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Just as Pike Research has said that 2012 may be the make or break year for electric vehicles and in 2013 we may look back and wonder why we doubted if EVs were for real, a trial taking place in the Durham Region of Ontario could provide us with information critical to understanding the potential of using EVs as a grid storage medium.

One of the participants in the [Durham Strategic Energy Alliance](#) (DSEA) pilot project on EVs is [WireIE](#), a Richmond Hill ON-based provider of wireless communications technology for the smart grid sector. In an interview with Canadian Green Tech, company CEO Rob Barlow explained that the goal of the trial is to determine the impact of EVs on the electric grid and whether the energy stored in EVs' batteries could flow back into the grid.

"Twenty years from now, we've got all this stored electricity in people's homes, how

can we leverage that and how does that have to be controlled?" he asks.

But before any benefits can potentially accrue to the electricity system, a smart communications infrastructure needs to be put in place. One that is capable of dealing with two-way power flow, able to measure the kilowatts that go into the battery during recharging and go back into the grid in times of need and ensure the appropriate amount of security and privacy to protect users.

Some studies have shown that the majority of EV charging stations will be located at the residence. This makes sense. People will charge their vehicle while it's parked in the driveway or in the garage. But there will be charging stations located elsewhere such as on business premises or in other public locations.

The DSEA pilot project will be looking at this as well. It will explore the potential business case scenarios for private

companies starting these public EV charging stations.

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- Rob Barlow, CEO, WireIE

"Enterprises offer free Wi-Fi and it attracts more business," says Barlow. "So how does the business model [for public EV charging] work for private enterprise?"

Utilities may be interested in the public EV charging business as a way to offload some of the variation capacity, he adds. "What's the financial benefit to the utility and how does that work?"

What works for EVs will work for distributed energy

The smart grid represents a significant element when considering the rollout of EVs and charging stations. And while it's not absolutely necessary for EVs and charging station infrastructure, it is if EVs are going to someday be capable of feeding back into the electric grid when energy is required.

It's for this reason that EVs should be considered just another element of a distributed energy system, which, to function properly and effectively, will require a smarter grid configured much like a distributed IT infrastructure. Whereas branches of a centralized command and control network will only be responsible for input and diagnostics, a distributed architecture provides decision making at more localized segments or nodes on the network with a rules-based management approach.

"Delegated decision making therefore becomes automated at the periphery of the

network while central control reserves the right to re-balance and manage the overall network rules and function or enact emergency overrides if needed. The implication here is that the nodes of the network are by nature more automated and autonomous within the overall network," explains Barlow.

The smart grid will also enable the utility to better react to changing conditions in the grid. As Barlow notes, "it is possible in a smart grid to shift and change parameters in more localized parts of the grid thus making more effective, safe and efficient use of the changing dynamic of alternative energy and the smaller incremental nature that some of those 'additions' to the grid often come in."

This is where WireIE can make a significant contribution to enhancing the smarts in the electrical grid.

"We design and integrate a data layer or intelligence layer that has the speed and capacity to accommodate rapid shifts and

changes, and equally rapid, automated decision making in grid management," Barlow says. "That adds up to a better and more sustained use of alternative energy on the grid regardless of where it is located in a province such as Ontario with diverse and distinct weather patterns."

For more on WireIE and its view that renewable energy projects will sit idle unless the utilities in Ontario begin to implement smart grid, click on this headline: [Rural microFIT projects to remain idle without smart grid.](#)

