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Sent: Monday, November 14, 2022 2:31 PM
To: -Info-Public Service Commission
Cc: 'Willingham, Anthony'; 'Appelbaum, David'; 'James Bride'; 'Shah, Jigar'; jamie@energytariffexperts.com
Subject: Case No. PU-22-147 Public Service Commission Electrification of Transportation Investigation
Attachments: Electrify America_ND Comments_11.14.22_Filed.pdf

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On behalf of Anthony Willingham, please find the enclosed letter of Electrify America for filing in the above referenced Case No. PU-22-147 regarding the Public Service Commission Electrification Transportation Investigation.

Should you have questions, please do not hesitate to contact myself or Mr. Willingham regarding this filing.

Thank you for the opportunity to submit this comment.

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November 14th, 2022

Via Electronic Filing

Mr. Steven Kahl
Executive Secretary
North Dakota Public Service Commission
600 East Boulevard Avenue
Bismarck, ND 58505-0480

Re: **Case No. PU-22-147 – Public Service Commission Electrification of Transportation Investigation**

Dear Mr. Kahl:

Electrify America, LLC (“Electrify America”) appreciates the opportunity to comment on the Public Service Commission of North Dakota’s (“Commission”) Electrification of Transportation Investigation regarding the Federal Infrastructure Investment and Jobs Act (“IIJA”) of 2021¹, (“IIJA Investigation”). Electrify America commends the Commission for opening this investigation, which represents a valuable first step in the consideration of policies, rate designs, and initiatives to spur Electric Vehicle (EV) adoption and transportation electrification in North Dakota. For the public Direct Current Fast Charging (DCFC) sector, alternative rate designs that reduce or eliminate the barrier posed by demand charges are needed to ensure sustainable investment of private capital in public EV charging infrastructure. As fully explained below, Electrify America responds to questions one, two and four within the Commission’s notice of issues and request for public comment dated October 3, 2022.

About Electrify America

Electrify America, the largest open DCFC network in the U.S., is investing more than \$2 billion over 10 years in Zero Emission Vehicle infrastructure, education and access. This investment will enable millions of Americans to discover the benefits of electric driving and support the build-out of a nationwide network of ultra-fast community and highway chargers that are convenient and reliable. To date, Electrify America has built a coast-to-coast network of DCFC stations across over 780 locations and with over 3,300 individual DC fast chargers in total.

Electrify America currently has four public DCFC stations under development in North Dakota. These stations will be open to the public 24 hours a day, seven days a week. They will unlock long distance travel across North Dakota,² as well as serve local communities that have not been able to connect to Electrify America’s network to date.

¹ Pub. L. No. 117-58, 135 Stat. 429

² To increase network connectivity, Electrify America analyzed needs across I-90 and I-94 to address current gaps across Montana, Wyoming, Minnesota, North Dakota and South Dakota, and I-20. See Electrify America’s National ZEV Investment Plan: Cycle 3, June 2021, p. 33 available at: https://www.electrifyamerica.com/assets/pdf/cycle3_investment_plan_epa.1aa21b9b.pdf



Question 1: Ownership of EV charging stations by regulated utilities

Electrify America does not oppose utility ownership of EV charging infrastructure in underserved communities, but stresses that the Commission should provide clear guidance regarding investment locations and proximity to competitively owned public EV charging stations; there should be a minimum buffer between competitive stations and utility owned stations so that competitive DCFC station operators can have the confidence to invest in the market. The Commission’s guidance should also prioritize exploring alternatives to catalyze private investment that would result in lower costs for ratepayers, such as make-ready programs and sliding incentive levels. The ability to attract competitive investments into the public EV charging segment in North Dakota requires a level playing field where investors can have the confidence that they will be able to realize an adequate return on their investments.

The Commission should also consider the EV charging segments that regulated utilities are allowed to participate in as there are widely differing business models among public DCFC charging, public Level 2 (“L2”) charging, fleets, Medium and Heavy-Duty Vehicles (MHDV), home charging, and L2 charging at Multi-Unit Dwellings (“MUDs”). The ability of each segment to draw in private capital and competitive market actors may drive the Commission’s policies as to where investment by the regulated utilities may be most beneficial.

Question 2: Considerations regarding unfair competition between third party charging entities and regulated utilities

Electrify America’s response to this question is specific to the public DCFC segment. Competitive DCFC station operators are customers of the regulated utility. As such, the utility will have visibility into the degree to which competitive DCFC stations are successfully attracting EV drivers. Therefore, if utility ownership of public DCFC is permitted, they should not be allowed to utilize load data from third party charging stations to inform station siting. Charging load data is highly sensitive commercial information and most DCFC station operators treat site selection as a trade secret.

Another important consideration is pricing of utility owned DCFC stations. It is important that prices charged to EV drivers for public charging reflect the cost of station ownership³ and operation. Prices charged should be aligned with the private market and the utility should not be able to socialize losses from its charging station among other customers unless there is a strong public policy rationale for doing so. As an alternative, make-ready programs and rate incentives can catalyze private sector investment with lower overall costs to ratepayers versus utility ownership with a guaranteed rate of return.⁴ If private sector DCFC station operators perceive that unfair competition or below market prices from the regulated utility are a real risk, investment of private capital in the market will likely stop and market failure is a real risk.

³ There may be public policy driven exceptions to this such as electrification of rural state highways or underserved areas that the private market may not be able to serve. Consultation with private sector EV charging operators should occur prior to an area being deemed underserved or un-investible by the private market.

⁴ Electrify America notes that it generally agrees with ChargePoints’ comments on make-ready programs filed in this docket. ChargePoint Comments, Public Service Commission Electrification of Transportation Investigation, Case No. 22-147, pp. 5-6 (Oct. 31 2022).



In summary, the North Dakota Commission and policy makers should consider the EV charging segments and public policy objectives that they are trying to solve for as part of any decision to permit utility ownership of EV charging infrastructure.

Question 4: Should the Commission consider pilot programs in anticipation of the electrification of the transportation sector?

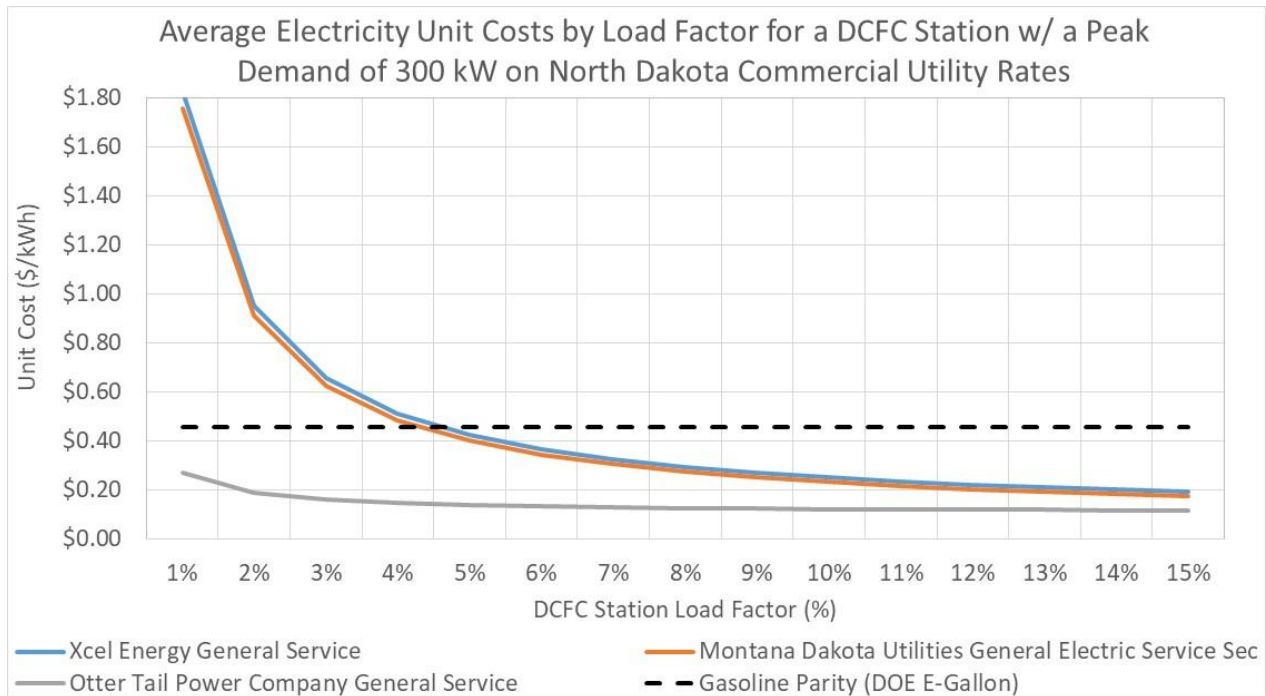
Demand charges pose a significant barrier to economically sustainable public DCFC station operations.⁵ Under low load factors, demand charges can preclude a DCFC station's ability to achieve financial viability. DCFC stations are unique loads with substantially different characteristics than typical commercial loads. Even highly utilized DCFC stations exhibit load factors in the teens to low 20% range.

Figure 1 below shows that DCFC stations in North Dakota can experience a wide range of unit costs at low load factors based on regulated utility service area and rate assignment. Otter Tail Power's General Service rate has low demand charges and as a result, the costs to operate a DCFC station are much more stable and predictable. In contrast, the commercial rates offered by Xcel Energy and Montana-Dakota Utilities (MDU) have much higher demand charges that result in input electricity costs to the DCFC station well in excess of the equivalent cost of gasoline at low load factors.⁶

⁵ Electrify America notes that it generally agrees with ChargePoint's comments on demand charges made in this docket. See ChargePoint Comments, Public Service Commission Electrification of Transportation Investigation, Case No. 22-147, pp. 4-8 (June 15, 2022).

⁶ The gasoline equivalent cost of electricity is determined using the Dept of Energy (DOE) E-Gallon method. This method presumes that a typical gasoline car gets 27.9 miles/gallon and an EV gets 3.5 miles/kWh. Dividing 27.9 by 3.5 indicates that an EV would need approximately 7.9 kWh to go the same distance as a gasoline car on one gallon of gas. To get the gasoline equivalent cost of electricity, divide the cost of gasoline as reported by AAA by 7.9. As of 11/11/2022 AAA reports the average price of gasoline in North Dakota as \$3.65/gal so the gasoline equivalent price of electricity is $\$3.65/\text{gal} \div 7.9 \text{ kWh/gal eq} = \$0.462/\text{kWh}$

Figure 1



The Great Plains Institute (“GPI”) studied DCFC station economics, which consisted of a review of the available commercial electric tariffs along the I-94 interstate corridor for DCFC stations with charging capacities of 50, 100, 150, 350, and 450 kW. The study then modeled DCFC station costs in 165 charging scenarios by varying the demand, charges per day, and energy usage (kWh) per charging session to determine DCFC station electricity costs and station economic viability.

The GPI study found that, for DCFC stations, demand charges are one of the most significant cost factors in DCFC operation.⁷ The study determined that DCFC stations with higher charging capacities do not benefit from increases in utilization at the same level as lower capacity chargers.⁸ The analysis illustrated that while volumetric energy charges increase linearly with utilization rates, the increases in demand charges with higher utilization are of a much higher magnitude as the charging station power level is increased.⁹

Furthermore, the study observed that ultra-fast charging stations offering 350 kW charging capacities or higher do not break even on operational costs in most demand charge scenarios, concluding that “DCFC economics are challenging at higher power levels such as 350 kW and 450 kW, where nearly all stations that break even or profit are those operating in utility territories where there is no demand charge.” As shown in Figure 2 below, the paper concludes that increased utilization causes lower-power DCFC

⁷ Great Plains Institute, 2019. “Analytical White Paper: Overcoming Barriers to Expanding Fast Charging Infrastructure in the Midcontinent Region,” p. 13. Available at https://www.betterenergy.org/wp-content/uploads/2019/08/GPI_DCFC-Analysis.pdf

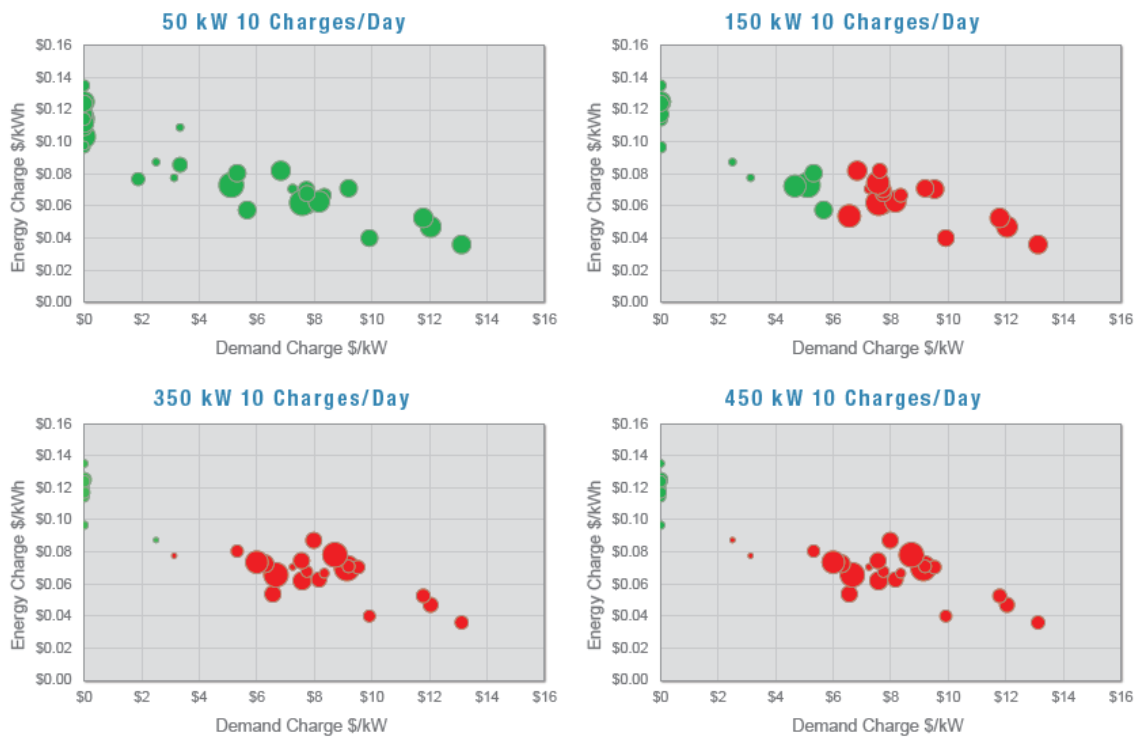
⁸ Id.

⁹ Id.



stations such as 50 kW chargers to break even across a range of demand charges, however, 150 kW and 350 kW charging do not reach a break-even point, except under rates that substantially reduce or eliminate demand charges.

Figure 2: GPI Study Results for Stations that Break Even (Green) and Do Not Break Even (Red) Based on Demand Charges and Charger Size (kW)



These results illustrate the unique constraints applicable to ultra-fast, 150 kW and higher charging, and the importance of demand charge mitigation specifically for this high-power use case.

The Commission may find that pilot programs are a suitable mechanism to implement the requirements of Section 111(d) of the Public Utility Regulatory Policy Act (PURPA) as modified by the IJA.¹⁰ Specifically, alternative rate designs that address the demand charge barrier can help realize each objective of PURPA 111(d) as summarized below:

1. Promote affordable and equitable EV charging options for residential, commercial, and public EV charging infrastructure;
2. Improve the customer experience and reduce charging times;
3. Accelerate private investment in charging infrastructure; and
4. Appropriately recover the marginal costs of delivering electricity for vehicle charging.

¹⁰ The specific requirements of PURPA 111(d) were listed in the Notice of Public Hearing issued on 9/7/2022 in the instant proceeding.



Senator John Hickenlooper, one of the sponsors of this provision, explained succinctly, “Our intention is to ensure that alternatives to traditional, demand-based electricity rates are made available to EV charging station owners with appropriate oversight by State public utility commissions.”¹¹

Alternative rate designs that reduce demand charges are increasingly important to maximize the effectiveness of the National Electric Vehicle Infrastructure (NEVI) formula program, which will provide funding to states to strategically deploy EV charging stations.¹² NEVI program guidance has established a minimum DCFC charging capacity of 600 kW per station and a minimum delivered power of 150 kW per charger at all times.¹³ This means that curtailment or throttling of EV charging sessions is prohibited if such actions would cause delivered power to fall below 150 kW or the charging demand of the EV.¹⁴ This Federal guidance means that EV chargers funded by the NEVI program across all of the nation’s interstates and major highways will have significant demand exposure in jurisdictions that have not taken steps to devise alternatives to demand-based rates. If North Dakota is to fully leverage NEVI funding opportunities for EV charging infrastructure, it is imperative that a full investigation pursuant to the modifications to PURPA 111(d) per the IJA take place. Alternatives to demand-based rates are needed so that the investments in EV charging infrastructure through NEVI are able to operate in an economically sustainable manner and for North Dakota to attract private capital to build out EV charging infrastructure.

Automakers are rapidly introducing new EV models with higher charging capacities. This is exacerbating demand exposure at DCFC stations, especially those that can supply up to 350 kW of power. In the past six model years, the average charging speed of new EV models has increased four-fold, from 50kW to 200kW, and the trend is accelerating.¹⁵ High capacity DCFC stations do not realize the same increases in load factor with increased utilization since the highest capacity EVs are able to charge without limitation. Lower capacity DCFC stations impose a cap on their demand exposure due to charging limits that are less than the EVs maximum capacity. An example of this would be a Hyundai IONIQ 5 registering a 100 kW demand at a 100 kW DCFC station, but registering a 230 kW demand at a 350 kW DCFC station. As a result, it is important to make the distinction that high charging station utilization does not automatically translate to high load factors for ultra-fast DCFC stations.

At the present time, North Dakota is in the early stages of EV adoption where load factors of DCFC stations are generally low. As North Dakota is a largely rural state, build out of DCFC stations is required for EV drivers to have the confidence to take longer trips away from home. In metro regions, DCFC stations are important for EV Drivers who reside in MUDs who may not have access to dedicated driveway or garage parking. As a result, the ongoing presence of demand charges has significant implications for the viability of long-distance EV travel in North Dakota as well as equity implications regarding the availability of charging options for those who do not have the ability to charge at home.

¹¹ Congressional Record, August 5, 2021, S.5926-5927.

¹² Description of the DOT Federal Highway Administration NEVI formula program available at <https://afdc.energy.gov/laws/12744>

¹³ NEVI Formula Program Guidance, p. 12 issued 2/10/2022, Available at The National Electric Vehicle Infrastructure (NEVI) Formula Program Guidance

¹⁴ NEVI Notice of Proposed Rulemaking, p. 68, Available at https://www.fhwa.dot.gov/environment/alternative_fuel_corridors/resources/nprm_evcharging_unofficial.pdf

¹⁵ Atlas Public Policy analysis of data from U.S. Environmental Protection Agency and various industry sources.



Rate Design Solutions Adopted in Other States

Electrify America operates in over 220 utility territories across the United States and acknowledges that there is no one-size-fits all solution to demand charge barriers. Instead, the Commission should consider and evaluate solutions based on their ability to remove barriers to EV charging station operator business models, i.e., provide predictable and stable electric costs over a range of load factors especially for low load factor sites. To assist the Commission in its deliberations on pilot program demand charge alternatives, Electrify America provides the following table summarizing alternative rate designs that have enabled sustainable commercial EV charging operations along with key examples from other states.

Table 1: Summary of Selected Alternative Rate Designs

Rate Design	Description
Fully Volumetric Rate	The revenue requirement for a rate class is recovered through volumetric charges. (e.g., Southern California Edison’s TOU-8 tariff, DTE Energy’s GS-3 tariff, and Rocky Mountain Power Utah’s Schedule 6A tariff)
Low Load Factor Rate Variants	A variation on a rate schedule for low load factor customers (typically < 15%) where demand charges are reduced and usage charges are increased relative to the parent rate. (e.g., National Grid Massachusetts’ proposed commercial EV rates)
Demand Limiters	A rate feature where demand charges are limited for low load factor accounts based on a minimum monthly hours of use or ratio. (e.g., Xcel Energy Minnesota’s General Service A-14 tariff)
Unit Cost Limiters	A calculation method where charges are based on the published tariff, but not to exceed a pre-defined unit cost threshold. (e.g., Dayton Power & Light Tariff D19)
Reduced Demand Charges	Demand charges are reduced to only recover local customer specific facilities-related costs (e.g., transformers), while shared distribution and generation and transmission charges are recovered volumetrically.
Hours of Use Tiered Charges	A rate structure where usage is grouped into tiers based on the load factor. Low load factor accounts would have usage priced in higher cost tiers and omit a demand charge. (e.g., Georgia Power Rate PLM)

Alternative rate designs are appropriate for DCFC station loads due to their unique characteristics. They do not exhibit a strong weather response and by virtue of having low load factors, are less likely to contribute to coincident peaks which drive costs for upstream system infrastructure such as substations and transmission. This divergence in load patterns justifies low load factor variants of existing rates for DCFC station loads. In the past, the Commission has recognized that unique loads warrant different rate designs. Irrigation pumping rates available from Otter Tail Power and Montana Dakota Utilities are an



example of this as they have lower demand charges and higher energy charges relative to typical commercial rates.^{16,17}

Conclusion

Electrify America welcomes the Commission's timely IJA Investigation and respectfully urges it to consider EV-specific rates by establishing a pilot program or a more permanent rate by November 2023 in accordance with the provisions of PURPA 111(d) as modified by the IJA.¹⁸

We appreciate the opportunity to submit these comments and would be happy to discuss this matter further and answer any questions the Commission may have.

Respectfully submitted,

Anthony Willingham

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¹⁶ Montana-Dakota Electric Rate Schedule, Section 11.02 available at: https://www.otpc.com/media/1353/nd_1102.pdf

¹⁷ Otter Tail Electric Rate Schedule, Vol. 4, 11th Revised Sheet No. 15 available at: <https://www.montana-dakota.com/wp-content/uploads/PDFs/Rates-Tariffs/Montana/Electric/MTElectric25.pdf>

¹⁸ IJA provides that "Not later than 1 year after the date of enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which the State has ratemaking authority) ... shall commence consideration under Section 111, or set a hearing date for consideration...". 16 United States Code 2621(d)(20) and (21)