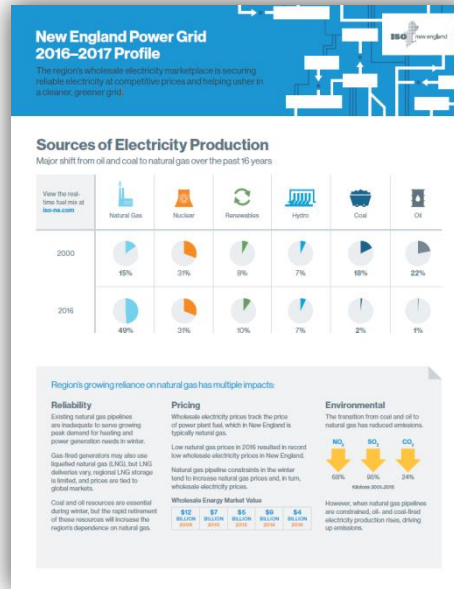


ISO New England Releases Several New Publications



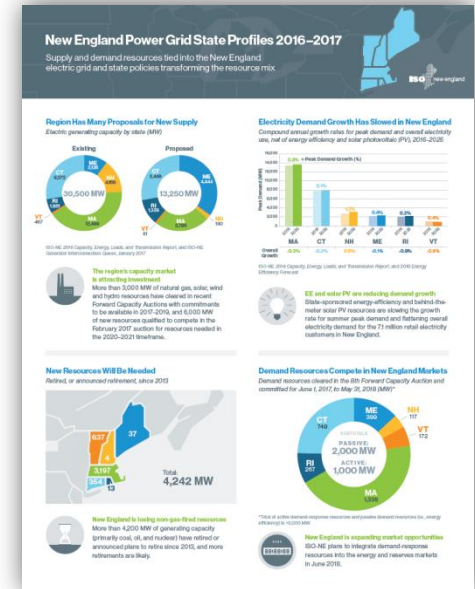
2017 Regional Electricity Outlook

Provides an in-depth look at New England's biggest challenges to power system reliability, the solutions the region is pursuing, and other ISO New England efforts to improve services and performance



New England Power Grid Profile

Provides key grid and market stats on how New England's wholesale electricity markets are securing reliable electricity at competitive prices and helping usher in a cleaner, greener grid



New England State Profiles

Provides state-specific facts and figures relating to supply and demand resources tied into the New England electric grid and state policies transforming the resource mix in the region

Additional Updates from ISO New England



- In January, the ISO shared its observations and perspectives on the proposals presented by stakeholders within the **Integrating Markets and Public Policy (IMAPP)** process
- In February, the ISO filed comments on the Federal Energy Regulatory Commission's **Notice of Proposed Rulemaking (NOPR)** on "Electric Storage Participation in Markets Operated by Regional Transmission Organizations and Independent System Operators"
 - The ISO is supportive of the Commission's efforts to minimize barriers to the participation of electric storage resources and distributed energy resources in the competitive markets
- The ISO has begun developing the ***2017 Regional System Plan (RSP)***
 - The RSP Public Meeting will be held at the Seaport Hotel & World Trade Center in Boston, Massachusetts on September 14, 2017



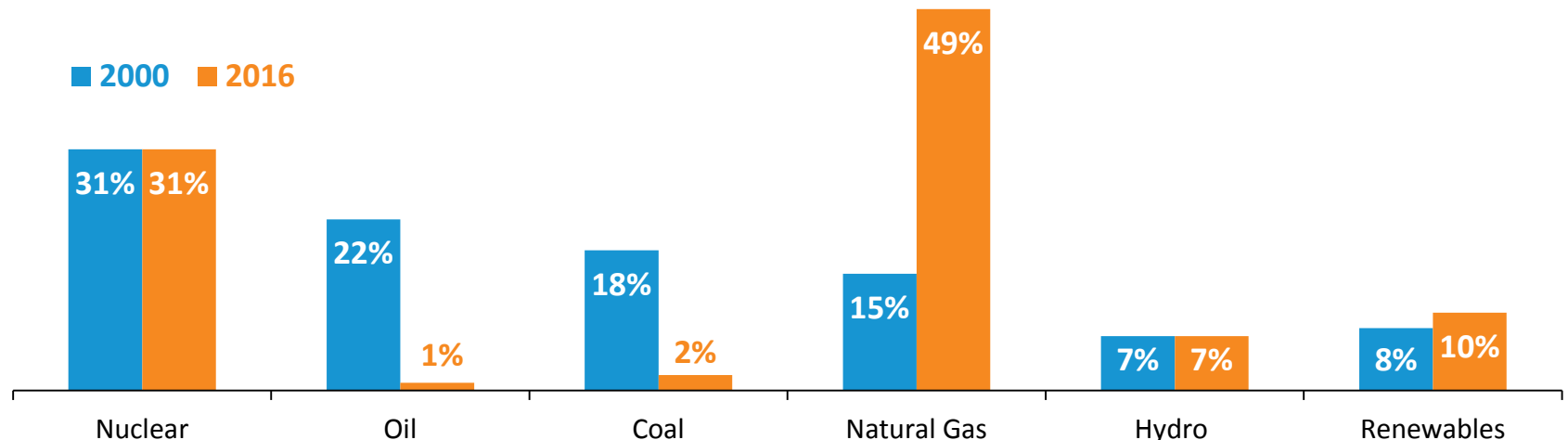
THE ROLE OF NUCLEAR IN THE REGION



Nuclear Power Is an Important Part of the Resource Mix in New England

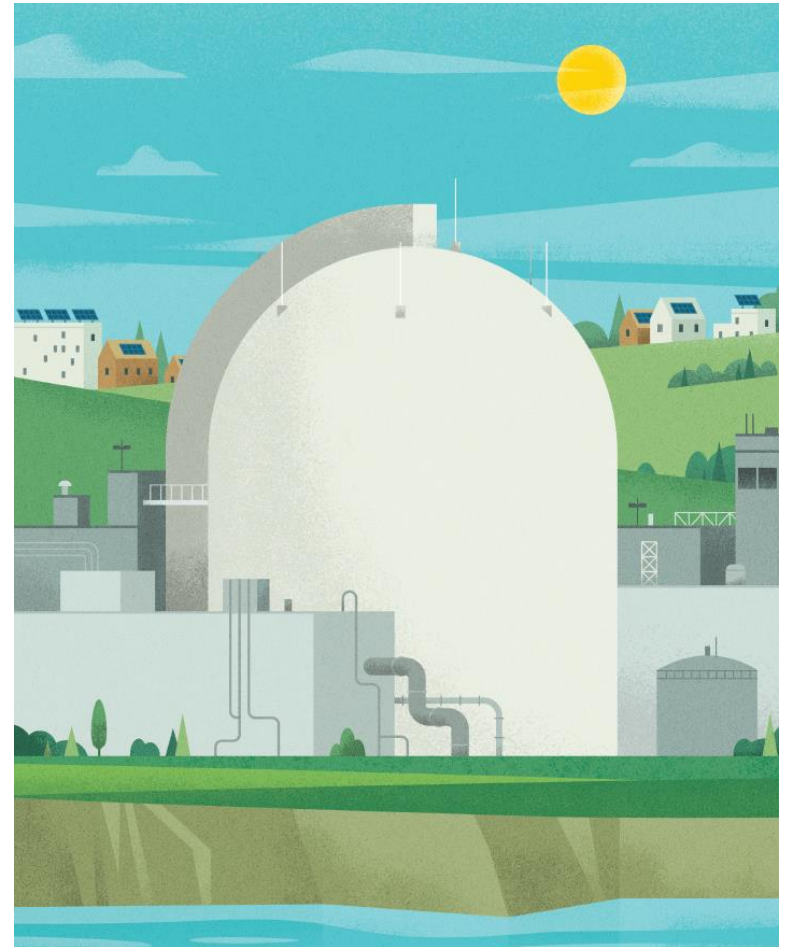
- Nuclear power accounts for more than **4,000 megawatts (MW)** (roughly 13%) of installed generating capacity in New England
- Nuclear power accounts for roughly **31% of energy production** in New England to meet electricity demand each year

Percent of Total **Electric Energy** Production by Fuel Type
(2000 vs. 2016)



Nuclear Power Plants Provide a Constant Supply of Power to the Electric Grid

- There are **three** remaining nuclear facilities in New England:
 - Millstone Nuclear Power Station
 - 2,100 MW of generating capacity
 - Seabrook Nuclear Power Station
 - 1,250 MW of generating capacity
 - Pilgrim Nuclear Power Station
 - 685 MW of generating capacity
- The owner of Pilgrim Nuclear Power Station has announced it will permanently **retire** the facility as of June 1, 2019



Power Plant Emissions Have Declined with a Changing Fuel Mix and Transmission Upgrades



Reduction in Aggregate Emissions (kilotons/year)

Year	NO _x	SO ₂	CO ₂
2001	59.73	200.01	52,991
2014	20.49	11.68	39,317
2015	18.86	9.11	40,312
% Reduction 2001–2015	↓ 68%	↓ 95%	↓ 24%
% Change 2014–2015	↓ 8%	↓ 22%	↑ 2.5%



CO₂ emissions rose in 2015 after Vermont Yankee's retirement in December 2014

Source: [2015 ISO New England Electric Generator Air Emissions Report](#), January 2017



FORWARD CAPACITY AUCTION #11



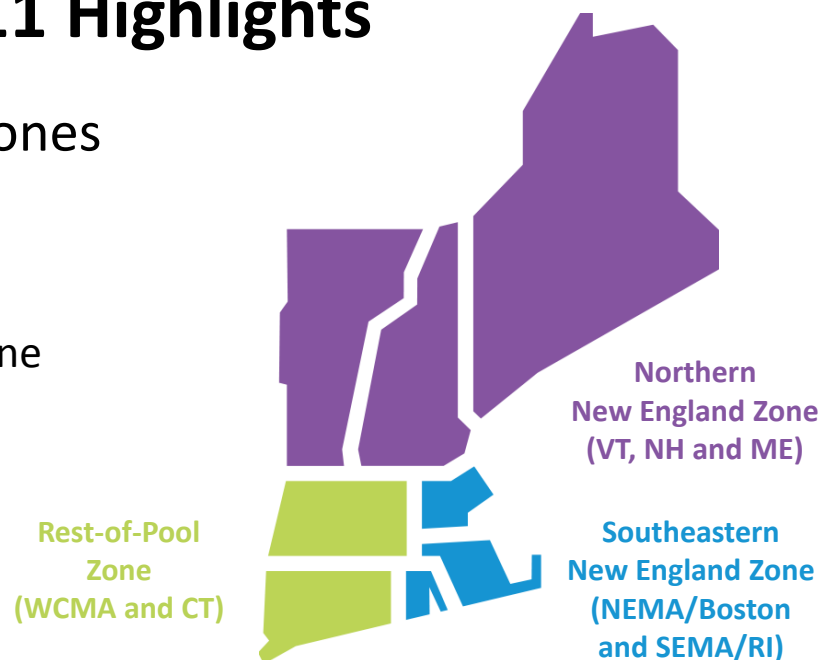
Last Month, ISO New England Conducted the Eleventh Forward Capacity Auction (FCA #11)

- FCA #11 was held on February 6, 2017 to procure the capacity resources needed to meet electricity demand in New England during the **2020-2021 Capacity Commitment Period**
- The auction concluded systemwide after six rounds of competitive bidding, with a clearing price of **\$5.30/kW-month**, lower than the \$7.03/kW-month clearing price in the previous auction (FCA #10)
 - The \$5.30/kW-month clearing price will be paid to new and existing resources in all three capacity zones, with the exception of imports from New Brunswick
- At \$5.30/kW-month, the total value of the capacity market in 2020-2021 will be approximately **\$2.4 billion**
 - Down from the estimated \$3 billion for the 2019-2020 capacity commitment period (FCA #10)



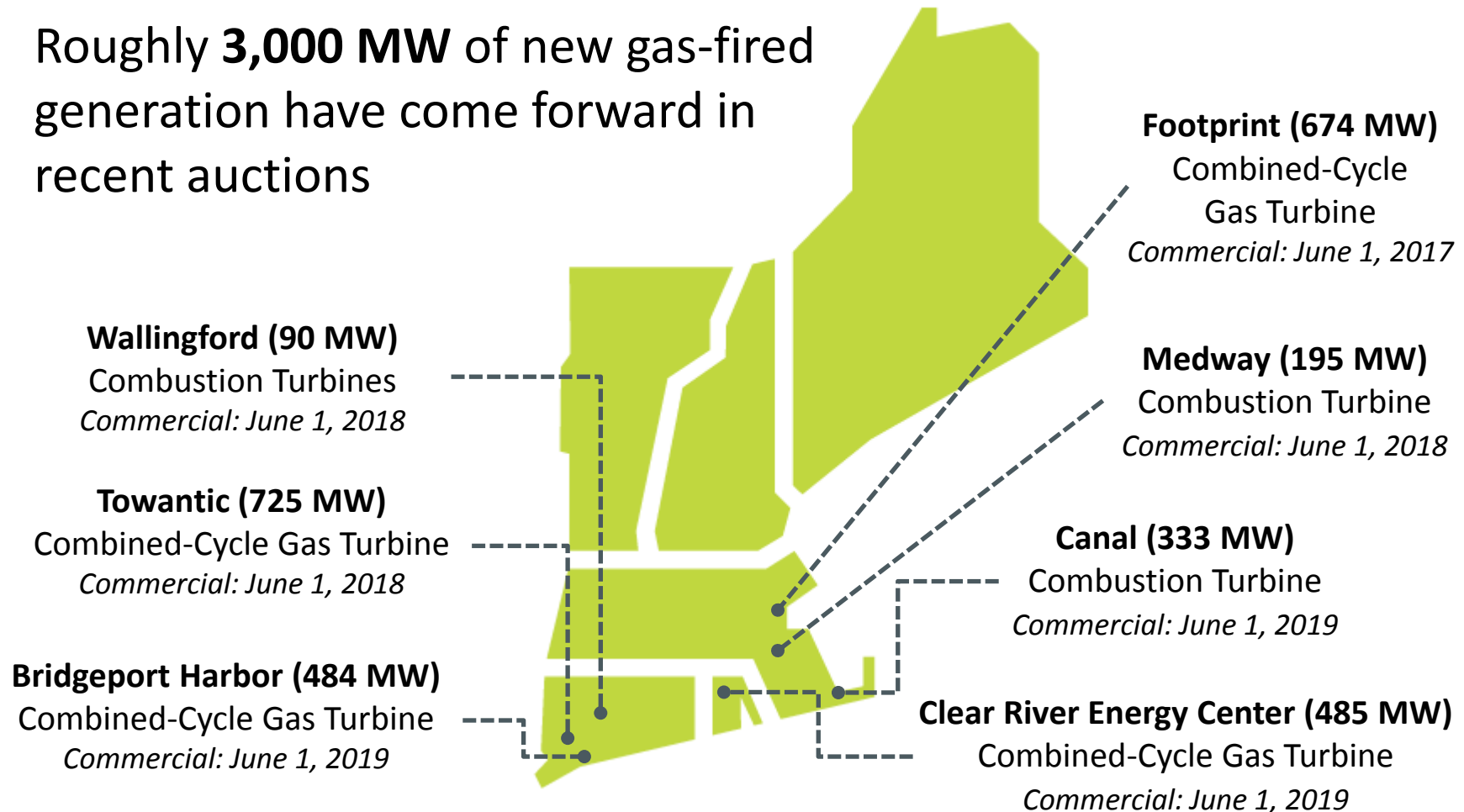
Forward Capacity Auction #11 Highlights

- The ISO modeled **three** capacity zones in the auction
 - Northern New England Capacity Zone
 - Southeastern New England Capacity Zone
 - Rest-of-Pool Capacity Zone
- The auction concluded with commitments from **35,835 MW** to be available in 2020-2021
- The net installed capacity target to be procured in the auction was **34,075 MW**
- No new large generators cleared in the auction, but **640 MW** of new energy-efficiency and demand-reduction measures—the equivalent of a large power plant—cleared and will be available in the 2020-2021 timeframe



The Forward Capacity Market Has Attracted Efficient and Fast-Starting Resources

- Roughly **3,000 MW** of new gas-fired generation have come forward in recent auctions

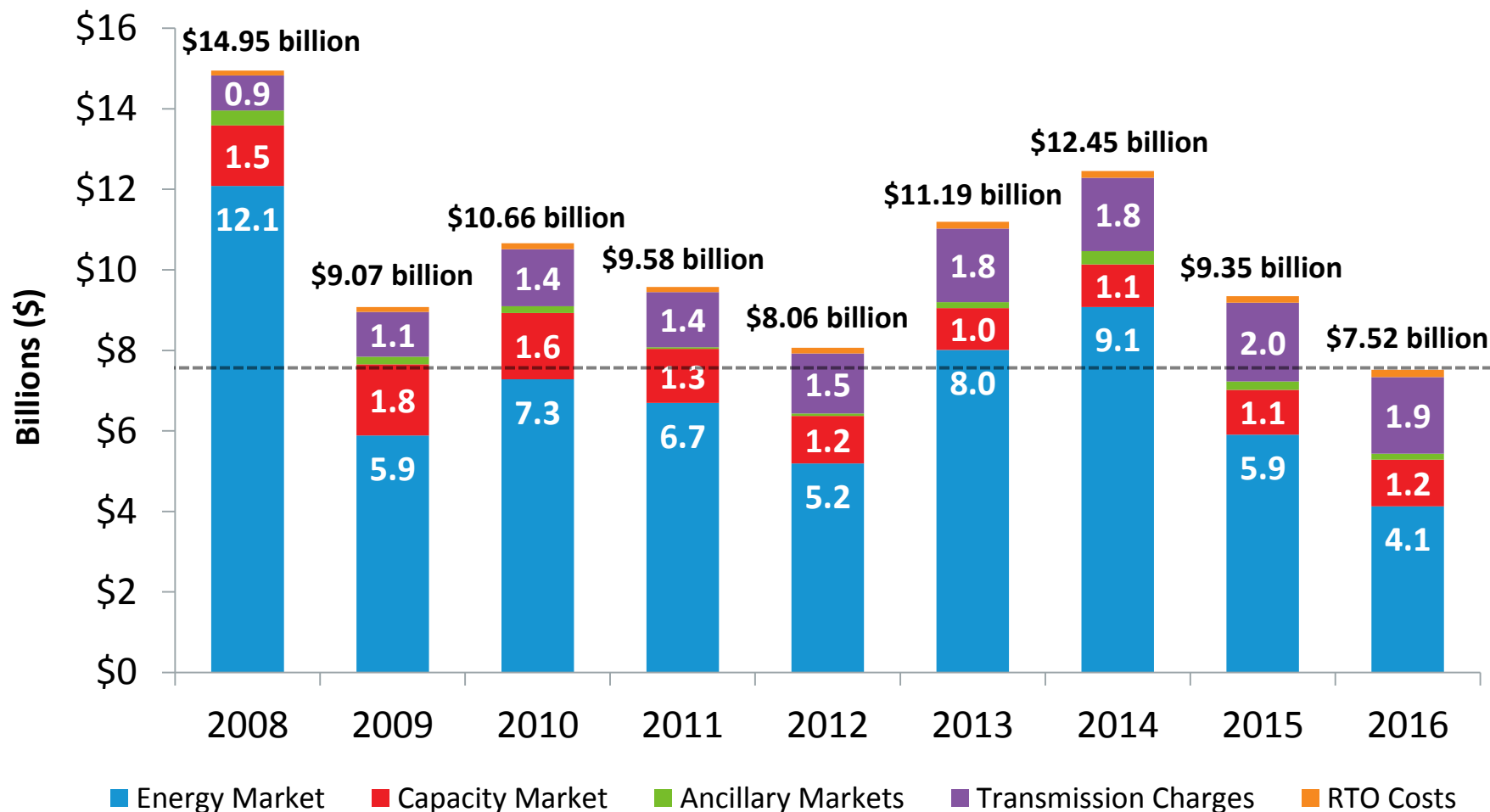


WHOLESALE ELECTRICITY COSTS



New England Wholesale Electricity Costs

Annual wholesale electricity costs have ranged from \$7.5 billion to \$15 billion



Source: [2016 Report of the Consumer Liaison Group](#); 2016 wholesale electricity costs are preliminary and subject to reconciliation

New England Wholesale Electricity Costs^(a)

	2012		2013		2014		2015		2016 ^(b)	
	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh	\$ Mil.	¢/kWh
Wholesale Market Costs										
Energy (LMPs)^(c)	\$5,193	3.9	\$8,009	6.0	\$9,079	6.9	\$5,910	4.5	\$4,127	3.2
Ancillaries^(d)	\$56	0.0	\$152	0.1	\$331	0.3	\$210	0.2	\$146	0.1
Capacity^(e)	\$1,182	0.9	\$1,039	0.8	\$1,056	0.8	\$1,110	0.8	\$1,161	0.9
Subtotal	\$6,431	4.8	\$9,200	6.9	\$10,466	8.0	\$7,229	5.5	\$5,433	4.2
Transmission Charges^(f)	\$1,494	1.1	\$1,823	1.4	\$1,822	1.4	\$1,954	1.5	\$1,902	1.5
RTO Costs^(g)	\$139	0.1	\$167	0.1	\$165	0.1	\$165	0.1	\$180	0.1
Total	\$8,064	6.0	\$11,190	8.4	\$12,453	9.5	\$9,348	7.1	\$7,515	5.8

(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.

(b) **The wholesale values for 2016 are preliminary and subject to reconciliation.**

(c) 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.

(d) 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.

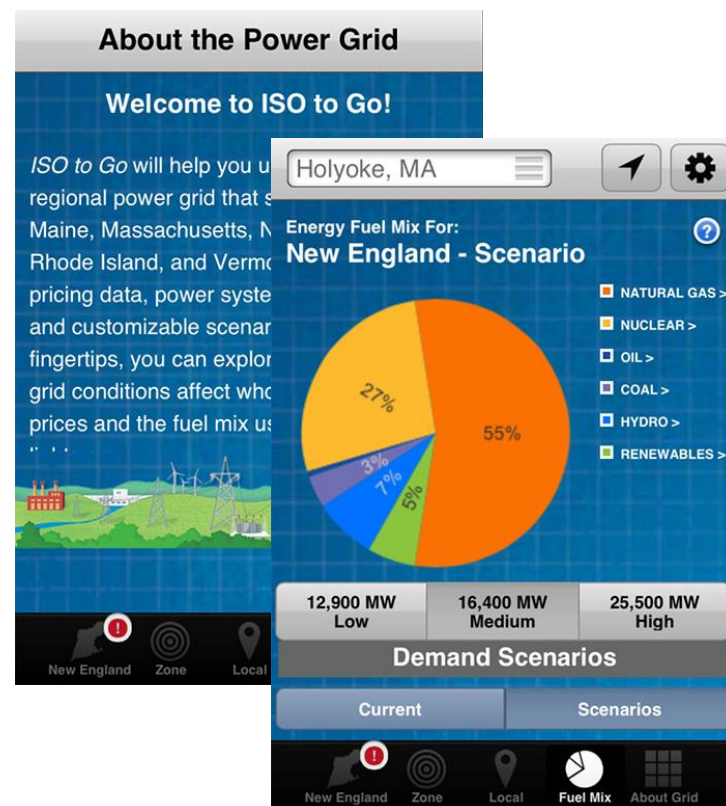
(e) Capacity charges are those associated with the transitional Installed Capacity (ICAP) Market through May 2010 and the Forward Capacity Market (FCM) from June 2010 forward.

(f) Transmission charges reflect the collection of transmission owners' revenue requirements and tariff-based reliability services, including black-start capability and voltage support. FCM reliability totals are not included in this value. In 2016, the cost of payments made to these generators for reliability services under the ISO's tariff was \$37.5 million.

(g) 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*.

For More Information...

- Subscribe to the **ISO Newswire**
 - [ISO Newswire](#) is your source for regular news about ISO New England and the wholesale electricity industry within the six-state region
- Log on to **ISO Express**
 - [ISO Express](#) provides real-time data on New England's wholesale electricity markets and power system operations
- Follow the ISO on **Twitter**
 - [@isonewengland](#)
- Download the **ISO to Go App**
 - [ISO to Go](#) is a free mobile application that puts real-time wholesale electricity pricing and power grid information in the palm of your hand



Questions



APPENDIX: BACKGROUND INFORMATION



Nuclear Power Accounts for Roughly 30% of Total Generation in New England

Electric Energy Production in New England (GWh)

