BEFORE THE STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

Docket No. DE 20-170

ELECTRIC DISTRIBUTION UTILITIES

Electric Vehicle Time of Use Rates

CLEAN ENERGY NH COMMENTS ON PARTIAL SETTLEMENT

Clean Energy NH (CENH), intervenor in this docket, is a non-profit member-based organization. We are New Hampshire's leading clean energy advocate that is dedicated to supporting policies and programs that strengthen our state's economy by encouraging the transition to renewable energy and promoting energy efficiency. Battery electric vehicles (EVs), being four times as efficient as gas and diesel-fueled internal combustion engine (ICE) vehicles, are vital to the success of that transition.

CENH offers the following comments on the partial settlement agreement (Agreement) signed by the NH Department of Energy (DOE); Liberty Utilities (Liberty); Unitil Energy Systems, Inc. (Unitil); the Office of Consumer Advocate; and the NH Department of Environmental Services and filed with the NH Public Utilities Commission (PUC) on January 14, 2022. Broadly speaking, CENH supports the residential time-of-use (TOU) and opposes the EV commercial rate TOU rates and demand charge proposals included in the Agreement.

I. BACKGROUND

The transportation sector is the single largest consumer of energy in New Hampshire, responsible for 42 percent of the state's total end-use energy.[1] As EVs use 25 percent of the

[1] Calculations based on US DOE State Energy Data System (SEDS): 1960-2017 https://www.eia.gov/state/seds/seds-data-complete.php?sid=NH.

energy of a conventional ICE vehicle to travel the same distance,[2] EVs present clear economic, energy, and environmental opportunities for the state, and New England as a whole, by reducing overall energy consumption, reliance on energy imports, and the emission of air pollutants and greenhouse gas emissions. As the ISO-New England grid becomes even cleaner, and electric power supply costs fall, due to the transition away from coal, oil, and natural gas, and through the interconnection of distributed energy resources and large renewable energy projects, the net economic, energy, and environmental benefit of EVs will grow.

What's more, as the vast majority of electric vehicle charging occurs at home, and can occur in the overnight hours, there is enormous potential for the electrification of transportation to result in improved load factors for existing electricity infrastructure. In a well-designed policy landscape, this could result in substantial rate-depression, and resultant savings for all consumers.[3] For these reasons, CENH and its members actively support this technology.

However, the three investor-owned utilities, similarly observed, in joint comments on the Grid Modernization Docket, IR-296, that while EVs have the potential to grow electric loads, this load growth can result in savings to all customers if forecasted and managed properly. As EVs consume more electricity, there are more KWHs over which to spread the other utilities' fixed costs. TOU rates are a critical element of achieving this improved resource utilization.

Further, vehicle electrification is consistent with the New Hampshire Energy Policy:

> *"The general court declares that it shall be the energy policy of this state to meet the energy needs of the citizens and businesses of the state at the lowest reasonable cost while providing for the reliability and diversity of energy*

[2] US DOE (2019). All-Electric Vehicles, Office of Energy Efficiency & Renewable Energy, https://fueleconomy.gov/feg/evtech.shtml, (Last accessed April 18, 2019).

[3] NREL (2021). Incorporating Residential Smart Electric Vehicle Charging in Home Energy Management Systems, https://www.nrel.gov/docs/fy21osti/78540.pdf.

sources; to maximize the use of cost effective energy efficiency and other demand side resources; and to protect the safety and health of the citizens, the physical environment of the state, and the future supplies of resources, with consideration of the financial stability of the state's utilities."[4]

While EVs are more efficient and increasingly cost-effective than ICE vehicles, their utilization of the local electric distribution network and the regional grid requires pre-planning and careful integration to support their adoption by consumers and the realization of their full potential. In the absence of well-designed policies and appropriate price signals, there is a risk that electrification of transportation will increase electricity rates by increasing demand during peak hours. An effective policy package would balance policies encouraging speedy adoption of EVs by enabling the creation of a public fast-charging network, while simultaneously maximizing the incentive to charge vehicles during off-peak hours with strong residential TOU rates. CENH is concerned that the Agreement does not go far enough in supporting adoption and realizing that potential.

To support adoption, the commission should first aim to eliminate economic barriers to public fast charging. Drivers' concern about lack of available charging infrastructure is a significant barrier to EV adoption. Currently, 5,627 of them direct current fast charging (DCFC) stations in the United States compared with 150,000 gas stations. As EV charging is dissimilar from fuel ICE vehicles, there are estimates that the US may require up to 1 million DCFC stations,[5] with more stations at slower charging levels.

[4] NH RSA 378:37 New Hampshire Energy Policy, http://gencourt.state.nh.us/rsa/html/XXXIV/378/378-37.htm.
[5] Korn, M. (2021). More EVs are coming. Where's the infrastructure to support them? ABC News, https://abcnews.go.com/Business/evs-coming-infrastructure-support/story.

However, current utility electric tariffs, designed following cost-causation principles, undermine the economics of public charging. At present time, with relatively few EVs on the road, a DCFC may be used by only a few vehicles each day, or in remote areas, a few vehicles each week. Regardless of the frequency of use, DCFCs can draw a significant amount of power. Many DCFC installations require a three-phase 480-volt AC electric circuit. Most existing DCFC stations are 50 kilowatts (KW) with much faster DCFC stations, including ones that deliver up to 350 KW starting to be installed. Draws of this magnitude can result in significant demand charges, which at low utilization rates are spread across just a few users. In these scenarios, demand charges can be responsible for over 90 percent of electricity costs and can make the cost per unit of charge (kwh or time) unreasonable. Such rates either discourages site-hosts from installing chargers, or drivers from using the station.

This results in fewer stations being built, reducing the viability of owning an EV, reducing the business case for owning DCFC. Thus, the current lack of widespread charging infrastructure is a pressing chicken-and-egg problem[6] that is impeding the electrification of transportation, which has the potential to result in substantial economic benefits to all New Hampshire ratepayers.

While supporting adoption, the Commission must simultaneously aim to aggressively manage when the vast majority of EV charging is occurring in order to avoid costly upgrades to the electric distribution system. EV charging can represent a relatively draw compared to typical residential electric loads. Residential EV charging can draw nearly 50 percent more power than even the most energy-intensive residential appliances such as single room air conditioners (ACs)

[6] Kadoch, C. (2020). Roadmap for Electric Transportation: Policy Guide, Regulatory Assistance Project, https://www.raponline.org/EV-roadmap/.

and are comparable to whole house AC units. If charged during a time of peak demand with a standard Level 2 charger, an EV's load can be roughly equivalent to that of an entire household.[7] Absent price signals, a typical EV owner is likely to plug their vehicle into their home charger when they arrive home from work, which may coincide with the evening peak demand. Which is to say, as EVs continue to increase as a percentage of the New Hampshire fleet and in the number of vehicles carrying visitors to the state, the rise in electric power consumption has the potential, if not properly managed, to increase the total ISO-NE daily and seasonal peaks, as well as New Hampshire's share of that peak.[8] Should this be allowed to occur, the electrification of transportation would increase electric rates, instead of decreasing them.

A study from Norway, which had an EV market penetration of 10 percent as of fall 2018, highlights the danger of not planning for EV charging. The study found that controlled EV charging could be met with the existing distribution grid, but that uncontrolled EV charging could require grid investments of $100 to $200 billion for one city.[9] The inclusion of residential TOU rates is an important step in ensuring that widespread EV adoption results in savings and not costs, by encouraging off-peak charging.

In summary, an appropriate EV policy would eschew rigid adherence to cost-causation principles when it comes to rate design for high demand public charging applications while simultaneously sending strong price signals encouraging off-peak charging in residential applications. These two policies are necessarily complementary: implementing one without the

[7] Allison, A. and Whited, M. (2017). A Plug for Effective EV Rates: The Case for Supporting EVs, Synapse Energy Economics, https://www.synapse-energy.com/sites/default/files/A-Plug-for-Effective-EV-Rates-S66-020.pdf.

[8] Harper, C., McAndrews, G., and Sass Byrnett, D. (2019). Electric Vehicles: Key Trends, Issues, and Considerations for State Regulators, National Association of Regulatory Utility Commissioners, https://pubs.naruc.org/pub/32857459-0005-B8C5-95C6-1920829CABFE.

[9] Hildermeier, J., Kolokathis, C., Rosenow, J., Hogan, M., Wiese, C., & Jahn, A. (2019). Start with Smart: Promising Practices For Integrating Electric Vehicles into the Grid, Regulatory Assistance Project, https://www.raponline.org/knowledge-center/start-with-smart-promisingpractices-integrating-electric-vehicles-grid/.

other will either result in limiting the ratepayer savings that would flow from increased EV adoption or result in a growth in peak demand and electric rates.

II. TERMS OF SETTLEMENT AGREEMENT

To clarify which items CENH supports, and on which CENH takes no position on, each item included in the Agreement is listed below, with comments deemed appropriate.

A. Unitil Residential EV TOU Rate

CENH assents.

1. Customer Charge

CENH assents.

2. Time Varying Periods

CENH assents.

3. Transmission and Generation Rate Development Method

CENH assents.

4. Distribution Rate Development Method

CENH assents.

B. Commercial Customer EV TOU Rates

CENH objects to the inclusion of EV TOU rate provisions in the Agreement.

While CENH does believe that TOU rates are entirely suitable for residential applications, CENH does not agree commercial TOU rates are appropriate at this moment in time. EV penetration, as noted above, remains relatively low and the deployment of public and private DCFC and networked Level 2 EVSE is necessary to support rapid fleet electrification.

Implementing commercial TOU rates too early is likely to have a negative impact on the business case for developing and operating public charging locations.

It is the position of DOE that a commercial TOU rate would spur innovation on the part of charging site hosts to reduce the impact of the rate's higher on-peak rate to site host overall costs. Such innovation could include battery storage that draws power and charges during off-peak hours and is deployed during on-peak periods to charge customers to limit the site hosts exposure to on-peak rates. While CENH agrees that such innovation will be of increasing importance as EV adoption increases and commercial EV sites increase in number and in utilization, CENH is concerned that the implementation of commercial TOU rates at this moment in time will result in limited uptake by public charging site hosts as the technologies such as co-located batteries increase the upfront capital costs to develop a site; costs that will not necessarily be recovered in appropriately under likely site utilization rates.

5. Eligibility Requirements

CENH takes no position.

6. Optionality

CENH takes no position.

7. Customer Charge

CENH assents.

8. Time Varying Periods

Addressed in Part B – CENH objects as they are not appropriate at this time.

9. Time Varying Components

Addressed in Part B – CENH objects as they are not appropriate at this time.

10. Rate Development Method, Demand Charge, and Revenue Neutrality

CENH objects to the inclusion of the 50 percent demand charges for the commercial EV rate classes. Similar to the concerns regarding the adoption of commercial TOU rate, CENH is of the opinion based on input from its members that each utility should develop and offer a DCFC rate or a customer class that provides greater flexibility around demand charges in order to give owners of DCFC stations or networked Level 2 chargers much greater potential to recover costs and make a business case for their stations.

Rather than repeat previous in-depth coverage, CENH would point again to the testimony of its consult, shared with Conservation Law Foundation (CLF), Christopher R. Villarreal.

Further, CENH echoes the points raised by CLF in its own extensive Agreement comments regarding demand charges.

C. Other Matters

1. Implementation Date

CENH takes no position.

2. Marketing.

CENH assents.

3. Reporting

CENH assents.

4. Annual Rate Update

CENH assents with respect to the Residential TOU rates.

5. Update Rate and Class Revenue Requirement to Reflect Actual Cost of Service

CENH assents.

6. Alternative Metering Feasibility Assessment

CENH assents.

7. Matters Neither Addressed nor Prejudiced by Settlement

CENH assents

III.GENERAL PROVISIONS

CENH takes no position at this time.

Sincerely,

/s/ Chris Skoglund
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