

Integrating Climate Resilience into Today's Energy Landscape: The New York Power Authority's Approach to Leveraging Predictive Models

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Background/Objectives. The New York Power Authority (NYPA) is the largest state-owned utility in the US, producing 25% of New York state electricity, with 88% of NYPA's 2021 electricity produced by hydropower. As the electricity landscape evolves due to factors such as renewable integration, decarbonization, and electrification, climate change stressors are compounding impacts to existing power grid infrastructure. These impacts also need to be considered in grid planning efforts. As a key partner in helping New York state achieve its aggressive climate targets, such as the full decarbonization of its electricity by 2040, NYPA is committed to providing clean reliable electricity and is looking to better understand existing and future climate risks and opportunities to facilitate the clean energy transition. Here, we will provide a broad level understanding of NYPA and its role in clean energy generation, and strategies being employed to mitigate and adapt to climate change across NYPA's business functions. We will highlight how NYPA is approaching operationalization of climate resilience through integration of climate projections and infrastructure planning to mitigate the compounding impacts of the changing power grid.

Approach/Activities. Expanding on work presented last year detailing the downscaled climate modeling and transmission load flow analysis for New York State that NYPA initiated with Argonne National Laboratory, NYPA is undertaking a cross-functional and enterprise-wide planning process to operationalize climate risks and opportunities. NYPA has begun to implement resilience strategies across four key areas. Climate resilience will be integrated into (1) asset planning including asset management plans, ISO 55001 certification, and tool integration, (2) engineering design standards and specifications including maintenance and new infrastructure design criteria, spares policies, and consistent and data-driven design, (3) policies and procedures including health and safety, crisis management, contingency planning, load forecasting, employee development, and customer awareness, (4) project identification and planning including transmission, research and development, infrastructure hardening, nature based solutions, and licensing projects. These implementation strategies highlight how climate projections and other modeling efforts can be leveraged by utilities to build resilience and internalize climate risks and opportunities.

Results/Lessons Learned. Results from the climate planning efforts will be used to implement policies and projects across the organization. These efforts will complement NYPA's current climate change mitigation and adaptation, decarbonization, and grid reliability actions. Further applications include cost-benefit analysis for specific business cases, collaboration with other utilities on large-scale projects and with local stakeholders on community climate resilience projects, and with regulatory agencies on best management approaches for integrating climate resilience into long-term planning.