**STATE OF ALASKA**
**THE REGULATORY COMMISSION OF ALASKA**

Before Commissioners:

Robert M. Pickett, Chair
Stephen A. McAlpine
Antony G. Scott
Daniel A. Sullivan
Janis W. Wilson

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| In the Matter of the Consideration of the Adoption of Regulations for Electric Vehicle Fast Charging Tariffs | R-20-______ |

## PETITION FOR RULEMAKING

Pursuant to AS 44.62.220, the Alaska Electric Vehicle Association ("AKEVA") petitions the Regulatory Commission of Alaska ("RCA") to consider adopting regulations relating to the implementation and framework of electricity tariffs for electric vehicle ("EV") fast charging applications. AKEVA's petition states: the substance of regulation requested though presentation of a "straw man" proposal[1], reason for the request through background information on EV charging and existing utility rate structures, and the authority of the Commission to take action.

In U-17-002 the Juneau Electric Vehicle Association ("JEVA") intervened in a matter brought by Alaska Electric Light & Power ("AELP") to establish a permanent off-peak EV charging rate. JEVA petitioned the Commission to consider the broader issues surrounding the EV ecosystem and require adoption of a rate for fast chargers in conjunction with the proposed off-peak rate. The Commission approved the off-peak rate and declined to address fast

[1] Inspired by R-09-001 as described in Order R-09-001(2)

chargers stating, “We do not find that establishment of a DC fast charging tariff is ripe for a decision at this time.” [2]

Since U-17-002 concluded, business-case driven charging networks have thus far declined to invest in Alaska and public money has languished unspent while wrestling with how to pay for operating expenses and adequately recover costs.[3] The only operational fast chargers in Alaska are four obsolete stations that were donated to JEVA in 2017 and installed in Juneau through community efforts. For EVs traveling outside the 50 miles of isolated road in Juneau, there exists an extremely marginal patchwork of recreational vehicle park plugs and not-fast chargers. Therefore, other than round trips to and from a home point, due to the lack of fast charging infrastructure, safe and timely transportation via EV is not possible for those living in the road-connected communities of Alaska.[4]

EV adoption in Alaska faces a key “chicken-and-egg” issue[5]: potential EV owners are dissuaded from buying EVs because of lack of public charging infrastructure and builders of public charging infrastructure are dissuaded from building in areas where operating costs are high and EV ownership is low. In Alaska the issue is exacerbated from all angles: large geographic area, low population density, lack of a unified grid, variable level of infrastructure, and fragmented utility areas. Where the aforementioned intrinsic barriers are not as extreme, i.e. Juneau, EV adoption is quickly occurring, contributing to beneficial electrification for residents and creating an opportunity for firm load growth for the utility.

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[2] Order U-17-002(5) page 8 lines 1 though 6

[3] The City/Borough of Juneau has set aside approximately $125,000 over the past few years to construct EV charging infrastructure. Alaska Energy Authority has allocated ~$1.2 million of the Alaska Volkswagen Settlement to construct EV charging infrastructure.

[4] RCA public meeting, February 26, 2020, Alaska Electric Vehicle Association Presentation (S200431). Presenter Dimitri Shein provided a narrative from the EV owner’s perspective about traveling round-trip Anchorage to Homer, begins in meeting transcript on page 55 line 18.

[5] JEVA’s *Petition for Reconsideration of Order U-17-002(5)* page 2 line 11

However, while Juneau's EV population may lead Alaska and be considered quite high when compared nationally on a per capita basis, not even Juneau has the EV population level required to create fast charger utilization levels that match the typical load curves of the established customer classes. Meter data from the free-to-use Fred Meyer fast chargers[6] indicate the Juneau EV population can only manage between a 4% and 7% load factor leading to some months where the aggregate electrical rate is $0.57/kWh.[7] Even though AELP's demand charge is on par with the national average and much lower than other Alaskan utilities[8], this results in an aggregate kWh charge nearly 10 times higher than AELP's off-peak EV rate[9] and 5 times higher than the general residential[10] or small commercial rate.

Existing two-part rates which feature a flat customer charge and recover the demand charge through the energy charge backstop the asymptotic effect of separate demand charges for low load factor services. Per the rate design methodology codified in 3 AAC 48.550, the backstop is set at 20 kW, i.e. customers drawing more than 20 kW can be put on a three-part rate where demand is recovered independently from the energy charge. Comparing the two-part and three-part rates in effect for Alaskan utilities, the three-part rates typically require a roughly 30% load factor to average down the upfront demand charge and equal the cost of

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[6] Juneau installed four donated fast chargers. To minimize costs, two stations were placed behind existing meters to mask their demand and two stations were placed on their own service at Fred Meyer. Due to technical limitations there is no fee to charge at the stations, unintentionally encouraging maximum use.

[7] Meter data received from AELP for Fred Meyer EV charging site, email communications July 23, 2020. Highest per kWh calculated cost: May 2020, 43kW, 1353kWh. Highest usage month (pre-COVID): January 2020, 77kW, 3638kWh.

[8] In other utility areas of Alaska a load factor of 4% results in similar or higher costs per kWh under rates for demand-metered large commercial services. Ignoring the effects of a customer charge, $/kWh = ($/kW)/(720*LF)+($/kWh): CEA, $0.88/kWh; MEA, $0.44/kWh; HEA, $0.92/kWh.

[9] AELP Rate 93: Nov-May, Residential, $0.0561/kWh; Jun-Oct, Residential, $0.0491/kWh

[10] AELP Rate 10, General Residential <20 kW: Nov-May, $0.1157/kWh; Jun-Oct, $0.0951/kWh

energy in a two-part rate; as illustrated by the Juneau data, an unobtainable utilization given the current EV population of Alaska.

AKEVA attributes the huge disparity in energy prices to the fast charger service type being allocated to an overbinned or few and overly broad rate classes that when implemented collect loads based upon industrial voltage, number of phases, and/or arbitrary demand thresholds and not necessarily loads of similar "demand and energy usage characteristics."[11] While nameplate fast charger demands (50kW to 250kW) are high relative to residential charging (6kW to 10kW), a fast charger is concentrating its impact on the grid to a single point where it serves on the order of 500 EVs[12]. By comparison, more than 80% of charging is done at home[13], where a charger only serves one EV. With many EVs charging at home and at far flung ends of the distribution system, the impact is widely distributed. These distributed impacts are difficult to predict and, as AELP and others have argued, could necessitate large costly distribution upgrades for which the future cost is not currently being recovered in existing cost of service studies. However, current rate structures for large commercial loads with low utilization recover future demand-related costs at an extremely aggressive amount per kWh compared to residential schedules, as illustrated above, even though it logically follows that the cost to serve a single centrally-located large load is much easier than many remote distributed loads in a residential distribution system.

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[11] 3 AAC 48.540 (d)

[12] Wood et al, U.S. Dept of Energy, Office of Energy Efficiency and Renewable Energy, *National Plug-in Electric Vehicle Infrastructure Analysis*, September 2017, page 15, retrieved from: https://www.energy.gov/sites/prod/files/2017/09/f36/NationalPlugInElectricVehicleInfrastructureAnalysis_Sept2017.pdf

[13] U.S. Dept of Energy, Office of Energy Efficiency and Renewable Energy, *Charging at Home*, Retrieved from: https://www.energy.gov/eere/electricvehicles/charging-home

The disparity between the two-part rates typical of the residential class and three-part rates typical of the commercial class for low utilization equipment is a price signal for EV owners to charge their vehicles on not-fast chargers regardless of grid conditions.  At 10kW per EV at home, work, or at a public station it only takes a handful of EV drivers plugging in for hours at a time to exceed the demand placed on utility generation and distribution that a single fast charger creates.

The utilities, led in Alaska by AELP, have correctly identified those residential ratepayers increasing their energy usage while improving their load factor by utilizing off-peak charging should drive down their cost of service per kWh.  However, there has yet to be recognition that EVs as a population are a load with unique demand and energy use characteristics.  EVs are a load that, under typical rate structures, traverses classically defined customer classes.  A load which is predominately shiftable[14] or dispatchable in the residential customer class and not in the commercial class, but undoubtedly will be counted twice in the retail demand for both classes.  Fast chargers are not truly creating a new load instead EV loads are literally driving between customer classes.

Following the lens of EV charging as a customer class, because of low EV population and nonexistent fast chargers in Alaska there is generally a lack of data that makes doing a cost of service study for EVs currently impractical, if not impossible.  However, undertaking a cost of service study or setting the stage for a future study is not being suggested or recommended. It is the generally held belief that as EV population increases; fast chargers will increase in utilization sufficiently for their load characteristics to begin to resemble that of typical loads in their assigned-by-default commercial customer class.  Since there is no free lunch, generally

[14] *AEL&P Schedule No. X1 Summary Report*, filed as Exhibit "A" to *Tariff Advise Letter no. 455-1: Off-Peak Electric Vehicle Charging Rate* (TR1607232)

speaking, the per unit cost of energy across all customer classes at nominal utilization levels becomes roughly the same. Therefore when utilization of charging resources increases to a nominal level, cost disparity will cease to exist. When the cost disparity ceases to exist, many issues will become moot.

However, if the high cost of energy for fast chargers continues to exist, the costs to operate are egregious enough that they could change the cost-benefit analysis behind how charger sites are constructed and operated. It may simply be easier and cheaper to self-generate electricity or install large behind-the-meter energy storage. Constructing duplicative infrastructure is: cost inefficient especially in areas already awash with generation capacity, removes future electric vehicle related revenues from increasing the rate base, and with already limited funds for construction more expensive sites will mean fewer can be built.

In order to reach the EV adoption levels required for the aforementioned, a bridge must be created to allow development and operation of the required EV charging infrastructure during the current nascent period of EV adoption in Alaska. AKEVA believes a bridge can be created responsibly, one that protects non-EV ratepayers and creates benefits for the utilities, charger operators, and EV drivers alike.

Lastly, the abovementioned issues are not unique to Alaska and many examples of utility commission action exist in other jurisdictions. One example approach is described in filings from the Hawaiian Electric Company (“HECO”): "Schedule EV-F encourages the development of public EV charging facilities by eliminating the demand charge that is present in Hawaiian Electric's demand service rate schedules such as Schedule EV-C and Schedule J[.] The elimination of the demand charge is an effort to overcome one of the market barriers to providing public EV charging service, i.e., high electricity costs for a start-up facility relative to potential sales revenue."[15] While the approach that is best for Alaska has yet to be written, the situation is ripe for beginning the process.

The RCA has the authority to adopt proposed changes to electric utility rate design under its general powers and duties. Existing rules in the Alaska Administrative Code ("AAC") allow the Commission to consider alternative "pricing objectives"[16] and to generally exercise discretion[17] when establishing electricity rates. Additionally adoption of rules for EV fast charging rates will streamline future filings and avoid unnecessary duplication.

For the foregoing reasons, AKEVA petitions the Commission to open a rulemaking docket and consider the proposed changes to regulations described in Attachment A.

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[15] Public Utilities Commission of the State of Hawaii, Decision and Order No. 31338 for Transmittal No. 13-07, 13-08, page 17, retrieved from: https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A13G02B20602F41861

[16] 3 AAC 48.510 (b)

[17] 3 AAC 48.520

DATED this 30th day of July 2020, at Juneau, Alaska.

ALASKA ELECTRIC VEHICLE ASSOCIATION

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Attachment "A"

PROPOSED REGULATION CHANGES

3 AAC 48.5XX Rate design for electric vehicle charging

(a) If requested, an electric utility shall furnish a two-part electric vehicle fast charging rate consisting of a customer and energy charge meeting the requirements of this section.

(b) Rates filed under this section shall be based on the filing utility's approved two-part rate for service in the Residential customer class.

(c) Rates filed under this section are exempt from the cost of services study requirement set out in 3 AAC 48.540.

(d) Service under the rate must be limited to electric vehicle fast charging equipment, sometimes called fast, Level 3, quick, DC charging or by a manufacturer's trademark. Small axillary loads are allowable, but must be related to the electric vehicle charging intent of this section, e.g. redundant AC or Level 2 electric vehicle charging equipment, site lighting, etc.

(e) An electric utility shall recover a fixed or customer charge in accordance with 3 AAC 48.550 (a).

(f) An electric utility shall recover demand costs through the energy charge per 3 AAC 48.550(c)(2) regardless of demand and energy consumption level set in 3 AAC 48.550(c)(1).

(g) Electric utilities with existing seasonal rates meeting 3 AAC 48.550(d) may apply seasonal consideration to rates filed under this section.

END