

Technical Conference on Energy Storage

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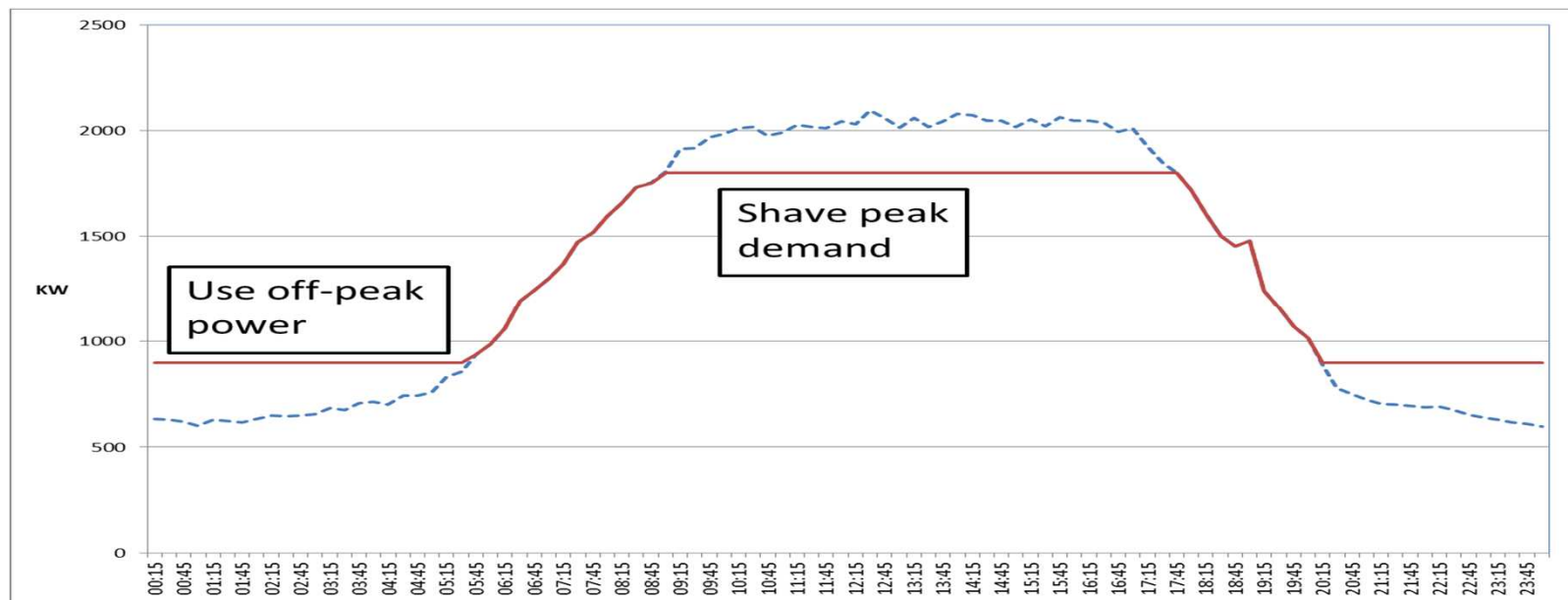
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Discussion Topics

- Benefits of Energy Storage
 - For Customers
 - For Con Edison
 - For The State Of New York
- Reforming The Energy Vision (REV)
- Con Edison Incentive Programs
 - Demand Management Program
 - Brooklyn-Queens Demand Management Program
- FDNY/Con Edison/NYSERDA Battery Testing Collaboration

Benefits of Energy Storage – Customers

- Uses low-cost, off-peak power
- Shaves peak demand
- Firming renewable resources



Benefits of Energy Storage – Con Edison

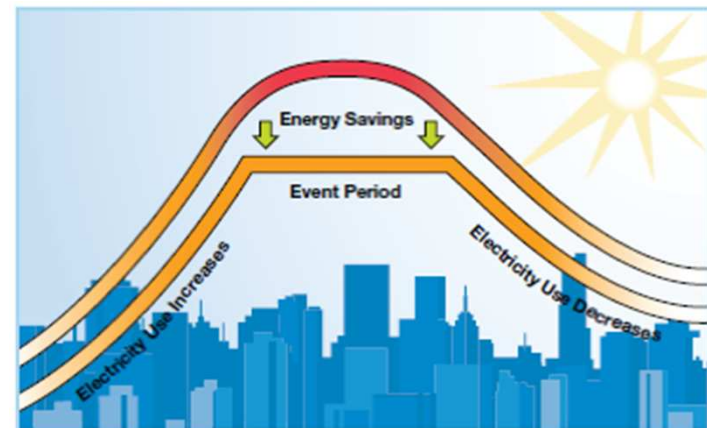
- Deferral of Transmission and Distribution Investments
- New Source of Revenue (REV)
 - Virtual Power Plant Demo Project
 - 4MWhr/1.8MW
 - A few hundred homes is expected to be enrolled
 - Energy Storage RFI generated 47 responses
 - Con Edison and O&R plan to file for Demo Projects in Q3

Benefits of Energy Storage – State of NY

- 2015 State Energy Plan
 - Obtain 50% of state electricity generation from renewable energy sources by 2030.
 - Firming of Renewable Distributed Energy Resources (DER)
- REV
 - Enhanced Customer Engagement
 - Encouragement of Distributed Energy Resources (DER's)
 - Load Curve Management & System Efficiency (Peak shaving)
 - Lower emissions

Demand Management Program (DMP) - Overview

- Peak Demand Reduction (kW)
 - Projected average system - coincident peak demand reduction that occurs during on-peak hours
- On-Peak Hours
 - 2 p.m. – 6 p.m.
 - Monday – Friday (excluding Holidays)
 - June 1 through September 30



Demand Management Program - Incentives

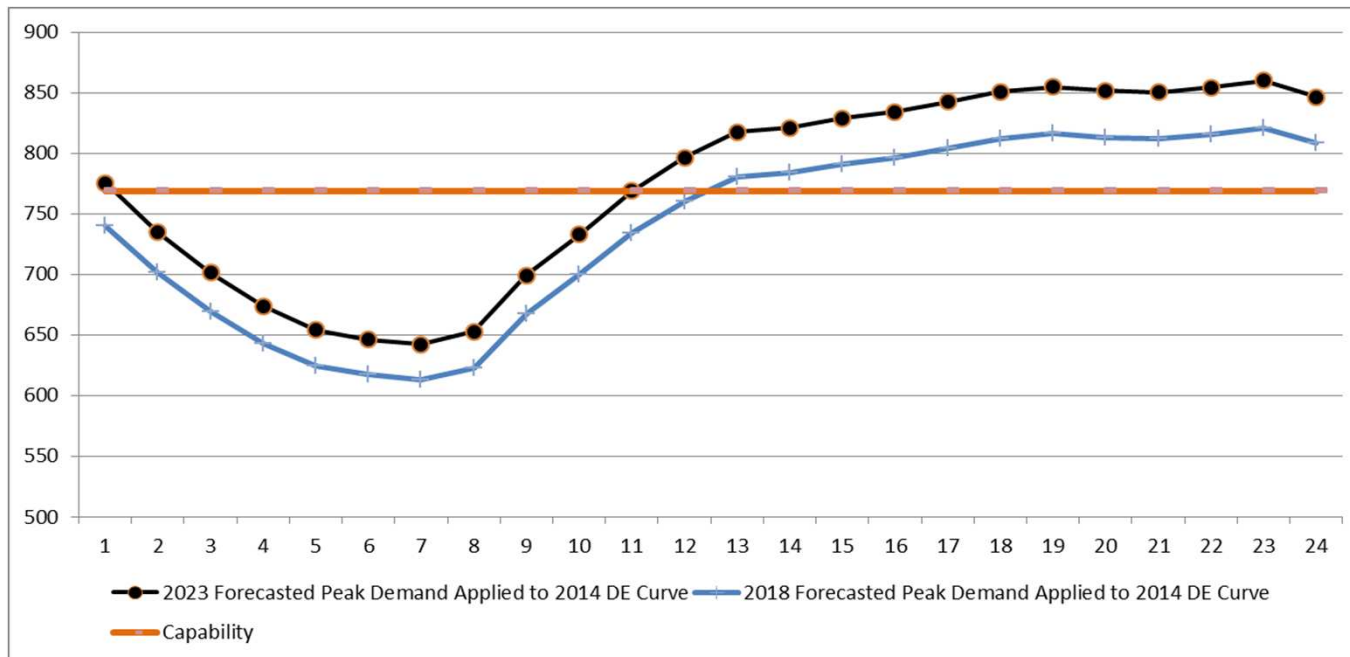
Project	Current Incentive	DMP Incentive/kW	Total Customer Benefit
<i>Thermal Storage</i>	<i>\$600/kW</i>	<i>\$2,000</i>	<i>\$2,600/kW</i>
<i>Battery Storage</i>	<i>\$600/kW</i>	<i>\$1,500</i>	<i>\$2,100/kW</i>
<i>Chiller/HVAC/Controls/ Process Efficiency</i>	<i>\$0.16/kWh</i>	<i>\$1,250</i>	<i>\$0.16/kWh + \$1,250/kW</i>
<i>Lighting/LED</i>	<i>\$0.16/kWh</i>	<i>\$800</i>	<i>\$0.16/kWh + \$800/kW</i>
<i>DR Enablement</i>	<i>\$200/kW</i>	<i>\$600</i>	<i>\$800/kW</i>
<i>Fuel Switching (Non-electric AC)</i>	<i>Steam AC Program</i>		<i>\$500-\$1,000/kW</i>
Large Project Bonus			
<i>Projects over 500 kW</i>		<i>+10% of kW incentive</i>	Bonus funds are first installed, first paid.
<i>Projects over 1MW</i>		<i>+15% of kW incentive</i>	

Demand Management Program - Projects

- 21 Battery Storage Project Applications Committed through the program
 - Capacity of 18 MW
 - 2 different battery chemistry families
 - Lithium Ion (multiple species)
 - Lead Acid
 - 4 of these projects are for indoor installations
 - 17 projects are outdoor installations
 - An additional 5 projects are prospecting, representing 7 MW of capacity.

Brooklyn Queens Demand Management (BQDM) Program – Overview

- Sub-transmission feeders serving two networks in Brooklyn and one network in Queens overloaded (>800MW)
- Targeted peak period: 12pm-12am
- Commission approved: Customer Sided 41 MW (\$150m), Utility Sided 11 MW (\$50m)



Brooklyn Queens Demand Management Program – Projects

- 18 Customer-sided proposals include battery energy storage
 - 5 different battery chemistry families
 - Lithium Ion (multiple species)
 - Zinc flow
 - Lead Acid
 - Sodium Sulfur
 - Sodium Nickel
 - Indoor and outdoor installations
- Utility-sided solution:
 - 12 MWh battery storage system installed at a unit substation

Collaboration with the FDNY & DOB

- Develop a first responders' guide for select battery chemistries:
 - One Lead Acid
 - One Vanadium Flow Battery
 - Five Li-ion Chemistries: 4 Types of NCM, Fe_3PO_4 , Titanate
- Provide off-gassing data and rate of heat release to inform code requirements
- Support for training materials and training exercises for energy storage systems

Thank You!

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