

# Unlocking the power of data to monitor and manage energy flow

## ABOUT THE PROJECT

This project involved installing and testing an intelligent sensor system from distribution transformer monitoring company GRID20/20. The company's OptaNODE™ sensors generate intra-grid data, which allowed LDCs to quickly identify and correct adverse conditions in its distribution grid, including power theft.

### LDC PARTICIPANTS

ENWIN Utilities Ltd.  
Cambridge North Dumfries Hydro (now Energy+ Inc.)

### PROJECT TIME PERIOD

July 2014 – November 2015

### SMART GRID FUND INVESTMENT

\$1,657,370

*For further information about Ontario's Smart Grid Fund, visit [Ontario.ca/smartgrid](http://Ontario.ca/smartgrid).*

Gaining greater control over fluctuating grid conditions is an emerging imperative for LDCs as they transition from one-way deliverers of power to two-way, networked electricity generators, distributors and managers.

Three years ago, in a pilot project funded in part by the Ontario Ministry of Energy's Smart Grid Fund, and led by GRID 20/20, Windsor-based ENWIN Utilities Ltd. began testing an intelligent sensor system mounted on transformers as a solution to its data requirements. The sensors capture highly accurate energy, voltage, current and external temperature readings, and send the data to a secure location for interpretation by LDCs.

"We installed 135 single-phase units, and five poly-phase units on our transformers," explains Dragan Savic, a Distribution Engineer at ENWIN Utilities. "These OptaNODE™ sensors from GRID 20/20 provided ENWIN with all the electrical parameters that one would be interested in," says Savic.

The resulting information can help reduce LDC operating costs and improve customer service by:

- Detecting energy losses, both technical and through theft
- Detecting maintenance requirements and outages sooner
- Providing additional information to help accommodate renewable energy sources
- Monitoring the impact of EV charging stations
- Improving reliability

"This innovative project is helping us move forward in terms of achieving operational efficiencies and delivering added value to our customers."

According to Savic, the utility can now see the values of specific transformers every five minutes, and respond to changes. "It's a big advantage."

The resulting insights provided by the data enable ENWIN to use its resources more efficiently. For instance, the data can help:

- Prevent problems from escalating. "If we see a transformer that routinely operates at 80 per cent is now operating continuously above 100 per cent, we can replace it on our terms, planning an outage for a time that's convenient for everyone and minimizing the outage duration."
- Detect and minimize losses from power theft. For example, ENWIN identified \$170,000 worth of power theft from just two transformers.

Savic sums up the results this way: "This innovative project is helping us move forward in terms of achieving operational efficiencies and delivering added value to our customers."

## LOOKING AHEAD

Since the pilot project ended in November 2015, ENWIN has added more OptaNODE™ devices. Savic anticipates that the value of this type of data for LDCs will only increase. As a growing number of electric vehicle charging stations draw energy, and as micro power generators add energy to our system grids, LDCs like ENWIN will be able to monitor and respond to the effects of variable electricity consumption on transformers.

Barbara Shortreed, Vice President, Customer Care and Communications at Energy+ Inc., agrees with

Savic's assessment. "Intelligent sensor systems are a fantastic tool for some utilities that may not already have the technology to gather this information. Advancements like this translate into greater system reliability, faster restoration time and, if done right, efficiencies that will benefit the customer, the shareholder and the communities they serve."

"We embrace projects like this because we want to understand what benefits we might be able to connect with going forward as new technology is introduced into the market."

As for GRID 20/20, reports company president Alan Snook, "since the successful Ministry of Energy SGF project we have focused on our business case and on creating value for Ontario LDCs and their customers. GRID 20/20 provides an Ontario invented and manufactured solution that will be integral to achieving 'in front of the meter conservation' within the province."

### ABOUT ENWIN UTILITIES LTD.

*ENWIN Utilities Ltd. is a licensed electricity distribution company serving customers in the City of Windsor. ENWIN is also the licensed water system operator for the water system owned by Windsor Utilities Commission. ENWIN works with Windsor to provide a safe, reliable source of electricity and water for its community.*

### ABOUT ENERGY+ INC.

*Energy+ Inc. is a local distribution company serving the City of Cambridge, the Township of North Dumfries and the County of Brant. Energy+ Inc. owns and services the electrical poles, wires and underground electrical infrastructure in the City of Cambridge, the Township of North Dumfries and the County of Brant.*



Installation of GRID 20/20 OptaNODE devices