New York Power Authority
Climate Resiliency

EPRI and NYSERDA Workshop

"Climate Change Vulnerabilities of and Adaptation Strategies for new York State's Future Electric System"

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NYPA Assets

The NYPA transmission system consists of four voltage levels: 765 kV, 345 kV, 230 kV, and 115 kV. NYPA's transmission assets include 15 high-voltage and extra-high-voltage substations, an energy control center, three sets of subterranean/subaquatic transmission lines and overhead transmission with a total circuit length of approximately 1400 miles.

NYPA's fleet of generation facilities consists of a mix of hydro and fossil fueled generation facilities, in many locations around the state of New York. The sixteen primary generation facilities have a combined, electric generation capacity of more than 5,500 megawatts. Over 70% of the company's electric generation is from hydropower. The company's fleet of fossil generation facilities consists of eleven, simple cycle, natural gas fired, power plants on seven sites; and two, large frame, duel fuel, combine cycle, power plants, on individual sites. All fossil generation facilities are located in New York City and Long Island

Vision Forward

NYPA has developed a multi-pronged strategic plan for increasing the reliability and resilience of New York State's energy infrastructure. This plan includes improvements and modernization of NYPA's existing generation and transmission assets, the development of microgrids, installation of local generation equipment, the improvements in energy efficiency across New York State, the development of an Asset Health Monitoring Diagnostic Center for NYPA's various generation and transmission assets, and the development of a versatile research and design center focused on advanced technology for the next generation electric grid all while supporting New York's CES.

Resiliency Analysis

- NYPA's existing transmission and generation facilities were reviewed to identify potential extreme weather risks based on historical events and predictions of future climate changes that may result in more extreme conditions. This vulnerability assessment focused on three primary weather related areas – extreme winter weather, extreme hot weather impacts including heat waves, and flooding.

- The main weather vulnerabilities identified were extreme winter weather, specifically ice and wind loading combinations on transmission assets; and extreme flooding, and extreme high temperature~~s~~ weather including extreme heat waves on the generation facilities in New York City.

Future State

- NYPA is developing an Asset Health Monitoring Diagnostic Center for NYPA's various generation and transmission assets. This Center will create new asset management decision-making capabilities by aggregating existing and future data streams used to monitor, and diagnose the health of the equipment. The objective of the center is to provide increased real-time insight into an asset's health status.
- NYPA is funding an Advanced Grid Innovation Lab for Energy (AGILe) which is an electric power lab to model the New York State Grid. AGILe is slated to be a versatile research and development (R&D) center oriented towards applied research in the areas of next-generation advanced energy management systems, electric power systems protection and control, smart grid technologies, and power electronics applications.

Support of Additional Research

Many factors will impact our industry going forward including:

- Climate Change
- Reliability Requirements (NERC)
- Regulatory Mandates
- Community Input
- Distributed Energy Resources
- Renewables

Information is needed that will assist in long term planning processes in a de-carbonized electric grid while support NYS REV and the CES.