

Electric Vehicle Charging Station

written by Martin Mueller | June 28, 2021

Mission: Install chargers to increase the usage of electric vehicles in the northernmost region of Michigan: the Keweenaw. And help reduce range anxiety for electric vehicle owners that are driving their vehicle in the Keweenaw wilderness.

Project Milestones

- **September 21st, 2021:** Reached out to Tesla and Rivian to begin communicating about installing either of their EV chargers.
- **September 30th, 2021:** Martin submitted Rivian's site evaluation forms to Rivian.
- **February 25th, 2022:** Martin and John confirmed their choice on patterning up with Rivian and have Bay Electric Inc handle the installation.
- **May 2022:** Worked with Bay Electric Inc to finalize installation schedule and finalized the finances with Rivian.
- **June 2022:** Construction began at the Calumet and KML sites. Began applying to EGLE's Charge Up Michigan Program parallel to the construction.
- **July 2022:** EV chargers became operational and had our first EV customer at the KML site 24 hours after installation.
- **July – November 2022:** Got put in contact with NextEnergy by EGLE as they fit with our charger type and vision. Began filling out the NextEnergy applications and went through the progress until grant was received at the beginning on November.

- **January 2023:** Rivian gave the pricing tool to Martin and John mid of January. Both were trained in using the tool and set the price to \$0.17 / kWh.
- **July 2022 – Present:** Both EV chargers in operation from the last summer of 2022 to their first UP winter leading into 2023.

Project Milestone Descriptions

September 21st, 2021 Update

We have contacted Telsa and [Rivian](#) about putting one or more of their electrical charging stations at the Lodge.

Email sent to Customer Service at Rivian on 2021-09-08: “We would be interested in finding out how we can get one or two [Waypoint charging stations](#) or two at our resort in the upper peninsula. It is the [Keweenaw Mountain Lodge](#), in Copper Harbor, Michigan – a historic resort at the top of the Keweenaw, focused on outdoor activities. It would be great to find out more info about if is possible to have these charging stations at the resort for guests and the general public. Thank you.”

Conference call on 2021-09-20 with Jason and George at Rivian to learn more about the Rivian charging station network, and what it will take to get a charging station or two at the Lodge. [Martin Mueller and John Mueller]

September 30th, 2021 Update

Rivian sent a check list for Martin to take certain photos and videos for their engineers to figure out the requirements and set-up of their charging station on our property. They were submitted on 2021-09-29. Right now Rivian is having an internal evaluation and will confirm with Martin and John on what they conclude.

While the Rivian team is still working on the evaluation, George held a video call with Martin and John to update them on the progress and provide information on future tasks. The meeting topics included installation cost by the Rivian team, estimated time period of each project interval, and visualization of the proposed EV station. Martin and John asked questions on future proofing the charging station (going from a one port to a two port in the future) and options on installation cost (if the team wants to have a local technician do the installation). George answered the questions in a way have multiple options to approach this project. With this in mind, Martin and John are discussing the next steps while waiting for Rivian's next update.

Below are a few images that were sent to Rivian as part of the Rivian Site Survey submission.



Proposed Rivian EV charging station located next to the VW Beetle.



Distance from the proposed EV charging station to one of our electric rooms.

February 25th, 2022 Update

After a month of discussions and financial calculations with Rivian and Bay Electric Inc (local electrical technician company), John and Martin have concluded to move the electrical vehicle charging station project forward. The plan is to have Rivian provide the necessary equipment for the charging station to operate and Bay Electric Inc to do the electrical installation.

On the morning of February 25th after making the decision, Martin sent a confirmation email to George to confirm our choice and await the next step to have Rivian prepare their charging station and items to send to us. Along with following up with Bay Electric Inc to get them prepared. The plan is to begin the project sometime before the end of Spring to have the station operational before Fall comes around. Rivian will finalize the project timeline and will confirm with us the next step in this project.

May 7th, 2022 Update

Rivian, John, and Martin have been finalizing the financial agreements and the charger's arrival date this year for the past two months. The EV charger is expecting to arrive in either June or July due to Rivian requiring about three months since partnership confirmation (February 25th) to prepare the charger and any additional equipment for Bay Electric, Inc to use when they install it on the property.

Martin has been talking with Bay Electric, Inc about the site to help them understand the equipment requirements for the construction and where they can attach the power cable that would supply the needed power during charging. Two days ago (May 5th) Martin met up with a representative from Bay Electric, Inc to evaluate the site while exchanging ideas on preparation and set-up on what they can do while waiting for Rivian to deliver the charger. They concluded with two options on where the connection can come from and whether or not the charger can have its own power meter to help the operator monitor power usage. Martin is going to talk with John to finalize the details and confirm with Bay Electric, Inc so that they can start preparing the site as soon as possible.

June 16th, 2022 Update

The first signs of construction work for both sites were May 25th at Calumet and May 26th at the Keweenaw Mountain Lodge (documented by Martin). Bay Electric has been digging up dirt, laying out the pipe line for the electrical wiring, and placing concrete into a mold to create a platform for the stations. For protection, a bollard is added in front of the platform (photos shown at the Calumet site). Martin has taken photos of their progress whenever he is there during their work or sees any progress. Now they are waiting for Rivian to deliver the chargers to install and do any touch ups before operation.

Calumet Site



May 25th, 2022 – First indication of construction documented (photo 1).



May 25th, 2022 – First indication of construction documented (photo 2).



May 25th, 2022 – First indication of construction documented (photo 3).



May 25th, 2022 – First indication of construction documented (photo 4).



June 8th, 2022 – Platform and bollard installed (photo 1).



June 8th, 2022 – Platform and bollard installed (photo 2).

KML Site



May 26th, 2022 – Day 1 of digging and electric installation (photo 1).



May 26th, 2022 – Day 1 of digging and electric installation (photo 2).



May 27th, 2022 – Day 2 of digging and electric installation (photo 1).



May 27th, 2022 – Day 2 of digging and electric installation (photo 2).



May 27th, 2022 – Day 2 of digging and electric installation (photo 3).



May 27th, 2022 – Day 2 of digging and electric installation (photo 4).



June 9th, 2022 – Platform and bollard installed (photo 1).



June 9th, 2022 – Platform and bollard installed (photo 2).



June 9th, 2022 – Platform and bollard installed (photo 3).

Parallel to the construction work, Martin and John have been applying for a grant to help finance the equipment cost. They first applied to [EGLE's Charge Up Michigan Program](#) and communicated with an EGLE representative to determine if the sites are fully eligible for the grant as they prefer Level 3 fast chargers to be installed for Michigan. They initially made it an expectation as Rivian only has Level 2 chargers available at this time and there are a very limited number of EV chargers

available in the Keweenaw (the Keweenaw Mountain Lodge will be the first with a charger in Copper Harbor). After communicating back and forth, we were informed that the sites were not eligible for the grant. The representative put us in contact with another program called [NextEnergy](#) (based in Detroit, MI) that would fit with the business's eligibility criteria.

Right now Martin and John are communicating with a representative from NextEnergy about the grant application process.



July 22nd, 2022 Update

This week features a few major steps leading up to a major milestone. On July 20th, Bay Electric received the Rivian Waypoint EV chargers and on that same day installed the charger at the Calumet site. The next day (July 21st) involves installing the charger at the Keweenaw Mountain Lodge. This is a very exciting moment as this project has been in the works since September last year and to see them standing brings out opportunities.



Bay Electric doing final preparation on the stand.



Main frame is set-up and cables are being installed.



Final touches to the charger before confirming completion on their side.



Rivian Waypoint EV charger completed and ready for use.



Rivian is going to do a few final check-ups on the chargers next

week to make sure everything is working and set-up properly before announcing on their Rivian program and other 3rd party programs (like [Plugshare](#)) that the chargers are available for usage. Recently, Bay Electric posted an image on their [instagram page](#) to mark the completion of the KML EV station site. The Keweenaw Mountain Lodge also did a post on their social media accounts ([Instagram](#) and [Facebook](#)) announcing the completion of the Rivian chargers.

Early today a group of visitors came in a VW EV vehicle and learned that the KML charger was installed yesterday. They became the very first people to use the charger and have documented the experience with these photos below (they gave permission in using the photos for the blog post).



VW EV vehicle parked for charging.



Rivian Waypoint EV Charger charging the VW vehicle.



Martin standing with the vehicle owner and his friend next to the vehicle while charging.



The first group to use the charger about 24 hours after installation.

August 28th, 2022 Update

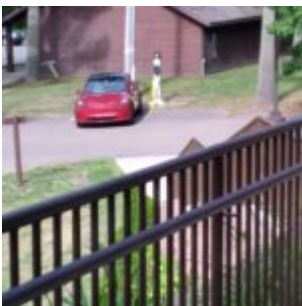
Since the previous update, we had various EVs use both or either chargers for different lengths of charging times. At the Lodge site, a Volkswagen, three Teslas, a Polestar (a Swedish EV car), and two Rivian R1T have used the charger. At the Calumet site, a Tesla, a Chevrolet, and a Hyundai (according to Plugshare Calumet site [reviews](#)) have been at the station. Now those are a few vehicles that either a KML employee have seen or based on Plugshare reviews. The Rivian EV charger dashboard records each charging session and displays the data for us to get a better understanding on how long they charge for and when they charge their vehicle (implying that they are likely cabin guests or visitors who need a charge). Below is an example of what kind of data is recorded after each charging session. Seeing the various EVs that come up and use the chargers is very exciting as we want EV owners to have the ability to drive their vehicles to the Keweenaw.



1st Rivian R1T using the KML Station



1st Tesla using the KML Station



2nd Tesla using the KML Station



3rd Tesla using the KML Station



4th Tesla using the KML Station



Polestar using the KML Station



2nd Rivian R1T using the KML Station

Session ID	Status	Network	Session Start	Session End	Duration	Energy Delivered (kWh)	Max Power (kW)
188232	COMPLETED	Rivian	2022-08-20 20:27:54 EDT	2022-08-21 07:43:32 EDT	11:15:38	34.9564	9.598
184647	COMPLETED	Rivian	2022-08-18 22:14:02 EDT	2022-08-19 10:12:55 EDT	11:58:52	66.6219	9.7685

Also on August 9th, Martin was interviewed by TV6 news to discuss the stations. In about 24 hours, TV6 published the article. You can read up about it on their [TV6 website](#).

November 11th, 2022 Update

In the June 16th, 2022 Update, it mentioned about getting in touch with a NextEnergy representative to determine if the project was qualified for their grant. Well, John and Martin were informed not long after emailing the representative that the project was qualified and that the program will help with the equipment cost. It was big news to hear.

So while the EV chargers were received and installed in July, Martin and John began filling out the applications to submit to NextEnergy. It involved setting up milestones from the planning

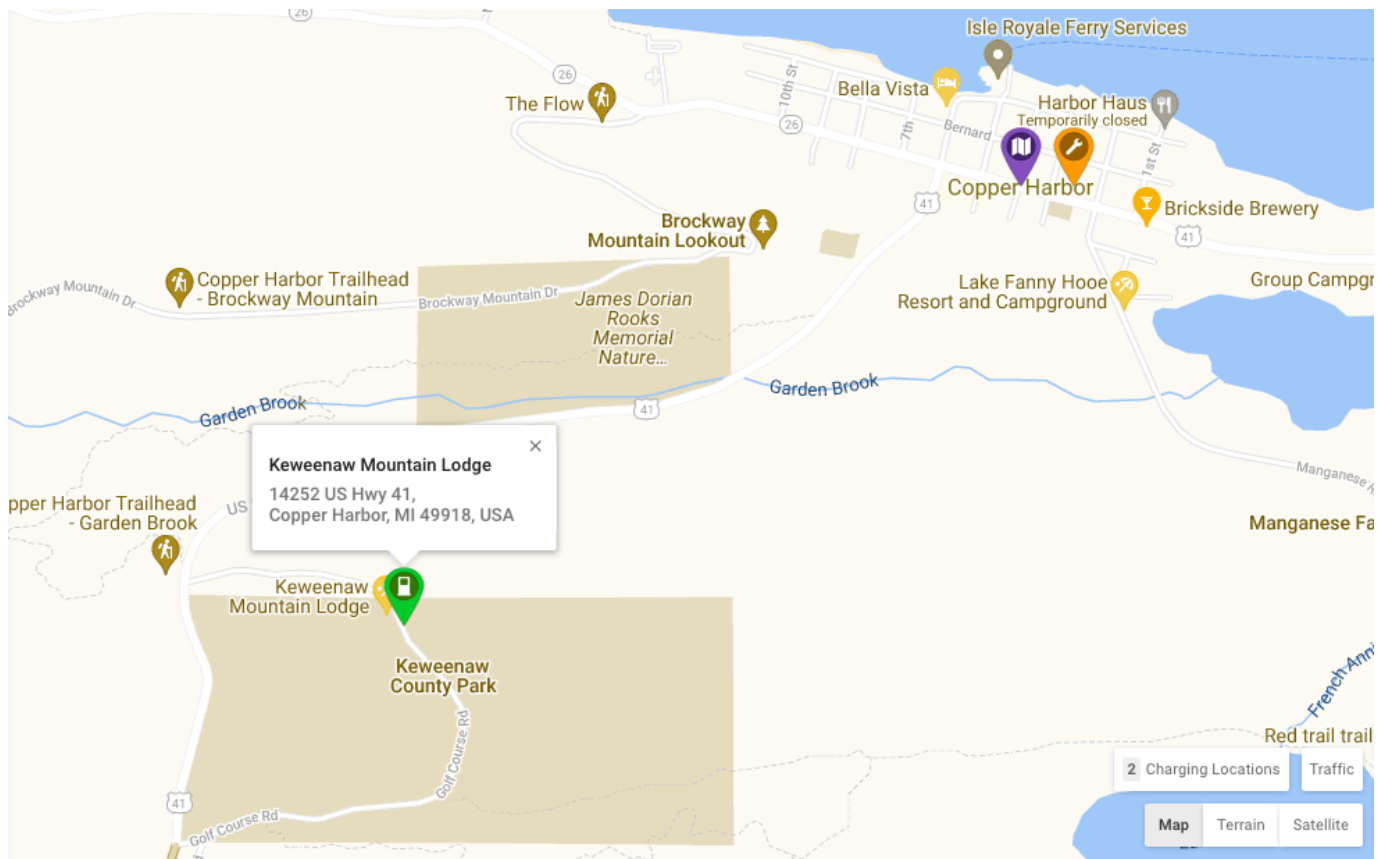
phase to the end phase that were recorded based on what to expect or has occurred. Even creating a budget to determine the cost of equipment and labor. Multiple revisions were done whenever a milestone was completed and/or something changed in the budget. Below is the final version of the Statement of Work describing the work plan overview, the phases from start to finish, documents needed for submission, and the next steps in managing the charging stations. The final submission was sent on October 10th by Martin and John, which involved those documents along with charger usage data from both sites over a period of three months.

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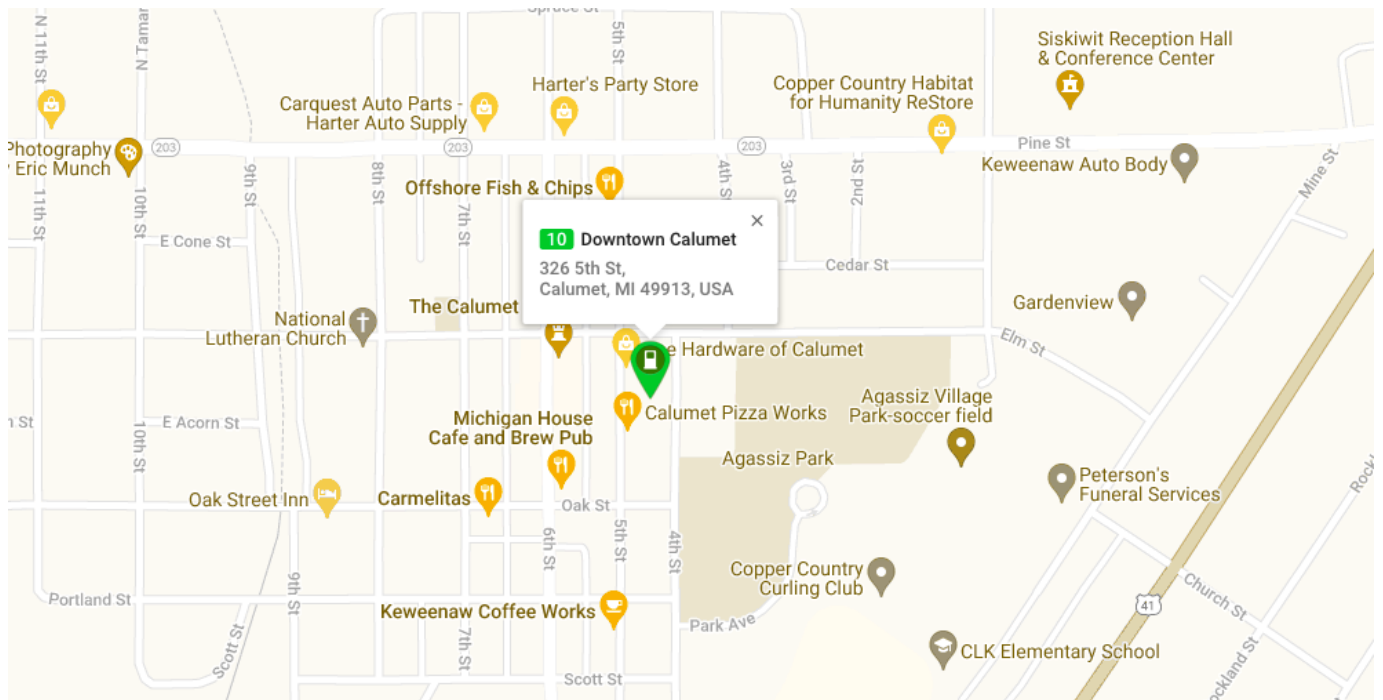
url="https://kweenawmountainlodge.com/wp-content/uploads/2022/11/KML-NextEnergy-MMFP-Attachment-A-Statement-of-Work-V1.2.pdf"
title="KML & NextEnergy MMFP Attachment A Statement of Work
V1.2"]

On October 26th, Martin and John were informed that the project was approved in NextEnergy's system and the payment for the equipment cost would be happening in early November. Two days before this project post update, the KML received the NextEnergy grant.

Martin and John want to thank NextEnergy for helping with financing the project, EGLE Charge Up Michigan for getting us in contact with NextEnergy, Rivian for providing the Level 2 chargers, and Bay Electric for installing the chargers at both sites (Keweenaw Mountain Lodge and Downtown Calumet). Now there are two additional EV chargers in the Keweenaw available for EV owners whenever they make a trip to the northern most part of Michigan's Upper Peninsula. We look forward to the upcoming adventures with these chargers at the Keweenaw Mountain Lodge and in Downtown Calumet.



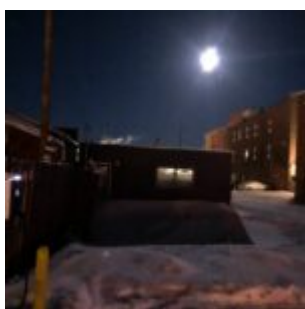
[PlugShare – Keweenaw Mountain Lodge](#) Site at 14252 US Hwy 41, Copper Harbor, MI 49918



[PlugShare – Downtown Site](#) at 330 5th Street, Calumet, MI 49913

December 23rd, 2022 Update

Winter is here in the U.P. It started off with a light snow, a warm period followed not long after melting the snow, and then a steady pace of snow fell in 30 degree Fahrenheit weather. As of today, snow is piling up by the inches. The staff have been snow blowing, plowing, and shoveling snow all around the KML property and the Downtown Calumet to ensure clear access to the EV chargers. The chargers are experiencing their first winter since their installation earlier this year.



Downtown Calumet Site in the Snow on December 8, 2022



KML Site in the Snow on December 9, 2022

So far, two vehicles have used the KML charger site while 12 vehicles used the Downtown Calumet charger site since the beginning of December. The average charging session is 2.29 hours at the Downtown Calumet site while 3.13 hours at the KML site. This is great to see more EVs making the trip through the Keweenaw snow. Now at this moment, the snow has been building up at a fast rate as we speak. We can officially say that the U.P. winter is here.



Tesla Charging at the KML Site in the Snow on December 11, 2022



Tesla Charging at the Downtown Calumet Site in the Snow on December 17, 2022

February 2nd, 2023 Update

For six months since the chargers became operational on July 22nd, 2022, both stations were free to use. This was part of Rivian's process of ensuring the stations were operational and working properly. On January 10th, Martin and John were trained on how to use the Rivian pricing tool. Then on January 17th, both were given the admin rights on using the pricing tool.

As some of you may have noticed that it is no longer free as we are currently charging at a rate of \$0.17/kWh. Rivian calculated this value to be the average kWh cost that the business pays based on both site's charging session data over the six month period. The idea of this price at the moment is the customer is essentially paying for their use of electricity whenever they charge at either site. The price may change once we collected enough data to determine the next course of action.

Martin is currently aiming to update the pricing on PlugShare to match with our current pricing so that it doesn't cause

confusion when they compare PlugShare's details with the actual price on the charger station.

[Post Updated on February 2nd, 2022]