Getting Ahead of Distribution Transformer Damage and Repairs

South Florida | *Deployed on 4G LTE*

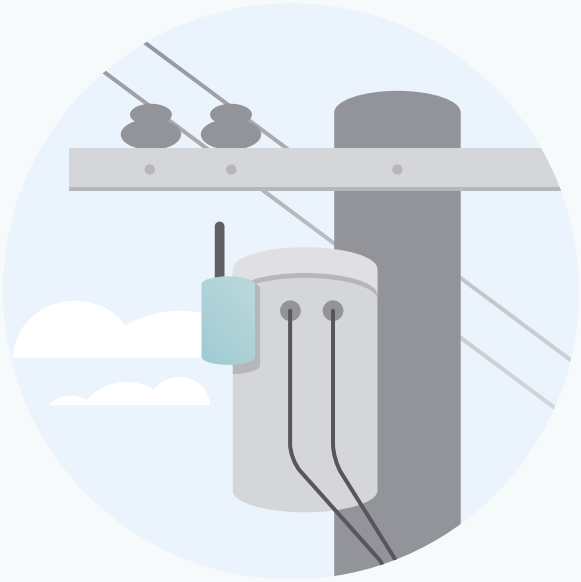
SCENARIO

With high lightning and storm activity putting equipment like circuits and transformers at risk, Florida Power & Light (FP&L) operates in one of the most challenging environments in the country. How could the utility more effectively spot problems, conduct repairs, and make its grid more resilient—without spending more on operations and maintenance?

SOLUTION

The answer: retrofitting transformers with new technology to monitor their condition in real time. This gives FP&L the ability to proactively address circuit-level electrical issues driving many maintenance and repair tickets.

FP&L partnered with Ubicquia to develop GPS-equipped wireless sensors. Mounted onto existing pole and pad-mounted distribution transformers, these sensors report location, electrical and mechanical information, and oil pressure and temperature readings every few minutes via an LTE network, providing immediate alerts when a threshold is breached.



RESULTS

Data from the 5,000-plus sensors FP&L has installed to date has provided much insight into both distressed transformers and the root causes of transformer failure. The sensors show true transformer utilization and load on specific parts of the grid. They also notify the utility of actual voltages and the current delivered to customers, to verify that both are within proper limits.

Looking ahead, FP&L plans to deploy sensors that measure primary circuit currents and sensors for larger three-phase transformers that serve critical customer loads. The utility is also working with Ubicquia to create alarms for early signs of dielectric breakdown within the transformer in order to identify damaged transformers needing replacement before they fall and cause customer outages.