

TXWatch is an in-development sensor that moves the cost-effective design of PowerWatch out of the household and onto the distribution transformer. Once TXWatch is installed on either pole- or ground-mounted transformers, it continuously monitors the voltage and current of all three phases emanating from the transformer, reporting this information back in real-time. High spatial and temporal resolution data collected from a fleet of TXWatch sensors combine to build a comprehensive picture of SAIDI, SAIFI, voltage quality, and frequency deviations across the distribution grid. Paired with the nLine Data Access System, collected data will assist utility engineers in locating outages, potentially reducing mean-time-to-repair, and will allow utility engineers to view the performance history of specific transformers, helping to prioritize transformer repair and replacement.

### **TXWatch Sensors**

- Timestamp phase-level outages and restorations with sub-second granularity
- Communicate data in real-time over a cellular connection
- Store data locally and send later in cases of cellular failure
- Continuously monitor and report voltage and frequency for each phase
- Install easily onto outside of transformer via wires that screw onto transformer secondary lugs
- Optional continuous current monitoring and reporting for each phase, enabling detection of sub-phase level outages
- Optional satellite connectivity in areas without cellular coverage

### **Deployment Methodology**

- Sensors provided with installation training to utility or contractor staff
- Sensor operations continuously monitored and maintained by nLine field staff
- nLine works with utility to determine proper trade-off between coverage, cost, and accuracy

### **Analytics and Reporting**

nLine collects data from the sensors, extracts the KPIs required by utilities, formats the data into report-ready graphs and figures, and produces analytics and reporting such as:

- SAIDI and SAIFI over any time period or geographic area
- Real-time outages maps with < 2 minute latency
- Identification of specific grid infrastructure or geographic areas with poor power quality
- Average grid voltage and frequency grouped by hour of the day, day of the week, or month of the year
- Comparison against SAIDI and SAIFI reported by a utility or their SCADA system (if SCADA information is provided)
- Data stream integration with utility O&M systems
- See Data Analysis and Visualization System whitepaper for more information