



Quarterly Business Intelligence Update:

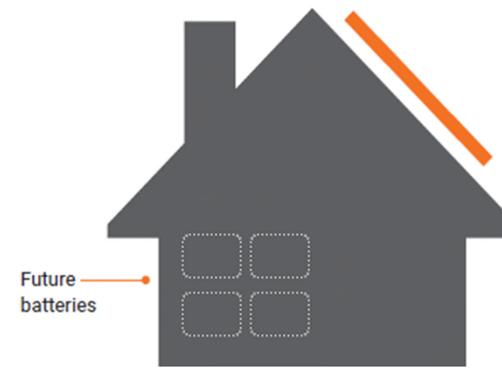
The role of storage in the transformation of the energy industry...

May 2016

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What is energy storage?

- The capture of energy produced at one time (e.g. when demand is low) for use at a later time (i.e. when demand is high).



- Five key types of storage technology that can be deployed across the energy system

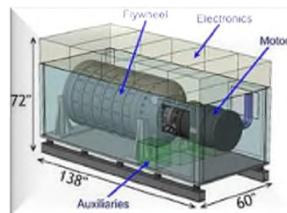
Pumped Hydro



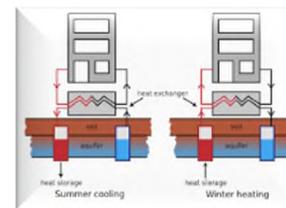
Batteries



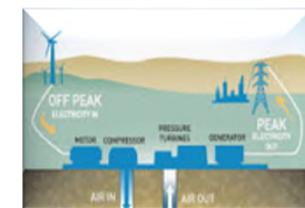
Flywheel



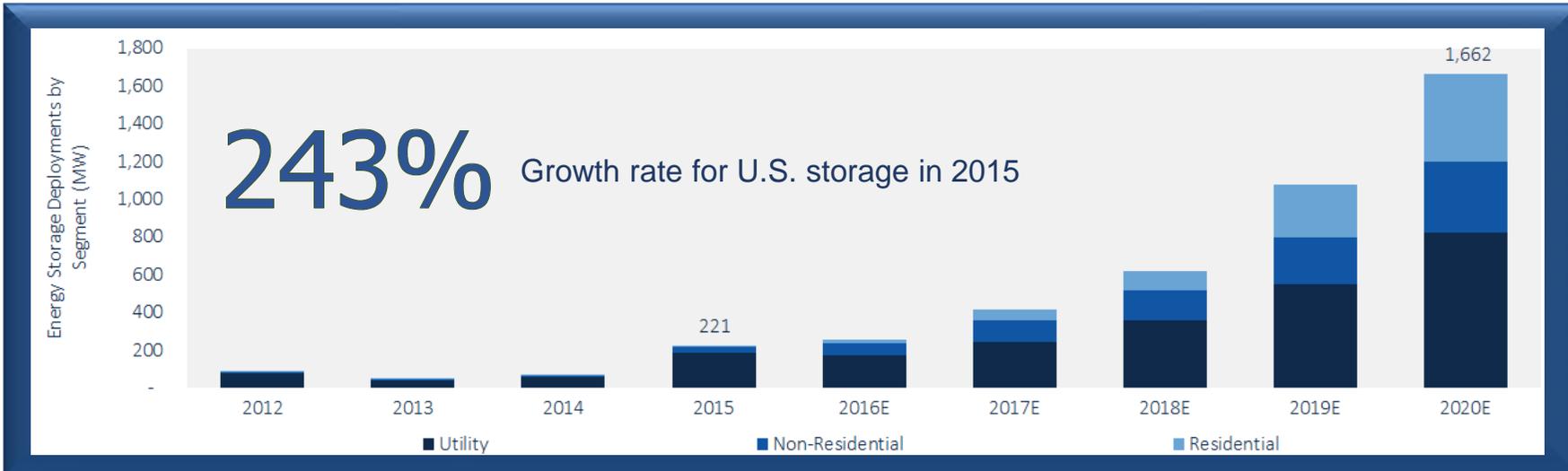
Thermal



Compressed Air



What storage trends are we seeing in the energy marketplace?



↓ 30%

Projected decrease in installed prices by 2017

↑ 1.7GW

Forecasted for the U.S. energy storage market by 2020 vs. 221MW installed in 2015

\$2.5B

Projected value of storage market by 2020

Why is storage so potentially important to the energy system?

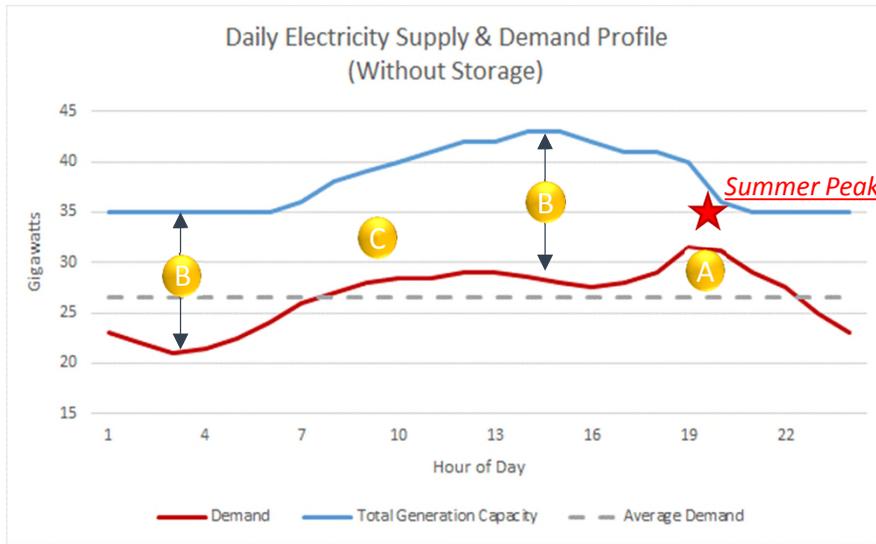


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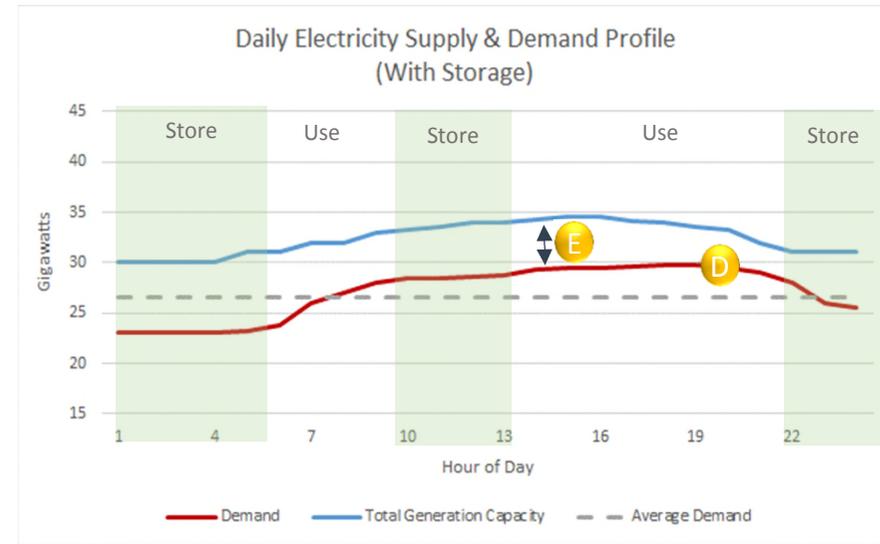
- The electric grid is built to meet peak demand at the highest time of the highest day in the year (often just a few hours). This means that there is significant idle capacity for the majority of the year.
- Storage can help address two significant challenges in the industry:
 - Helping to manage and reduce peak demand
 - Matching the timing of supply to meet demand.

Storage provides the ability to help manage and reduce peak demand and improve system efficiency.

Illustrative



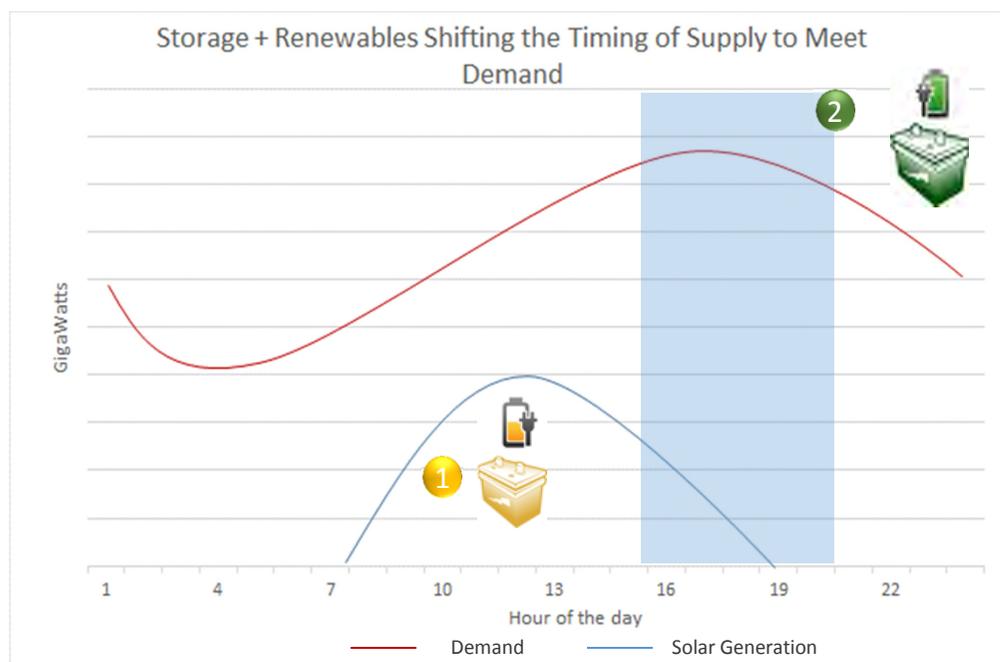
The grid must be able to provide a significantly higher total generation capacity (annually) in order to meet peak customer demand.



Storage can help to more closely match supply and demand so that they are more consistent and potentially reduce overall system generation capacity requirements.

Storage can also help optimize the use of renewables, matching the timing of supply to meet peak demand.

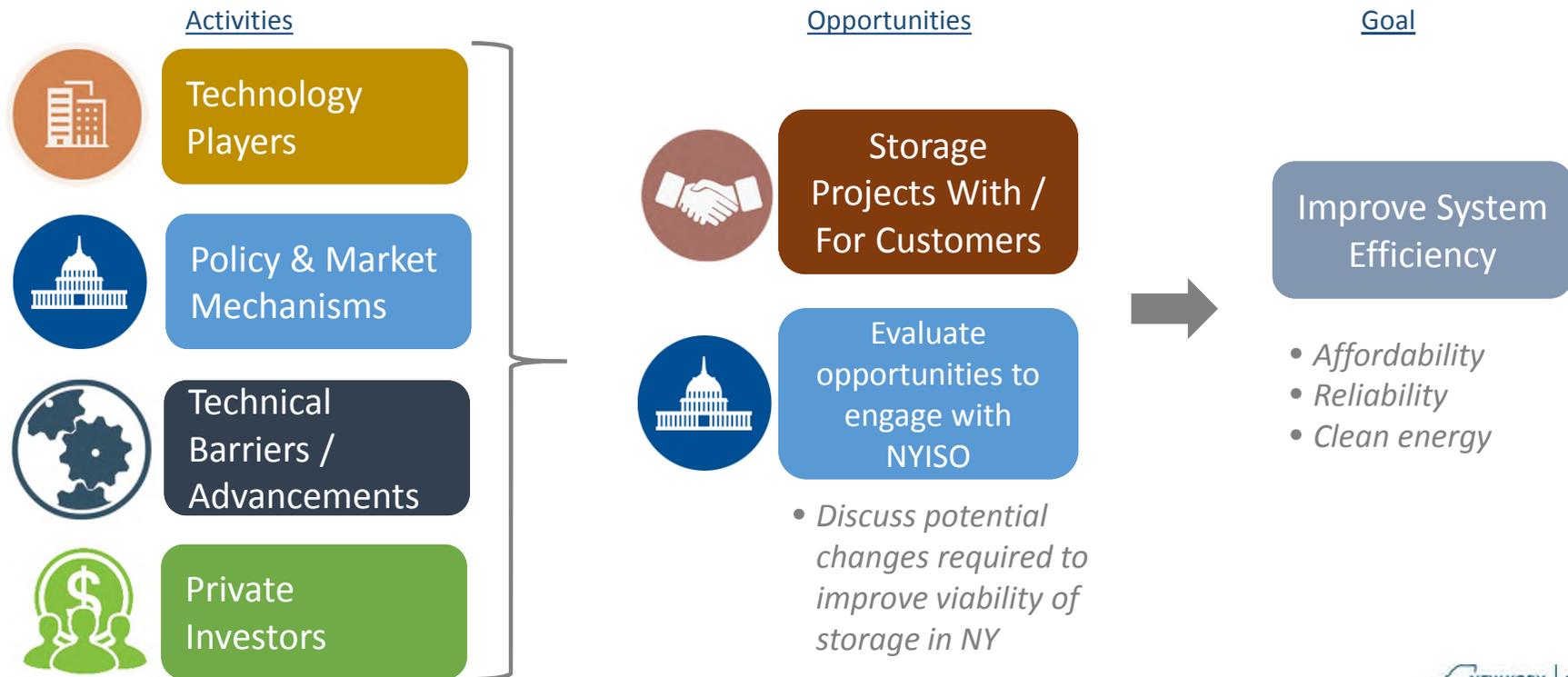
Illustrative



- 1) Storage can charge during the day while renewables, such as solar, are generating at their peak.
- 2) Storage, now fully charged, can then be dispatched in the early evening when customer demand peaks.

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Moving forward, NYPA will monitor industry trends and focus on opportunities to work with vendors and our customers on projects to improve system efficiency.



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