CONSIDERING BUYING AN ELECTRIC VEHICLE?

Robert Cornell, Manager

We have all read the news stories regarding the big auto makers' plans for electric vehicles (EVs) and the not-necessarily-so-gradual elimination of the internal combustion engine across certain classes of vehicles. While the offerings of high-profile cars like Teslas may grab headlines, in other news, GM plans to offer 30 different EVs by 2025 and has announced plans to sell only EVs by 2035. While slightly more vague, Ford has announced plans to invest $22 billion towards EVs through 2025. Other automakers are on similar tracks.

It makes no difference what our opinion on climate change is, or whether or not we like the idea of EVs—they are coming and they are coming pretty fast. From a personal standpoint, I will need to have a pretty big baseball card to put in the spokes of an EV in order to be fully on board with buying one!

Many of our cooperative colleagues view this as an opportunity to grow load and increase kWh sales. Your cooperative sees this as well, but from a bit of a different perspective. While Washington Island may seem the ideal place for EVs with our limited driving range needs, charging these vehicles presents an issue for our system. There are, to our knowledge, already three EV chargers on our system, all of which sit behind (or will sit behind) an 80 amp breaker. As these vehicles become more prevalent (and they most definitely will), if we are not careful, our electrical infrastructure will become strained and our wholesale cost of power will take a monstrous hit. This affects every member of the cooperative whether we own an EV or not. As the cost of electricity rises with the switch away from coal and other carbon-based fuels, this needs to be understood as well.

The average level 2 charger for an EV requires 11.5 kW to 15.4 kW of load capacity on the individual home system when it is in use. At 240 V, this equates to a 48 A – 65 A draw. While many modern homes have 200 A panels, there are a significant number of homes out there with 100 A services, and our average transformer that provides power to the home is 15 kW. There are still a fair number of 7.5 kW and 10 kW transformers on our system, some of which are serving more than one home. This is adequate under our current circumstances; however, think for a moment what will happen if you install an 11.5 kW charger in a home that is served by a 10 kW transformer that currently also serves the neighbor. When you begin charging that vehicle, it will cause excessive draw on the transformer, likely dimming your (and your neighbor's) lights, affecting furnace, refrigerator, etc. operation and, if the load of the transformer reaches twice the nameplate capacity, tripping out the transformer, thus cutting power to both homes! In addition, the life of an overloaded transformer is significantly decreased, leading to premature replacement and thus higher costs for everyone.

It is incredibly important that you contact the cooperative before installing an EV charger in your home…

The cooperative already has a policy that restricts the use of instantaneous electric water heaters for this very reason. It is incredibly important that you contact the cooperative before installing an EV charger in your home for this very reason. We need to evaluate our side of your electric service (and quite frankly an electrician should evaluate your side as well) so that we can determine if there is a need to upgrade your service.

Most of our members will be charging their EV at night. Should the charger create a situation where the transformer is overloaded and trips out, you will be calling us to report an outage—one that you will have created for yourself, likely at a time (and possibly temperature) that makes the outage the most inconvenient not only for you, and your neighbor, but also for cooperative employees.

This can be avoided or mitigated by communication with the cooperative.

While the immediate individual effects of EV chargers to the member are described above, the load growth that could be caused by these chargers has a potential larger effect on the cooperative and all its members. As noted in almost every annual meeting, approximately 65% of our wholesale electric bill is based on our peak load whenever it occurs. This means that if we reach a peak load of 2,000 kW, the portion of our wholesale bill associated with that will be approximately $40,000 each month. Typically now, we reach these peaks in the cold winter months (such as the first couple weeks in February this year) due to electric heat load. As few as 20 EVs charging at the same time (assuming that they don't trip off the member's transformer) can equate to a 300 kW increase in our peak load, which in turn can mean a $6,000 per month increase in wholesale power costs.

Further, our submarine cable (both the old and the new cable) are 4/0 copper and capable of carrying (80% load factor) 200 A at 24,900 V, which is about 2,000 kW on each of three phases. (The math is a bit more complex, but you get the picture!) This load needs to be as balanced as possible not only for the cable, but also for our generation system which requires the three phases to be within 29 amps of the average among all phases in order for the engines to stay running. A seriously unbalanced load will damage the windings on our generators and there are safety relays that shut the engines down under such circumstances. Multiple EV chargers in the same area of the Island will adversely affect this. To top it off, our generators have a maximum capacity of 3,200 kW. We won't go into primary conductor capacity and the cost of uprating.

You can see how important it is for us to know what is happening on our system and, for the good of all the members both financially and physically, to have control of what is happening on our system.

CHARGE
POWERED BY CO-OPS

This long discussion (a very important one) leads to the announcement that your cooperative has joined a group of 28 other cooperatives in Wisconsin, Minnesota, Illinois, and Iowa to form an LLC named CHARGE EV.

CHARGE EV was created by 29 electric cooperatives spread across Illinois, Iowa, Minnesota, and Wisconsin to help promote EV adoption and create a national charging network. Electric cooperatives serve more than 42 million people across 48 states. More information can be found at www.charge.coop.

CHARGE EV has invested in a company called ZEF Energy. The chargers marketed by ZEF (and now CHARGE EV and as part of it, the Washington Island Electric Cooperative, Inc.) have controls embedded in them that allow the utility to manage the load they are adding to the system. This is important for any utility, but as you have read earlier, it is incredibly important for the Washington Island Electric Cooperative. These controls can help us manage the peaks caused by EV chargers as well the potential system upgrade requirements we will have going forward. They won't help stop you dimming your neighbor's lights though, and you still need to discuss charger installation with us and an electrician. At this point, EV chargers other than ZEF-produced ones cannot be retrofitted with controls.

Due to limited space in this publication, we are adding a page to our website (www.wiecoop.com) which will have more information as well as links to both CHARGE EV and ZEF Energy. If you are considering purchasing an EV, please contact us here to discuss your charging requirements and the controlled chargers we will have available shortly. The cooperative is in the middle of developing policy regarding the installation of EV chargers on our system and the costs associated with upgrades required by them.

In addition, once some communication/upload issues are resolved, the cooperative will be installing a few "public use" level 2 chargers at various key locations on the Island. Ferry Line employees have reported more and more EVs visiting the Island and a big issue for them is something called "range anxiety." Based on current maps, the nearest public EV charger in Door County is in Egg Harbor. With a level 2 charger, in the summer months, a one-hour charge equates to about 40 miles in range for an EV. One of the things that CHARGE EV is working on is developing a map of available ZEF chargers that helps ease this "range anxiety" and allows those traveling using an EV to plan routes in order to actually be able to go where they want to without worrying about a charger being available. While the Island will likely never have a level 3 fast charger because they require 480 V three-phase power, installation of some public chargers (and yes, users will be paying to charge their vehicle using them) will make the Island more accessible to visitors who have adopted EVs.

As noted, soon, you will be able to get more information on the cooperative website, and we are always available to answer questions.

WIEC HISTORICAL HIGHLIGHTS

We are continuing our perusal of board meeting minutes throughout the years.

Since era wise, we are at the approximate appropriate time, starting in next month's issue, we plan to devote this space to an overview of the 1979 creation of the Island Energy Office and the project planning and installation of the 1981 submarine cable. In the meantime we will keep moving forward in time.

1980 The cooperative purchased its first wood chipper, a used unit that was purchased from Will Krueger.

At the annual meeting, the following members were elected to the board of directors: Nathan Gunnlaugsson, John Hershberger, Norbert O'Connell, Jacob Ellefson, Arni Richter, Hannes Anderson, and Howard Young Jr. At the organizational meeting Norbert O'Connell requested that he not be nominated to the position of secretary/treasurer after having served 30 years in the role he felt someone else needed the experience. Nathan was elected president, John was elected vice president, and Jake became secretary/treasurer.

Much work and progress was made in the project to install the submarine cable although delays in manufacturing would lead to the installation being delayed until 1981.

The wind generator, which is now a familiar landmark, was installed in conjunction with the Island Energy Office.

Radio communication for the crew and trucks finally became a reality after many discussions.

A load management system controlling water heaters was proposed and steps to implement it were begun. Controlling electric water heaters would be vital to control peaks not only when the cooperative began purchasing power from WPS, but also to ensure that the water heaters would not immediately cycle on after an outage to help control startup load on our generators.

FIBER UPDATE

At the time of this writing, we still do not have a whole lot to report other than we are still on track to begin some work early in the spring and that our grant application with NSight is in the system. This is basically a repeat of last month's update but we want to keep it in front of our members. This is a highly competitive grant, but while we have no guarantees, we feel we will score well. Information on all the grant applications along with comments and objections related to them can be found on the Wisconsin Public Service Commission's ERF website under docket number 5-BF-2021 or

https://apps.psc.wi.gov/ERF/ERFsearch/content/searchResult.aspx?UTIL=5&CASE=BF%20&SEQ=2021&START=none&END=none&TYPE=none&SERVICE=none&KEY=none&NON=N

We do not expect to hear anything until mid to late February or maybe even into March. In the meantime, we continue to work with NRTC on next steps after the pilot and engineering the system so that it is resilient and scalable, serves the needs of the members, and is as future-proof as possible.

Some of our members have heard about and some have even signed up and are using Elon Musk's offering of Starlink internet, the low orbit satellite system and it sounds as if there have been some good results. If our members have a need to sign up, and they are able to do so, we would encourage them to check with those that who the service regarding its performance. We know that our members need service that is seriously lacking on the Island and if this service works for you, you should not feel bad about using it. No matter the results of our grant application, our fiber to the home project is going to take quite some time to deploy. It may be the best long-term solution because of its scalability and low latency, but we understand the members need something now.

BILLING SYSTEM UPDATE

The vendor that we are using to link to our accounting system did not get things done in order to meet our planned January rollout of the billing portal and increased payment method for all accounts. To be completely frank, they dropped the ball in spite of regular follow up and pressure from us. This caused some of our members some heartburn because they were unable to access the various payment methods promised. At the time of this writing it is unlikely that everything will be fully functional for February as well, but progress is being made and we have high hopes for March.

By the time you read this, we are hoping that you will have received numerous contacts with instructions on how to sign up to access the member portal and how to sign up to make payments in your preferred method. Whether that be credit card, debit card, ACH or just sending a check or stopping in with good old-fashioned cash, we are sure that the improved flexibility will be a benefit to our members and will be worth the wait.

WINTER STORMS, GENERAL WORK AND, PLANNING AHEAD

Your cooperative was hit with its first winter storm of the season the night of February 4. To this point the winter had been pretty mild and, in the grand scheme of things, this storm was a baby compared to others we have experienced over the years. Still, it kept your crew busy restoring power until about 3 a.m. Friday morning.

During the day Friday, February 5, a fair amount of time was spent going around and knocking the built-up heavy, wet snow that had frozen to the lines during this "Dirty Thirties" (a Henry Nelson term) storm. This storm was the starting point for some cold weather that has increased not only our average daily load, but also the peaks associated with it. At the time of this writing it appeared that we will get some relief from the frigid temperatures during the third week of February. Even though it is a short month, we are expecting to see a pretty big wholesale electric bill.

We continue our joint effort at right-of-way trimming with the town crew, which benefits all of us because it increases the efficiency of what we are able to get done.

In addition to the underground work along Lobdell Point Road that we have previously discussed, we are actively looking at some of our problem areas to determine if we can achieve the depths necessary to change from overhead to underground. As has been discussed in the past, some of these changes make sense from a reliability standpoint, but do not make sense from a financial standpoint. In any case, if we make changes, it will most likely require outages and your cooperative will communicate with the members and schedule accordingly.

Heavy, wet snow in the "Dirty Thirties."

This discussion of storms and planning ahead brings to mind another important topic: Do you depend on life-support equipment? If you depend on an oxygen generator or a sleep apnea device or any such electrical device that is adversely affected by an outage, your cooperative needs to know! We maintain a list (and your privacy) of the location and users of such equipment so that we can prioritize those areas during major storms. In addition, because under most circumstances the cooperative will have power even if parts of the Island do not, we are happy to make this available to our members to charge batteries for portable oxygen generators and the like.

We also want our members to know that we have operational plans in place where the town center south to the Community Center/School area can be isolated from the system and likely would have power under a serious circumstance.

You can let us know about your medical device needs by calling the cooperative at 920-847-2541 or by emailing us at info@wiecoop.com.

SAFETY CORNER

If severe storms are in the forecast, be prepared for a possible weather-related power outage by making sure you have some key items available. An emergency kit should include:

- Bottles of water
- Non-perishable food
- Hand can opener
- Necessary prescriptions
- Candles & matches
- Flashlight
- Battery-powered radio
- Extra batteries
- First-aid kit
- Hand sanitizer

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Washington Island Electric Cooperative