

## **CECONY Electric System**

### **Service Territory (blue)**

Electric Customers 3.6 m

Population 9.1 m

Area 604 mi<sup>2</sup>

Peak Demand 13,322 MW

Load Density 21.8 MW/mi<sup>2</sup>

## **System Voltages**

Transmission(kV) 345, 500, 138, 69

Primary Distribution (kV) 33, 27, 13, 4

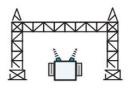
Secondary Distribution(V) 120, 265





## **Electric System Overview**







13,322 megawatts

Peak demand record on July 19, 2013 at 5 p.m.

62 area substations

51K billion kilowatt hours

**Underground** 



97K miles of cable



268.5K underground vaults



43K underground transformers

**Overhead** 



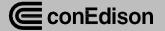
34.5K miles of cable



270K utility poles



52K overhead transformers



# **Electrification Strategy**

# Enable change in energy consumption



Drive growth in energy efficiency



Implement demand response programs



Promote installation of EV charging infrastructure



Support incentives for heat pump installation

### **Facilitate supply transformation**



Invest in transmission to interconnect renewable generation



Advocate for development of long and short duration energy storage solutions



Advocate for utility ownership of renewable generation

#### Build the grid of the future



Enable the expansion of the electric system



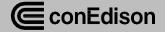
Build a more resilient system against climate change



Enhance safety, reliability, and customer experience

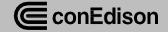


Develop new grid capabilities



## **Build the Grid of the Future**

	Safety	Customer experience	Operational excellence
Œ.	Zero-harm culture and actions for public and employee safety	Choice, control, and convenience through personalized services	Continued investments in programs and new technology that provide high levels of reliability
Strategy and Value Delivered	Reduced risk:  • Low voltage equipment failure  • Underground transformer failure	Leads to:  Customer options and personalization  Adoption of clean energy solutions  Choice through rate reform  Enhanced outage communication	Reduced risk:  Network shutdown  Loss of substation  Climate Change & Storm Impact
¥ −	<ul> <li>Secondary network reliability and Advanced Metering Infrastructure (AMI) analytics</li> <li>Risk-based transformer replacements</li> </ul>	<ul> <li>Digital customer experience</li> <li>Customer Information System</li> <li>Customer Relationship Management</li> <li>Customer-facing resources and tools</li> <li>Customer analytics</li> </ul>	<ul> <li>Primary network reliability</li> <li>Mobile transformers and equipment</li> <li>Overhead reliability and hardening</li> <li>System sensors and real-time monitoring and control</li> </ul>
Focus for ARPA-E Support / New Technologies	Asset health monitors	<ul><li>Advanced Distribution Management System</li><li>Outage Management System</li></ul>	<ul> <li>Overhead / underground smart switches</li> <li>Cybersecurity, data centers</li> <li>Smart / Automated Tools</li> </ul>



# Electrification impact on Utility worker safety & productivity



New hires & employee retention



Volume of work during transition



Rising trend of Operating Errors



**Human Factor vulnerability** 



**Productivity** 

Areas for ARPA-E to assist in developing technologies to improve safety, reduce human errors & accelerate learning curve

