

The Expanding Role of Energy Storage in the Regional Power System



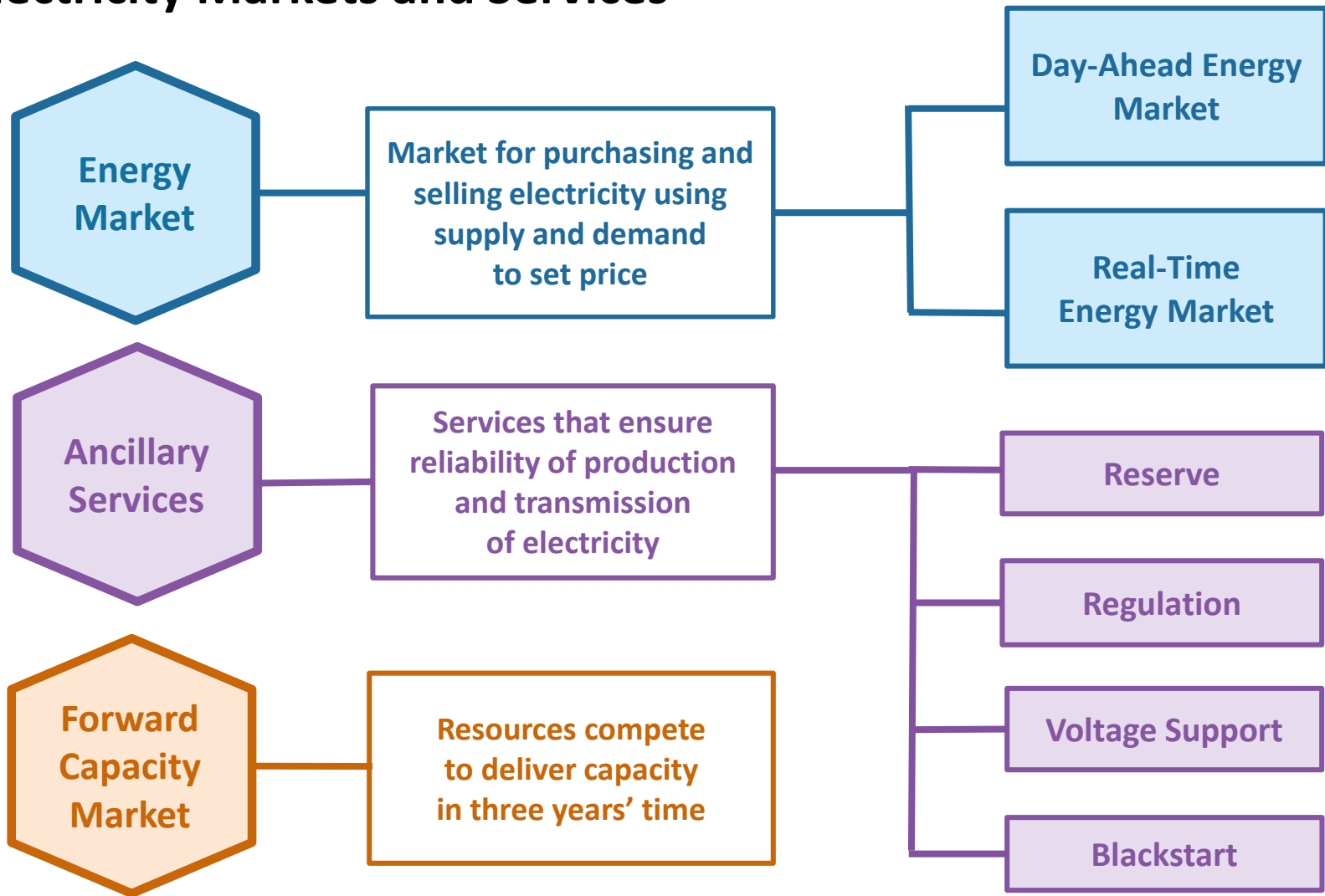
2019 Annual NECPUC Symposium

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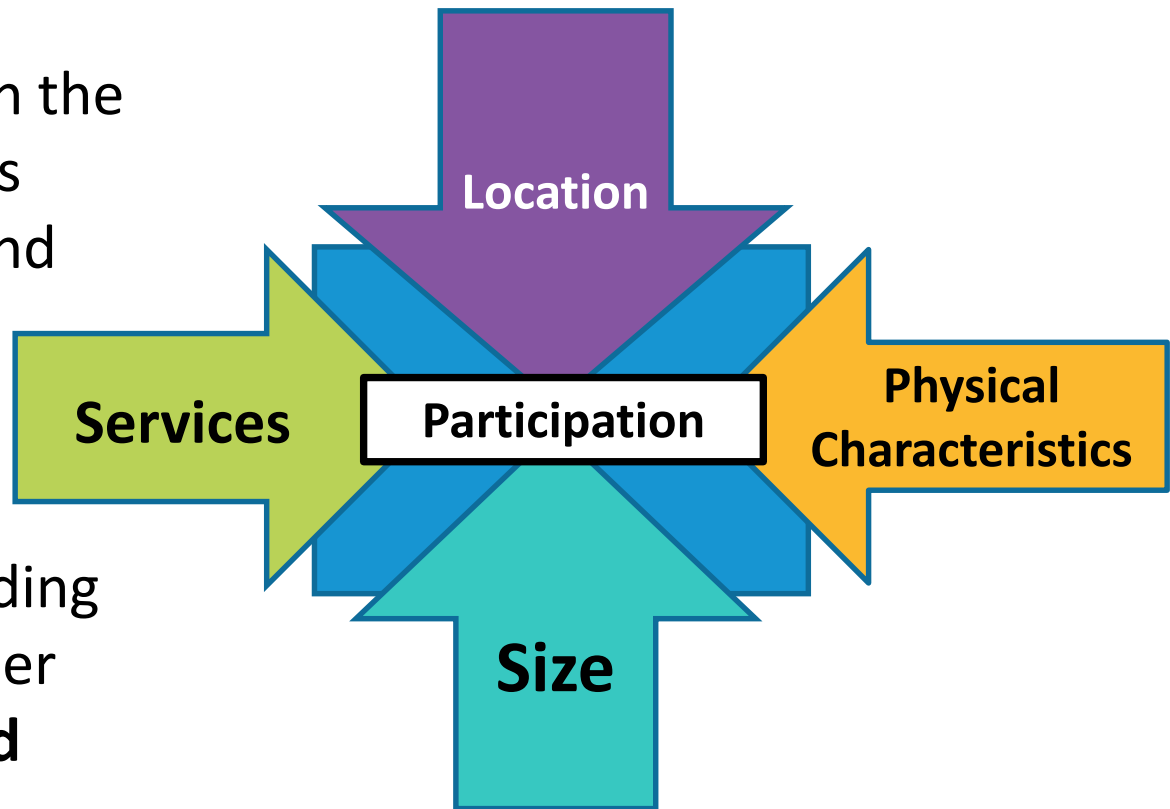


Storage Can Participate in All of New England's Wholesale Electricity Markets and Services



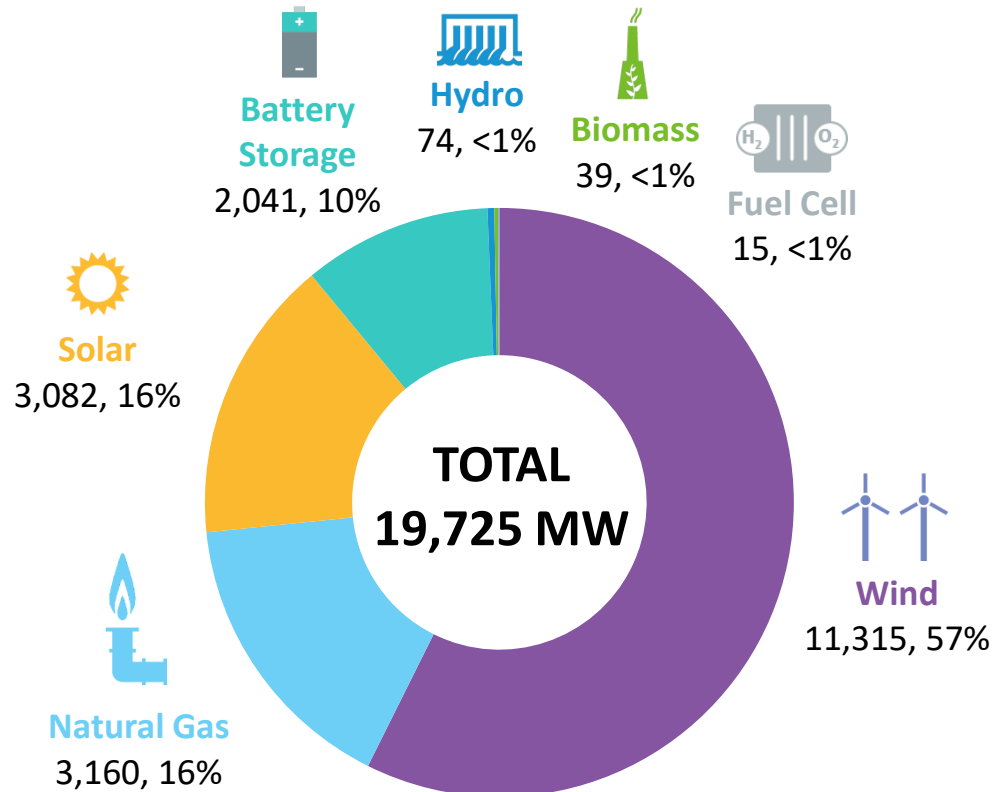
Participation of Storage Is a Function of Many Factors Including the Size and Location of the Facility

- **Larger storage resources (> 5 MW)** generally participate **directly** in the wholesale markets as supply and/or demand
- **Smaller storage resources** can participate in different ways, including aggregating with other resources as **demand response**



Battery Storage Is Emerging in Large Quantities in New England's Wholesale Electricity Markets

All Proposed Resources



Source: ISO Generator Interconnection Queue (April 2019); FERC and non-FERC jurisdictional proposals; nameplate capacity ratings. Some natural gas proposals include dual-fuel units (with oil backup); some natural gas, wind, and solar proposals include battery storage. Megawatts have been rounded.



ISO New England Continually Evaluates Opportunities to Enhance the Market Design to Enable New Technologies

- Storage can participate in the markets **today**
- The ISO recently implemented **rule changes** to better integrate storage and other technologies into the markets
- The ISO is looking **at further enhancements** to better incorporate technologies into the markets and value reliability services
- The region will need **flexible resources** to help balance the quantities of wind and solar being added to the system



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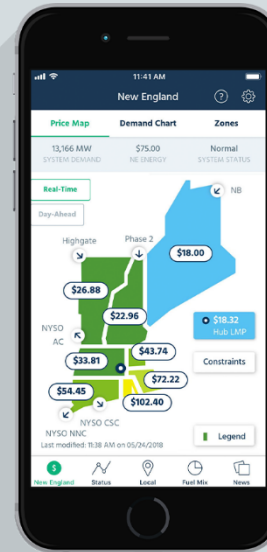


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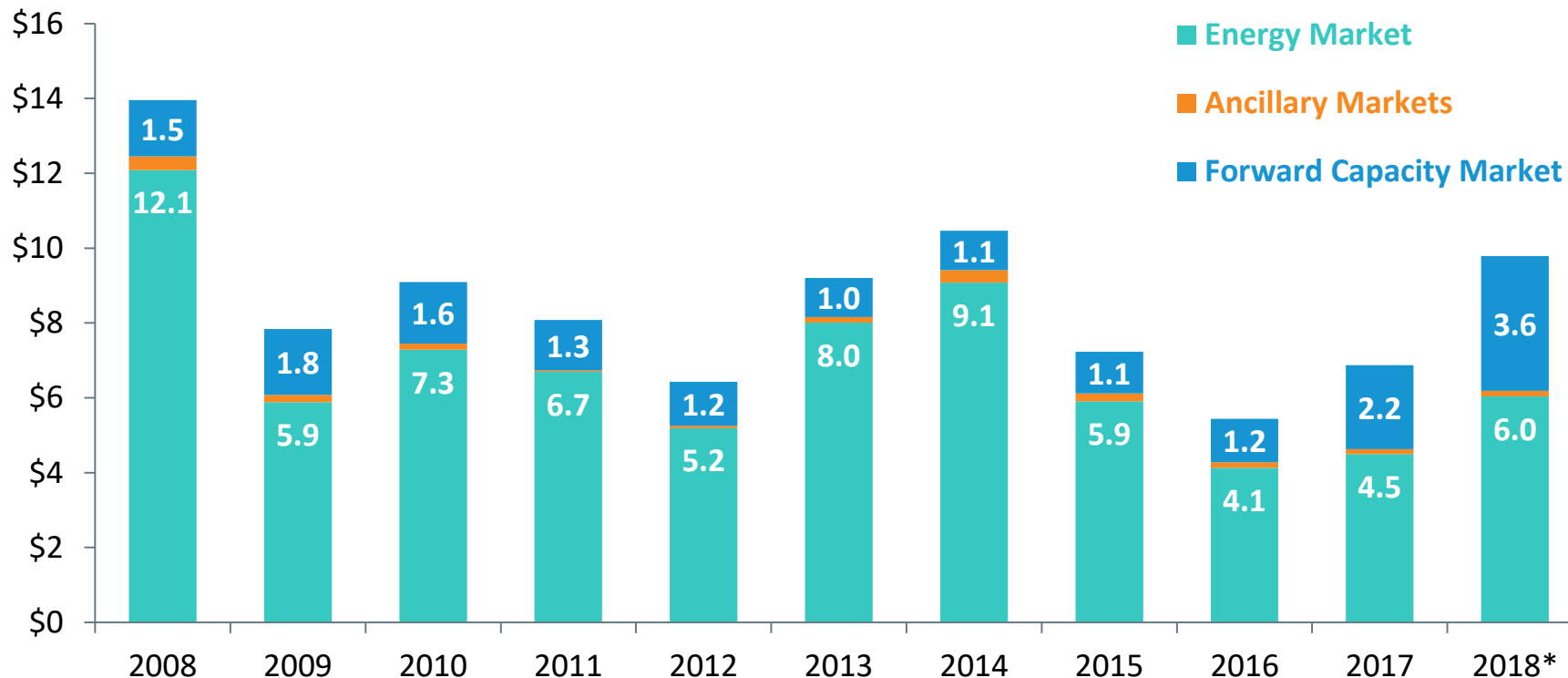
APPENDIX

Additional Background Information



Energy Market Values Vary with Fuel Prices While Capacity Market Values Vary with Changes in Supply

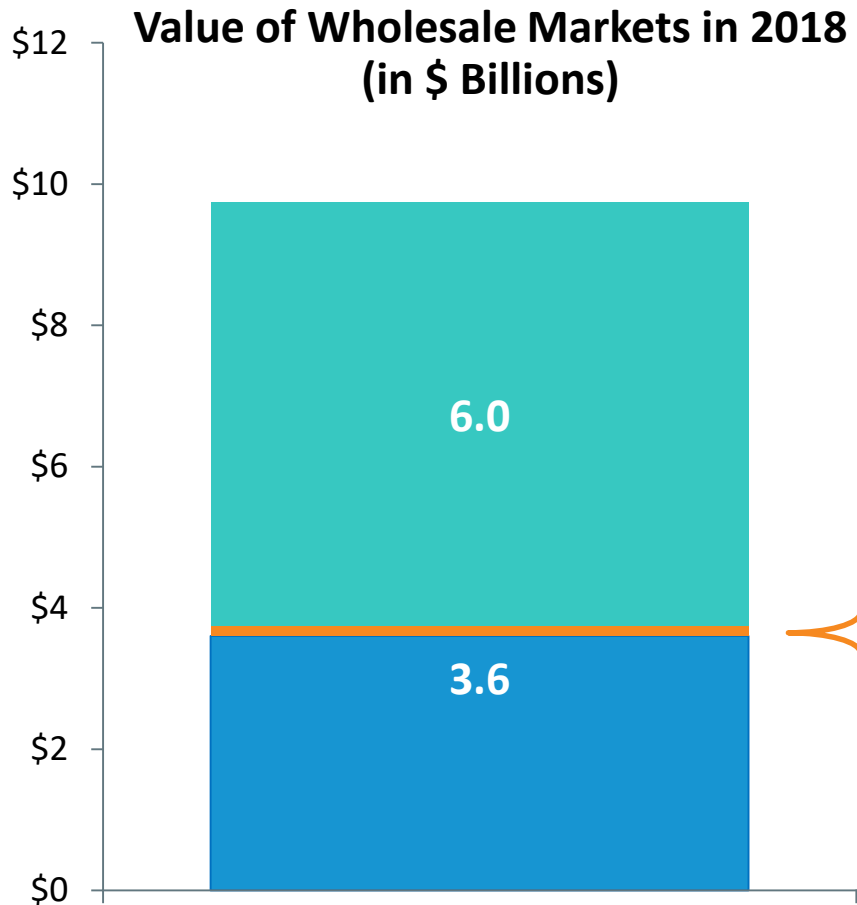
Annual Value of Wholesale Electricity Markets
(in billions)



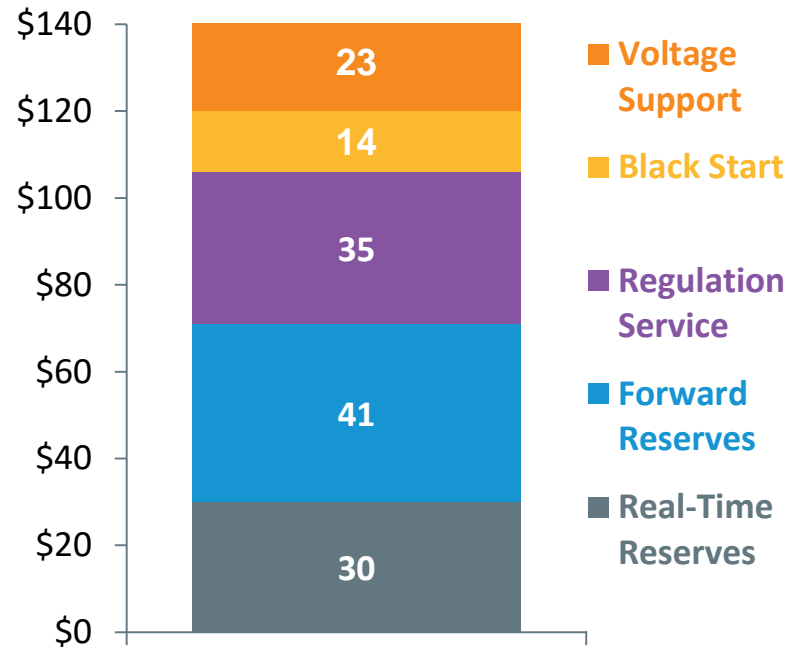
Source: [2018 Report of the Consumer Liaison Group](#); *2018 data is preliminary and subject to resettlement
Note: Forward Capacity Market values shown are based on auctions held roughly three years prior to each calendar year.



Ancillary Services Today Are a Relatively Small Part of the Wholesale Electricity Markets



Ancillary Service Markets in 2018 (in \$ Millions)



■ Energy Market ■ Ancillary Markets ■ Capacity Market

Source: ISO New England Internal Market Monitor
ISO-NE Markets and Settlements Data