

THE WIRE

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Electric Vehicle Programs Won't Reverse Flat Demand Growth, but the Benefits Are Still Strong

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Weak growth in U.S. electricity sales has been well documented in recent years, and continues to be a serious concern for many co-ops around the country. While the proliferation of electric vehicles (EV) is unlikely to reverse this trend by itself, there are other reasons that utilities would be smart to promote the adoption of EVs and the related infrastructure, which can significantly improve the efficiency of the grid.

California dominates the EV market, accounting for half of the roughly 600,000 EVs on the road in America. Nationwide, industry analysts expect there to be 3 million EVs in the next five years, potentially growing as high as 10 million by 2030.

The single largest hurdle to stronger adoption rates remains the high costs of batteries. In order for

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Paving the Way for Electric Vehicles

How a New Hampshire co-op developed an innovative EV program

With new models entering the market and a double-digit sales increase in 2017, electric vehicles may finally have turned the corner toward a more mainstream acceptance, according to the National Rural Electric Cooperative Association. Cooperatives can play an important role in overcoming lingering doubts and fears about the technology, and make it easy for members to take the plunge.

The New Hampshire Electric Cooperative in Plymouth, New Hampshire, is taking just that approach. *THE WIRE* spoke with President and CEO Steven Camerino and Vice President of Member Services Craig Snow about their education and rebate programs for individuals and businesses, the hurdles they've overcome and the advice they'd offer other cooperatives hoping to promote greater use of electric vehicles.

THE WIRE: Why did you begin your electric vehicle incentive programs? Was it because of demand from your members?

Steven Camerino: Our decision had to do with the bigger picture of our goals for this organization. We wanted to promote energy efficiency while also creating a sustainable business model with new sources of revenue. And we wanted something that would be beneficial to all of our members, and not just to those who chose to buy an electric vehicle.

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PAVING THE WAY, from cover

We believe that EV use is going to increase substantially, which could add load to our system – with much of that coming during off-peak periods as members charge vehicles overnight. All of those things led us to think more and more about electric vehicles.

What incentives do you offer?

Craig Snow: In 2015, we started a pilot program for installing electric vehicle chargers at commercial locations. We offer a 50 percent incentive of up to \$2,500, and we allow two chargers per account, so a business that wanted to put in two chargers could get as much as \$5,000 toward that installation. Additionally, this year we created an EV pilot program with incentives for individual members to purchase EVs.

Those who buy a plug-in hybrid electric vehicle receive a \$600 rebate, and those who buy a battery electric vehicle with no other power source receive a \$1,000 rebate.

What considerations did you look at before starting the programs?

Snow: For any startup program, we begin with what the potential member benefits are – in terms of economics and convenience, possible environmental impacts, efficiencies that can come out of the technologies. It helps that we aren't regulated for most of our programs and services, so we didn't need to seek regulatory approval. And by starting with a pilot program, we had some flexibility to begin without investing a lot of resources.

Camerino: Our board was generally quite supportive. They understood the need to look at energy efficiency in a way that was consistent with the financial sustainability of the enterprise. Our EV programs could potentially help meet our energy efficiency goals as well as the organization's revenue needs and environmental concerns.

What challenges did you face in educating your members?

Snow: The biggest was just getting the word out about the technology. Though people have certainly heard of electric vehicles, most still don't know a lot about them. What's the difference between a battery electric vehicle and a plug-in hybrid electric vehicle? What are the different kinds of chargers? What's level 1, level 2, level 3? We do email blasts, bill stuffers, and regularly include articles in our newsletter – any way we can reach out to members. We also attend trade shows and have done promotional events to let members actually see the vehicles and experience them.

Much of our education focuses on charging. Every plug-in vehicle can charge from a 120-volt outlet in your home. You pull a cord from the trunk, plug it into the wall outlet and you can charge the vehicle. That's level 1 charging. But it takes a long time – 48 hours to charge a Chevy Bolt, for example. With a 40-amp level 2 charger that uses a dedicated 240-volt circuit, you can get a full charge and 238 miles of range in eight to ten hours.

What are your members' most common misconceptions about electric vehicles?

Camerino: There's a lot of range anxiety – the worry that if you drive any distance in an electric vehicle, you'll end up stuck somewhere when your battery dies. That's one reason why we started with the charging stations. They aren't going to be a major source of load. Most people will do their charging at home. But the charging stations' mere presence calms range anxiety. You know there's going to be a place to stop and

Representative Charging Times and Costs

Miles Driven Daily	CHARGING TIMES			Daily Charging Cost ²	EQUIVALENT GASOLINE COSTS ³		
	Level 1 (120V)	Level 2 (240V)	Level 3 (480V)		\$3 per gallon	\$4 per gallon	\$5 per gallon
20	4-5 hours	1-2 hours	10 minutes	\$0.60	\$2.00	\$2.65	\$3.35
30	6-8 hours	2-3 hours	15 minutes	\$0.90	\$3.00	\$4.00	\$5.00
40	8-10 hours	4-5 hours	20 minutes	\$1.20	\$4.00	\$5.35	\$6.65
50 ¹	10-13 hours	5-6 hours	25 minutes	\$1.50	\$5.00	\$6.65	\$8.35
75 ¹	15-19 hours	7-8 hours	30 minutes	\$2.25	\$7.50	\$10.00	\$12.50

¹Data only applies to an electric vehicle that can provide this many "electric only" miles.

²Based on an average blended residential rate of 10 cents per kilowatt-hour.

³Based on a conventional vehicle rated at 30 MPG.

get a charge if you need it. That encourages more people to buy electric vehicles, which in turn does have the potential to result in a substantial increase in load.

Snow: Another misconception is that electric vehicles are prohibitively expensive. People don't realize that between the incentives we offer and the tax breaks from the federal government, the costs of an electric vehicle can drop down to well below what they'd pay for a comparable gasoline combustion vehicle. That makes this a great time to get into the technology if it's something that fits your lifestyle.

How do EVs compare to combustion vehicles in terms of operating costs and maintenance?

Snow: Factoring in the cost of the electricity needed to charge an electric vehicle, it's the equivalent of a gas vehicle that gets in the range of 100 to 120 miles per gallon. That compares with about 30 miles per gallon for a similarly sized gasoline-fueled vehicle. And the maintenance on an electric vehicle is much less. Whereas conventional internal combustion vehicle drivetrains have about 2,000 parts, an electric vehicle drivetrain has fewer than a two dozen. Such things as oil changes, maintaining transmissions, and replacing exhaust systems and starters aren't needed with an EV.

Have you structured your rates differently for EV use? Do you have a separate meter for vehicle chargers?

Snow: Not yet. But in 2018, if our vehicle incentive pilot becomes a full-fledged program, we'll need to incorporate some sort of a demand response structure, which will potentially include a time of use rate. One way to do that is with a separate meter.

How would you describe your members' initial response to your EV programs?

Snow: Definitely encouraging. We have nine or ten members that have installed chargers at commercial locations, another five that

are in the process of installing them, and several more that are interested. For the vehicle incentives, after launching our pilot at the end of the second quarter, our modest goals for the latter part of 2017 were to incentivize the purchase of 20 hybrids and 10 battery electric vehicles. By the end of August, we already had ten hybrids and nine battery electric vehicles, so we're well on our way to meeting our goals.

How do your programs for electric vehicles affect members who don't participate?

Camerino: The new load provided by members charging electric vehicles benefits all of our members through increased utilization of our system, which helps keep rates down. That's also good for our community at large, because electric vehicles reduce harmful emissions. It's a win-win-win – good for the person who takes advantage of the program, good for all of our members and good for the community.

What advice do you have for other cooperatives that are considering programs like these?

Snow: Education is key. You need to get the word out about the programs. If you have a good technology and you communicate its benefits, people will gravitate to it. And keep things simple to start with so you don't overwhelm your resources. Beginning with pilot programs is great. We have a history of launching new initiatives that way, and it has worked very well for us. It gives you an opportunity to feel things out without making a major commitment.

Do you expect more and more members to buy electric vehicles?

Snow: We're at a point now where I think there's no question that this is a technology that is going to be embraced; it's really just a question of when it's going to take off. We're positioning ourselves to be ready when that happens. ■

This Issue's Experts



STEVEN CAMERINO is president and CEO of New Hampshire Electric Cooperative (NHEC). Before joining NHEC, he

was an attorney who represented major New Hampshire and regional energy and utility clients and other companies with interests in the energy industry. His experience included regulatory and transactional matters including mergers and acquisitions, gas and electric industry restructuring, and other issues. Camerino holds an undergraduate degree from Dartmouth College and a law degree from Columbia University.



CRAIG SNOW has more than 30 years of experience in project management, construction management, facilities

management and energy efficiency solutions in New Hampshire and Massachusetts. He joined NHEC in 2009. As vice president of member services, he oversees the cooperative's energy efficiency, renewable and demand response programs. He holds an undergraduate degree from Canterbury University along with certifications in energy efficiency, renewable energy, and demand response.

general consumers to accept EVs, a major breakthrough is necessary to bring the cost of battery packs down from their current rate of \$225 per kilowatt hour (kWh) to below \$100 per kWh. Cost curves for battery packs indicate the \$100/kWh threshold could be reached by 2025.

Despite strong long-term growth projections for EV sales, EV-related energy consumption is not likely to be a major contributor to overall electricity sales in the near future. EV-related electricity sales in the U.S. reached approximately 1.8 terawatt-hours (TWh) in 2016. (The average EV drives around 10,000 miles per year, and each EV consumes on average 30 kWh per 100 miles.) This is certainly positive for utilities with a growing number of EVs, but this newfound demand was dwarfed by ratepayer-funded energy efficiency programs that shaved 220 TWh from total U.S. electricity sales in 2016 alone.

These energy-efficiency savings are expected to expand. Analysts at the Lawrence Berkeley National Laboratory predict ratepayer-funded energy efficiency programs will reduce sales by an additional 400 TWh in 2030. These savings will keep a lid on growth in electricity sales, even with 10 million EVs on the road. Major rating agencies expect EV-related demand to account for only 2 percent of total U.S. electricity sales in 2030.

Fortunately, electric utilities will still reap significant benefits from the proliferation of this new technology, despite the limited opportunity for growth in electricity sales. Research conducted by the California Electric Transportation Coalition (CALETC) shows that the major California utilities realize benefits from EVs primarily through improvements to their load factors. However, this is only possible if utilities are able to shift EV charging to off-peak times.

Providing incentives for off-peak charging provides utilities with the opportunity to increase electricity demand at a time when they have a large amount of underutilized capacity. Innovative utilities are also exploring demand response through EVs, integrating EV charging with renewable generation, and utilizing old EV batteries for grid storage.

Utilities that recognize the potential benefits offered by EVs, and proactively plan and support expansion of EV infrastructure in their service territories, will be best positioned to optimize these assets when the time comes. If your system is considering whether to promote EV usage among your members, these ancillary benefits may well make it worth your efforts. ■

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JULY 10, 2018

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JULY 10-12, 2018

■ Energy and Water Executive Forum

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