

1. Resilience Planning

As the threat of hurricanes, storms and extreme weather events grows, PSEG Long Island (PSEG) is taking steps to modernize and maintain the electric grid in order to improve resilience for its customers. PSEG's work focuses on the targeted replacement of transmission and distribution infrastructure, the addition of new technology to streamline work management processes, and incorporating renewable energy and demand-side resources among other improvements.

PSEG has taken a number of steps to ensure the reliable supply of electricity to sustain economic activity and maintain essential services. For example, PSEG has procured and is continuing to obtain a number of renewable energy resources while achieving their share of the [New York Clean Energy Standard](#). PSEG's [tree trimming program](#) has been expanded using utility best practices, leading to a 50% reduction in tree related outages. By creating an outage center and with the assistance of an outage management system, PSEG is able to provide customers real-time information on outages and restoration efforts through a map as well social media. PSEG has also carried out preventative maintenance throughout their electric system. For example, the utility spent \$500 million on system improvements in 2016 alone. Further, PSEG is elevating low-lying substations across its service territory to reduce the risk of flooding and power outages.

New technologies to limit the number of grid outages include automated distribution switches with enhanced communications and system monitoring. By working in tandem with a power restoration communications system, these devices help crews respond faster to field events. The utility is also scanning its power lines using infrared technology to proactively identify overheating issues with equipment.

2. Program or Project Implementation

PSEG has embarked on a number of programs and initiatives to maintain and ensure system reliability. For example, PSEG has a CHP program that offers up to 70% of project cost or \$2 million per CHP project, whichever is less. This is facilitated through [PSEG's Commercial Efficiency Program](#). PSEG Long Island modeled aspects of its program after NYSERDA's CHP program and launched it in the end of 2016. Rebates for CHP can range from \$1,440/kW to \$400/kW, depending on size, with several projects currently in the pipeline. After projects receive pre-approval and developers complete the installation and the system is operating, the utility provides the full rebate. The program helps PSEG Long Island reach its energy efficiency goals and improve the resilience of customers; systems above 50 kW must be black start capable to participate in the program. In addition to CHP, PSEG is also focusing on battery storage as a way to improve customer resilience. Utility 2.0 plans were recently filed in July 2018 to offer battery storage incentives for customers that already own solar, in order to assist with peak demand on hot summer days.

PSEG is also pursuing additional programs or initiatives aimed at enhancing system resilience and reliability. The [Circuit Improvement Program \(CIP\)](#) provides inspection and upgrades to hundreds of miles of electric distribution lines to increase circuit reliability. Other distribution system initiatives have included the storm hardening of mainline distribution circuits, the installation of over 800 new automatic sectionalizing switches and communication networks, and the installation of advanced metering infrastructure (AMI). PSEG is also taking proactive measures to protect against storms and extreme weather events. The utility is installing flood level monitoring and protection, and elevating substations and substation equipment to protect against flooding. The substation storm hardening program was

CHP for Resiliency Accelerator Partner Profile

initiated in 2014 and is scheduled to be completed in 2018. PSEG has also entered into an agreement with the Federal Emergency Management Agency (FEMA) to undertake a three-year reliability and resiliency project to harden the grid.

3. Lessons Learned

PSEG has learned a number of lessons from the variety of programs and initiatives it has recently implemented. One of the main takeaways is that protocols and training opportunities for its field workers and contractors are needed to support their efforts to prevent and recover from grid disturbances brought about by frequent storms and hurricanes. The utility has also realized that smart grid and intelligent field devices can have great benefits on blue sky days and during moderate storm events. However, automation is not capable of healing the kind of severe physical damage brought by events such as Superstorm Sandy. The utility is working with suppliers to improve the integrity and longevity of smart grid devices, while educating stakeholders to manage expectations about the capabilities and functions of intelligent devices.

Referring specifically to the CHP program, PSEG has had challenges with timeframe required to complete CHP projects (~2 years) compared to traditional energy efficiency projects (~6 months). There were also challenges related to educating customers about black-start requirements for CHP, and how to effectively communicate the resiliency benefits given the additional upfront cost. PSEG plans to continue to work with developers to understand the resilience needs of their customers in order to streamline the installation process. While incentives are used to stimulate the market for CHP, PSEG plans to keep the CHP program running within the same framework, and only gradually reduce incentives over time.

4. Additional Information

- ▶ [PSEG Long Island Interactive Reliability Map](#)
- ▶ [PSEG Long Island CHP Program](#)
- ▶ [PSEG Long Island Resiliency and Reliability Initiatives](#)