

ADVANCED ENERGY GROUP, LLC

Aligning Market and Policy for Grid Optimization

Washington [] Chicago [] New York City

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Drivers towards System Efficiency

- Congestion / Growth
 - > Growth and Movement
- Infrastructure
 - Aging, Central vs Distributed, RE penetration
- Technology
 - IoT, DERs, New System Platforms
- Climate
 - GHG Emissions, Air Quality, Resiliency

North Star for Power?

- AFFORDABLE
- CLEAN
- RELIABLE

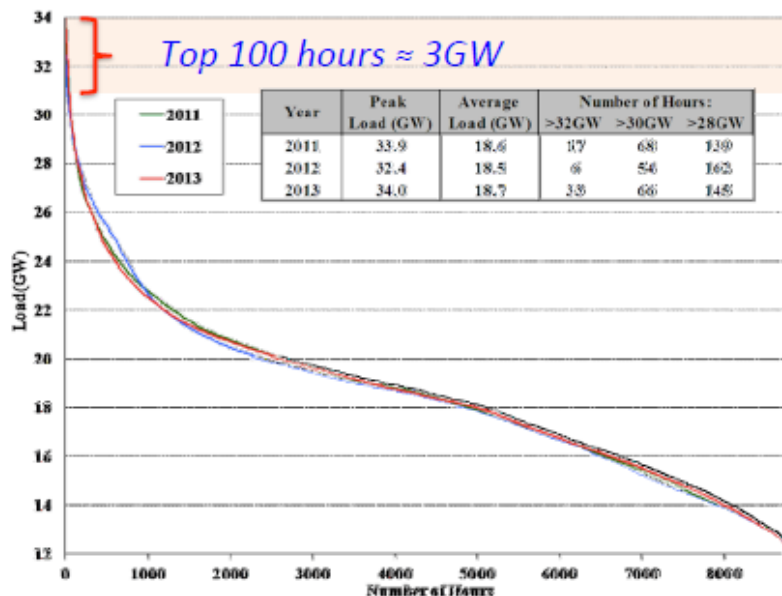
New York City

Trapped Value in Peak Demand

"If, for example, the 100 hours of greatest peak demand were flattened, long term avoided capacity and energy savings would range between \$1.2 billion and \$1.7 billion per year."

-NY PSC Order Adopting Regulatory Policy Framework and Implementation Plan [REV], 2/26/15

NY ISO Load Duration Curves, 2011 -2013



Source: 2013 NYISO SOM Report, Potomac Economics.

Cost of NYS Peak Demand

Top 100 hours = 3 GW statewide
(1.4 GW NYC alone)

Low Average @
\$1.2 billion

High Average
@\$1.7 billion

\$400 / kW

\$567 / kW

\$0.40 / kWh

\$0.57 / kWh

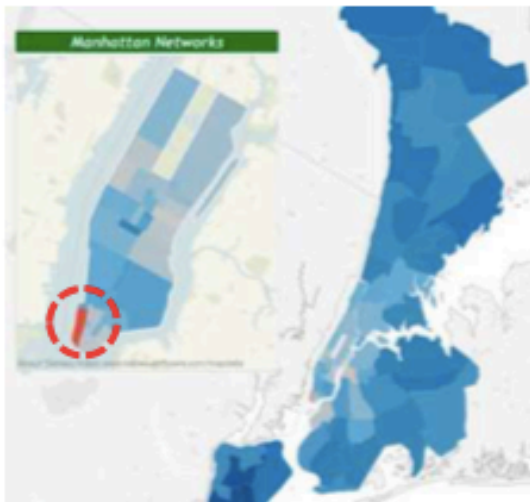
Reforming the
Energy Vision



New York City

Distribution Load Relief Program – 2 Hr Notification Program

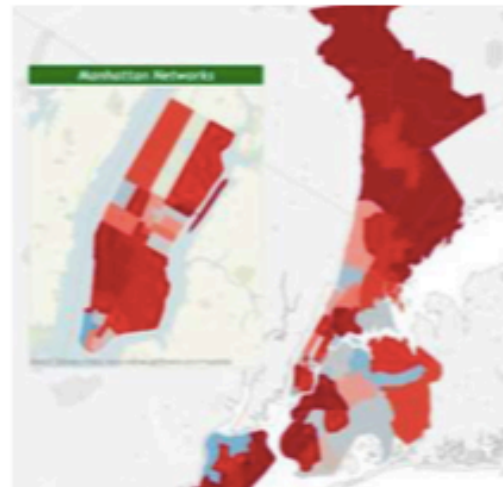
- Called on a network basis for contingencies



- Premium paid for 10 networks with higher need for demand response ("Tier 2" networks)

Commercial System Relief Program – 21 Hr Notification Program

- Called for network peak shaving



- 4 call windows to coincide with network peaks
- 3 events per year expected on average

Dramatic Increase in ConEdison DR Revenue

Commercial System Relief Program (CSRP)	2016	
Reservation Payment – Brooklyn, Bronx, Queens, Manhattan	\$18 / kW / Month	(up 80%)
Reservation Payment – Staten Island and Westchester	\$6 / kW / Month	

Distribution Load Relief Program (DLRP)	2016	
Reservation Payment – Tier 2	\$25 / kW / Month	
Reservation Payment – Tier 1	\$18 / kW / Month	(up 300%)

Notes:

1. These incentives are for the Reservation Payment Option
2. Incentives will increase by \$5 / kW / Month if 5 or more events are called in a network for a given program starting with the month of the 5th event
3. Performance Payments are \$1/kWh for the duration of an event

NYC - Owners are the key

- Demand Management Program - \$200M+
 - 120 MWs
- Brooklyn Queens Demand Management - \$250M
 - 60+ MWs
- Targeted Demand Side Management - \$60M
- Distributed Storage Incentive- \$25M

NYC - Owners are the key

- 5 yr paybacks
- Batteries: \$2400/kW incentive – Lead inside Li outside
- Diesel generator new install /upgrade \$900/kw capped at some % of project cost
- Thermal Storage – Ice @ \$900/kW
- VFD Optimization for FR and Demand Management
- Commercial Building Owners want to own the asset
- Education / Healthcare more ownership flexibility

NYC - Owners are the key

- 24 Months for behavioral change
- 24 Months for systems to go online
- Incentivize expedient adoption and penalize tardiness
- Low risk tolerance regarding safety or operations
- Project assessment and deployments needs real-time oversight and gating.

New York City



North Star for Power?

- CLEAN
 - 80% GHG Reduction by 2050
 - #1 for Air Quality
 - Maximize CHP, Maximize Renewable + Storage
- RELIABLE - Is a Diesel Generator a DER?
 - Estimated current installed diesel emergency generator capacity in DC?

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