



Veridian Connections



“ We chose Tollgrade LightHouse because it was a maintenance-free solution that integrated seamlessly with our SCADA system. Once deployed, we were impressed with the functionality of the solution and were able to use LightHouse well beyond basic fault identification. ”

Mark Tuney
Veridian Vice President of Operations

BUSINESS CHALLENGE

Veridian Connections is a Canadian utility company that provides electricity to nine communities located within southern Ontario in Canada. Veridian’s diverse service area posed multiple challenges for fault identification and power restoration because the majority of the communities they service are non-contiguous to each other and many are in very rural areas. Veridian has been using traditional methods for identifying fault locations in their distribution systems such as, Fault Current

Indicators (FCIs), line patrolling by crew, re-fusing, manually opening and reclosing circuit sections, etc. These methods are time consuming, expensive, and potentially dangerous. The utility grew frustrated with traditional methods that often led to longer outage times and exposed distribution system equipment to fault current multiple times until the fault could be located. carbon future.

Veridian was looking for new, maintenance-free technology that was safe, easy to deploy and

affordable that could help them improve network reliability and monitor asset health. More specifically Veridian hoped to:

- Identify fault locations more quickly and with greater accuracy
- Significantly reduce outage restoration time
- Perform real-time monitoring of their loads on feeders and substation transformers
- Analyze the cause of faults based on current and wave form analytics
- Proactively perform system planning, maintenance and asset management activities
- Feed real-time information into their SCADA system for review by their operations department and key staff

SOLUTION OVERVIEW

In 2013, Veridian turned to Tollgrade's LightHouse platform consisting of Medium Voltage Smart Grid sensors and Sensor Management System (SMS) software with Predictive Grid® Analytics. At the outset, Veridian selected LightHouse because it was a safe, maintenance free solution that could reduce Operations and Maintenance (O&M) expenses plaguing traditional fault detection methods, for example:

- Unlike FCIs, LightHouse Sensors are inductively powered (battery-free), with a lower Total Cost of Ownership (TCO) over their 20 year lifespan
- Unlike FCIs, LightHouse sensors seamlessly integrate into Veridian's SCADA system
- Unlike FCIs, LightHouse sensors have integrated communications and fault analytics software for better data accuracy, are remotely configurable and firmware upgradeable.

BUSINESS JUSTIFICATION

Currently LightHouse is being used well beyond basic fault identification capabilities by distribution engineers, operations, planning, and asset offering a compelling economic justification for the multi-purpose platform. Key applications include:

- Capturing and loading data for system planning, load forecasting and maintenance planning
- Fault detection, fault location and the reduction of outage times
- Making feeder load transfer decisions
- Monitoring rural substations
- Delivering power quality and predictive grid analytics

Tollgrade's LightHouse sensors feed their data into Veridian's SCADA systems using the DNP protocol. A single SCADA screen is now used to view all of the field sensors, their alarms for permanent and momentary faults, and their loading data. Veridian is now able to identify fault type and to get visibility of their rural substations by aggregating load information from their feeders and substation transformers.

Using the "predictive grid" or analytical software



features available in LightHouse, Veridian can start identifying the root causes of problems so that they can manage their system in the most optimal way. LightHouse possess a unique ability to denote waveforms to capture events such as lightning,

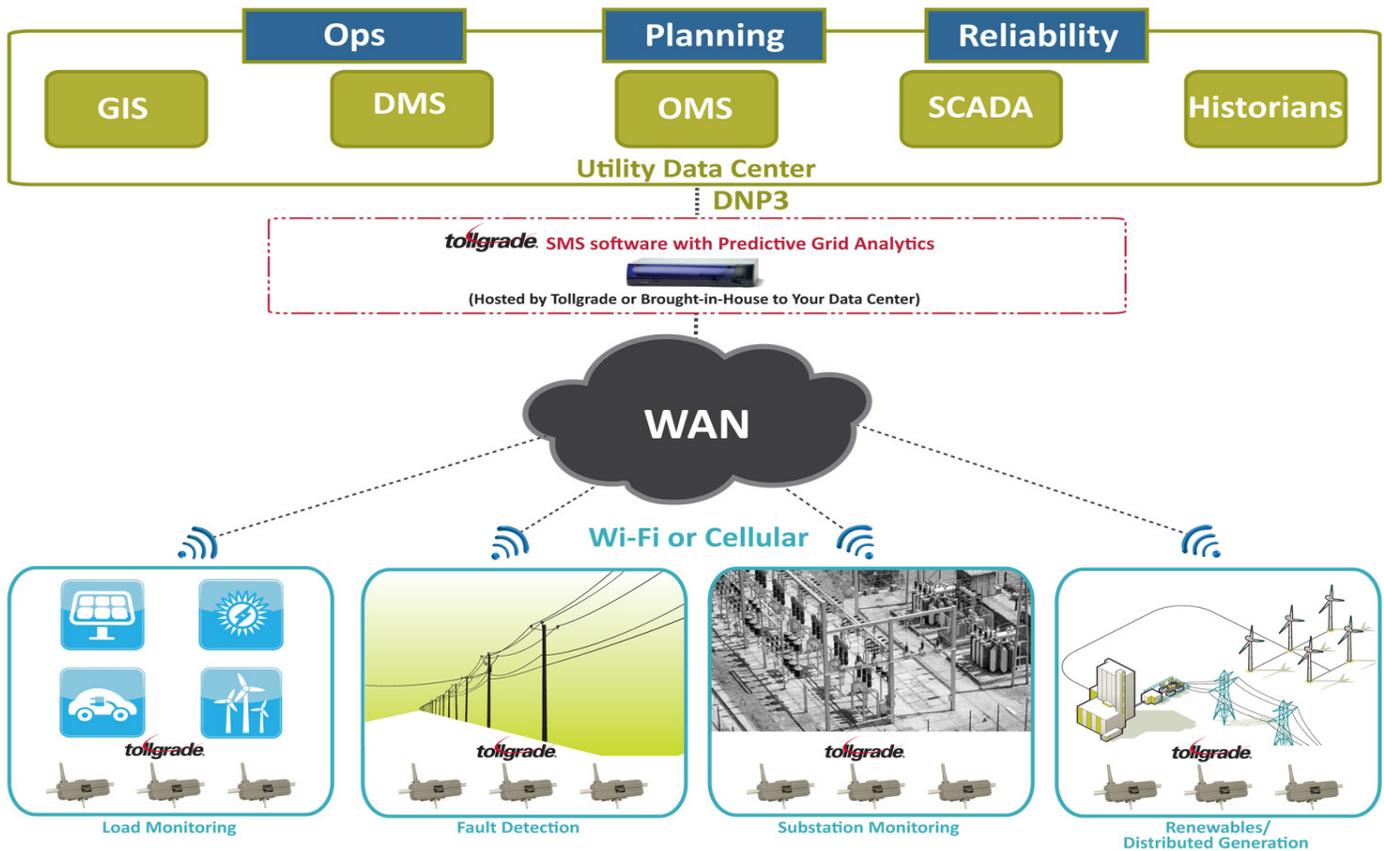


Figure 1. LightHouse Architecture

animals touching the lines, equipment failure, load transfers, tree contacts and other line disturbances. By providing these wave forms to better understand the nature (and location) of faults, Veridian’s staff can more proactively respond to outages and momentaries.

From an asset management perspective, Veridian also found LightHouse particularly useful as a substation monitoring solution. The LightHouse Sensors are deployed in Veridian’s rural substations where there are no breakers and relays for monitoring and control. The platform enables Veridian to have much greater visibility and reliability without installing costly backhaul communications like fiber optic lines. Tollgrade’s LightHouse sensors have integrated communications, are hot stick deployable, and only take a few minutes to install. There is no need to roll fiber, de-energize substations or re-wire. Configurable alarms and reports enable Veridian to know when transformers are being stressed by overloading or are in danger of aging prematurely due to unbalanced load.

“Before LightHouse we had to rely on line patrols, or FCIs. We had to live with having little to no real-time visibility at our rural substations. Now we have a safe, maintenance-free solution that allows us to get proactive on outages enabling us respond and restore power faster.”

Mark Tuney
Veridian Vice President of Operations