



# Island Nation Enhances System Reliability With Cutout-Mounted Reclosers

**S&C Featured Solution:** TripSaver® II Cutout-Mounted Recloser

**Location:** Pohnpei State, Federated States of Micronesia

## Customer Challenge

Pohnpei Utilities Corporation (PUC) provides electricity to roughly 40,000 inhabitants on Pohnpei Island, a Pacific island that is part of the Federated States of Micronesia. Operating approximately 1,000 miles from the closest land mass, Guam, the state-owned utility maintains an independent grid and is solely responsible for power generation and distribution. However, the isolated location makes providing reliable and resilient electrical power challenging.

PUC had relied solely on diesel oil for power generation but acquiring the fossil fuel was expensive because of the island's remoteness. The utility wanted to reduce its carbon emissions by curbing diesel oil consumption and use more renewable resources, such as solar and wind. It began that transition through a \$15.5 million grant from the World Bank in partnership with the Asian Development Bank.

When PUC stabilized generation production by upgrading its diesel generators, the utility expected to see improved reliability. However, frequent temporary faults along its distribution system were causing lengthy power outages, negating the generation improvements and forcing PUC to reevaluate its strategy.

Crews were frequently traveling to fault locations to make repairs regardless of whether the underlying cause was permanent. The utility realized it needed to secure the backbone of its electrical grid and upgrade its aging distribution infrastructure, but environmental conditions also were making reliability and resilience improvements difficult.

PUC's distribution grid was designed and installed in the 1960s with limited segmentation, meaning a single fault would affect a large portion of each feeder. The independent grid uses three main feeders—West, East, and Kolonia 2—to distribute power to the entire island. As part of that system, long feeder and lateral

lines weave over mountains, low coastal zones, and onto a smaller adjacent island. Pohnpei also gets up to 300 inches of rain annually, making it one of the wettest parts of the globe and causing a fast vegetation growth cycle that only exacerbated the number of temporary faults. Each required a truck to travel to the fault location to make repairs because fuses would blow every time.

The utility had a set amount in its budget to address its distribution system reliability problem, so it needed to make sure a solution would be economical and long-lasting. It determined it had two options: use available funding for extensive vegetation management, which would be a recurring expense, or explore smart devices that could provide a long-term reliability solution. The solution had to be adaptable to the present grid and require minimal maintenance. PUC chose to explore lateral reclosers able to operate on 13.8-kV overhead three-phase feeders along with single-phase lateral lines.

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*“As an island, our isolation presents unique reliability and resiliency challenges. Installing S&C’s TripSaver II Cutout-Mounted Reclosers solved our issues with temporary faults, allowing us to keep the power on for our entire nation.”*

—Nixon T. Anson  
Chief Executive Officer,  
Pohnpei Utilities Corporation

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# Fault-Testing Reclosers Help Island Nation Enhance System Reliability

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## S&C Solution

PUC officials knew of S&C's TripSaver II Cutout-Mounted Recloser, and they were impressed by the device's rating flexibility and ability to integrate into existing cutouts. With up to 80% of faults being temporary in nature and with the utility's grid primarily consisting of overhead lines, they believed the device could dramatically improve PUC's power reliability. The device accomplishes this by testing whether faults are temporary or permanent and closing back in if the temporary cause goes away. The TripSaver II recloser's proven success at preventing temporary faults from becoming permanent outages was a key selling point because fewer outages meant the utility could save money by reducing repair trips.

PUC believed the TripSaver II recloser was the superior choice over other options because the device required minimal maintenance, could be installed into existing fuse cutouts, and S&C would provide support. S&C's expert team traveled to Pohnpei and provided on-site training. Local support was critical because hands-on training allowed the utility's crews to learn how to install and operate the new devices quickly. S&C also pre-configured the reclosers' time-current characteristic curves to make installation straightforward and simple for line crews.

The utility decided to pilot three TripSaver II reclosers, installing them on main feeders for a six-month period. It chose the locations because they experienced the highest rate of temporary faults. The feeders also faced the heaviest problems from overgrown vegetation, and the pilot's goal was to prevent temporary faults from becoming permanent outages. The TripSaver II reclosers also would provide sectionalizing points, so if a permanent outage were to occur, they would typically minimize the number of customers who would lose power.

*The TripSaver II recloser is helping PUC prevent nuisance outages caused by common problems, such as vegetation overgrowth.*





## Results

PUC was thrilled with the results of the pilot. Within one year, the three TripSaver II reclosers used in the pilot prevented 59 temporary outages from becoming permanent, translating into substantial O&M savings by avoiding 59 repair trips. Most importantly, it allowed the utility to transition from reactive to proactive management of its network. Because PUC was able to reduce costs by cutting back on the number of repair trips, it was able to reallocate resources to other key tasks, including replacing poles, repairing cutouts damaged from saltwater, and other essential maintenance activities.

The utility was so elated with the initial pilot's success, it decided to deploy nine more TripSaver II reclosers, with the goal to continue deploying more throughout its feeders to cover a systemwide deployment on the island. Afterward, PUC planned to use the TripSaver II reclosers' versatility by installing the advanced protective devices along laterals as well.

S&C's TripSaver II reclosers enhanced PUC's ability to improve its reliability and resilience, helping ensure the power stays on across the entire island. By bolstering its distribution system, the utility can now maximize the investment in both diesel and renewable power generation along with comprehensively modernizing the grid. Today, even in blue- or black-sky days, PUC can more routinely provide reliable and resilient energy to its island nation.

*The TripSaver II recloser was key to improving PUC's distribution system reliability for the entire island.*

