Interim Evaluation of the EVSE Pilot

The Company has gained valuable data and experience since the first EVSE installation on July 20, 2016, as detailed in its quarterly reports filed in Docket No. UE-160082. Overall, the program's operations, analytics, customer participation and feedback have been positive. This interim evaluation considers progress made toward the pilot's primary objectives, lessons learned thus far, and the Company's future direction with EVSE.

Objective #1: Determine EV residence locations, base charging profiles, and enable demand-response experiments to estimate system impacts and inform long-term system planning.

EV residence locations are primarily concentrated in the Spokane area, with more limited distribution throughout other areas of the Company's service territory in eastern Washington. Other than for those customers participating in the EVSE pilot or through auto dealer referrals, specific address information is unavailable for all EV drivers. The number of registered EVs by zip code is provided semi-annually by the Washington State Department of Transportation (WSDOT).

Data gathered thus far demonstrates average electricity consumption for various driver categories (predominantly at residential and workplace locations), and base/uninfluenced load profiles, where the bulk of electricity consumption consistently coincides with system peaks in the evening hours. Drivers that use all-electric battery vehicles (BEVs) and those that commute, consume as much as 36% more electricity than those that use plug-in hybrid vehicles (PHEVs) and/or do not commute. Initial demand response experiments for workplace charging have successfully shifted 50% of on-peak loads to off-peak times. Given load profile data, additional experiments that shift 75% or more of on-peak load to off-peak appear feasible, both at residential locations and at the workplace. Demand response is not feasible for more public-facing EVSE, where drivers typically require the maximum available charge rate over a relatively shorter vehicle dwell time.

Extending the pilot for an additional year will allow for more installations and a corresponding greater number of participants. This will help develop a more comprehensive dataset for electric consumption and load profiles, particularly in the non-commuter and long-range BEV categories,

for both uninfluenced charging and demand-response scenarios. In turn, this will enable more robust modeling and system impact studies in the future.

Objective #2: Determine how much peak load can be shifted to off-peak without utilizing a time-of-use (TOU) rate and while maintaining high customer satisfaction; determine how this may comparatively result in regional net benefits over time.

As stated above, the data thus far indicates that it may be feasible to move 75% or more of on-peak charging at home and work locations to off-peak times, while still providing a full charge of the battery by the next time the customer needs to use the vehicle. To fully meet this learning objective, the proposed pilot extension will provide more time to correct existing EVSE software problems that have delayed demand response in residential locations, utilize new EVSE in the market that can provide reliable demand response capability at a competitive price point, and attain an expanded number of customers that ultimately provides for a more comprehensive dataset.

It is hypothesized that a very high degree of load shifting from on-peak to off-peak times at homes and workplaces will be achieved, while maintaining high customer satisfaction. These results will be used as inputs to economic modeling for various scenarios, and may be compared to other available studies including those that utilize TOU rates to achieve demand shifts from on-peak to off-peak times. In this way, various differences in resulting regional net benefits may be demonstrated, helping to inform the design and implementation of longer term programs that maximize benefits to all customers.

Objective #3: Install EVSE to support EV adoption.

Overall, the company has made steady progress installing EVSE in various categories and locations. Allowed participation for residential homes is nearly fully subscribed, and close to half of the initial targets for workplace and public port installations have been completed, thereby supporting early EV adopters and encouraging greater adoption. However, the Company may not achieve desired workplace and public EVSE installation targets by the expiration of the existing program, given the length of time required for decision making and realistic installation schedules at commercial locations. Typically, significant outreach and consulting is required to inform and

assist the customer to install an AC Level 2 EVSE on their property, particularly for more public locations. One goal of the pilot is to begin to establish a backbone of public EVSE spread throughout the region, for both AC Level 2 and DCFC, in order to provide a minimum level of "range confidence" and enable more practical, longer-distance electric transportation in the area. While good progress has been made, much work remains to install this backbone of public infrastructure, strategically placed in various smaller towns and along major travel corridors in eastern Washington.

Based on registration information provided by the WADOT, the most recent year-over-year increase in registrations is approximately 30% in the counties served by the Company. While the pilot program has clearly supported and encouraged EV adoption, it is difficult to estimate how much is directly attributable to pilot activities. Given the relatively short amount of time since the pilot was launched, it seems doubtful that it has caused a significant direct effect in terms of higher numbers of EV registrations to date. Nevertheless, as an example of effective support, some customers have stated the ability to affordably install an EVSE at their home and/or making EVSE available at the workplace was the deciding factor in their EV purchase. It appears likely that these effects, as well as others including greater availability of public EVSE, and education and outreach efforts will continue to support EV adoption, and its effects will build over time. The Company will continue to assess and adjust the program, including monitoring customer feedback regarding decision factors for EV purchases, satisfaction with public EVSE, improvement suggestions, increasing levels of EV commuting, etc, through a variety of regular communications and surveys.

To date, only a few customers involved with new construction MUDs have installed EVSE through the pilot program. The Company expects that as greater numbers of customers living in MUDs choose to drive an EV, effective EVSE installations at existing MUD facilities will become more significant.

In the near term, additional attention will be placed on how to best serve commercial fleets, as interaction with commercial customers large and small reveals an increasing level of interest in the possibilities and implications of electric fleet conversions. This may include timely

information about EVs, EVSE installation, and customized cost/benefit analysis, not only for light-duty vehicles, but also for medium and heavy duty applications.

Objective #4: Learn by doing, validate operational costs and benefits to inform the business case and designs for longer term programs, as well as develop the capability to cost effectively deploy EVSE on a larger scale.

EVSE hardware and installation costs continue to meet expectations and are in-line with other available studies documenting these direct costs. In addition, planned maintenance requirements and projected costs are relatively small. However, ongoing O&M costs resulting from unplanned maintenance and repair of EVSE hardware and associated networks remains an area of uncertainty and potential concern. Examples include replacement of EVSE hardware such as cord sets and user interface screens, faulted internal communication gear, electronic board replacements, weak communication signals requiring diagnosis and remedy, damage from vandalism, remote firmware upgrade difficulties, loss of WiFi connectivity, etc. Greater understanding of these costs and risks and how to best mitigate them over projected time horizons is critical to developing credible cost/benefit assessments and the business case for longer-term utility programs. This is one of the principle reasons for the request to extend the pilot program, to allow for more experience in assessing these costs and risks that will inform longer term proposals.

The Company's experience to date validates the vital importance of open communications standards and networks. This allows for competitive selection and deployment of new EVSE that may enter the marketplace as it evolves, along with the ability to switch to alternative EVSE in the event of performance issues. This avoids the operational risk of being "locked in" for the long term to proprietary EVSE and networks that are closed and do not allow for alternatives. In the near term, new EVSE entering the market are currently in testing and will be deployed in the pilot program for ongoing evaluation. In addition, if software issues that have delayed demand response testing in residential applications cannot be resolved, those units will be returned under warranty and replaced with other alternative EVSE entering the market at a competitive price point.

It is clear that premises wiring reimbursements have been very important for achieving customer participation thus far. Over time as EV adoption increases and the market is transformed, the

expectation is that these reimbursements may be reduced, thereby lowering overall program costs and increasing net benefits to the general body of customers. Therefore, the Company proposes to decrease premises wiring reimbursement to 50% of premises wiring costs up to $1,000 for residential customers and $2,000 per port for non-residential customers. This change should help test the impact that differing levels of premises wiring reimbursements have on customer participation, at the current state of EV adoption.

The use of networked EVSE is necessary to provide data for analysis and modeling, in cases where user fee transactions are necessary, and demand response/load management capabilities in residential, workplace and fleet locations. Cost effective, networked EVSE will be important to provide net system benefits by shifting large loads from on-peak to off-peak times, reducing system strains and better utilizing grid infrastructure. This becomes especially true when EV adoption reaches a high percentage of overall vehicles, as seems possible, if not probable at some point in the future. It is also important to recognize that networked EVSE add substantial upfront and ongoing costs in terms of installation work, hardware, communications, and network services. The company intends to model costs and benefits for both networked and non-networked EVSE, as more cost data of both types are analyzed in detail.

The strong emphasis of the Company's EVSE pilot program involves the use of networked EVSE and demand response experiments. However, non-networked EVSE may also play a useful role as part of a utility EVSE program portfolio, in terms of providing cost effective EVSE services and support for market transformation in the near term. Simultaneously, developing capabilities and reducing costs for networked EVSE systems over time is critical to maximize net system benefits over the long term. For example, the use of Advanced Metering Infrastructure (AMI) for communications and integration with other utility systems, may provide the most cost-effective and reliable method for load management at scale.