NW Energy Coalition

for a clean and affordable energy future

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To: Steven King, Executive Director & Secretary
Washington Utilities and Transportation Commission
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Re: Docket # UE-160082, Avista EVSE Pilot Program

The NW Energy Coalition is pleased to support, in general, Avista's EVSE pilot program docket (UE-160082). We believe transportation electrification has many benefits for Washington ratepayers, including:

- Sharply reduced greenhouse gas emissions;
- Better air quality and human health outcomes (particularly in low-income communities who live near freeways and industrial zones);
- Fuel cost savings that spur the state economy, as households can spend their disposable income on goods and services other than petroleum;
- Much greater energy efficiency of the electric motor over the internal combustion engine; and
- Grid benefits, which can include:
    - Downward pressure on rates, as utilities sell additional kilowatt-hours with a flexible load that can be managed to off-peak times when demand and costs are low;
    - Potential load matching to variable renewable energy generation; and
    - Future applications such as vehicle-to-grid integration, mobile energy storage, flexible charging, and grid services such as frequency regulation.

The Coalition recently passed a resolution supporting greater utility involvement in transportation electrification (link). In it, we call on utilities to have clear legal authority to serve this emerging field, with attention to low-income participation and broadly shared ratepayer benefits. The resolution also calls on utilities to minimize incremental generation, capacity, and distribution costs through load management, which may include time-of-use rates or other charge management strategies. With these policies, all ratepayers can benefit and achieve significant environmental gains, primarily carbon emission reductions. Transportation comprises the bulk (>45%) of Washington's carbon emissions, and lowering emissions in this sector will be critical to meeting our carbon targets. More detail and analysis of these benefits and opportunities can be found here.

We find Avista's filing for this limited pilot to be, in general, appropriately sized for the service territory and state of the electric vehicle (EV) market. It also fits within the general parameters of HB 1853, which allowed the state's investor-owned utilities to install EV supply equipment (EVSE) and earn an incentive rate of return on those assets. We also appreciate Avista's interest in data acquisition on charging behavior and programs that will help manage utility costs (such as possible additional peak loads) and drive potential grid benefits, in keeping with the Coalition's resolution on the subject.

However, the docket would benefit from additional policy development and attention. The NW Energy Coalition has the following policy requests and observations at this time.

Major comments

1. **The program lacks an equity focus. It should address low-income participation with firm targets.** The NW Energy Coalition's resolution on transportation electrification stresses that utility programs must make EVs attractive to customers across the income spectrum, with attention to low-income and disadvantaged communities. This is particularly important if there are net rate impacts for these communities. Utility programs in California have featured a minimum 10% service requirement in disadvantaged communities, as well as two-tiered rebate rates by income. The Commission and Avista should consider a similar low-income component for this pilot program to ensure that all ratepayers, not just upper income households, benefit. We understand that this may be more difficult to implement in Washington than in California, which also features a strong vehicle purchase incentive program using carbon market revenue to provide purchase rebates to low-income households in areas with poor air quality. We encourage the company to find a suitable state or local government, private or non-profit partner to assist with the vehicle acquisition side of the equation. Used, low-mileage Nissan Leafs are currently available for $12,000 - $14,000, and since drivers save about $100 a month vs. gasoline on their fueling costs with low maintenance, the cost profile of these vehicles could be a good fit for a low- to moderate-income household.

2. **A policy decision is required on a gross vs. net rate impact cap.** HB 1853 states that "the commission may allow an incentive rate of return on investment on capital expenditures for electric vehicle supply equipment that is deployed for the benefit of ratepayers, provided that the capital expenditures do not increase costs to ratepayers in excess of one-quarter of one percent."

   The law is silent on whether this rate impact cap reflects only the *gross capital cost* of the program, or whether it should be applied *net* of any countervailing rate relief brought on by additional energy sales. As with decoupling, additional energy sales to EVs, particularly at off-peak times, can put downward pressure on rates and benefit all ratepayers by helping the utility spread its fixed costs over more kilowatt-hours. Puget Sound Energy in its 2014 charging rebate docket estimated that each EV provided $770 in net new revenue over its lifetime (net of generation and capacity costs). This estimate was based on relatively low annual mileage and can be seen as a lower bound. Avista, in its filing, estimates a present value of $500 - $2,000 per vehicle (cover letter, p. 12). While we have not seen detailed estimation parameters for this estimate, a value of at least $1,000 per vehicle in lifetime present value rate relief would appear to be a reasonable assumption, using standard driving and utility cost assumptions.

We would encourage the Commission to consider a *net* rate impact when applying the investment cap, taking into account both the gross capital outlay and also the countervailing rate relief from additional energy sales. More data to calibrate this estimate should be available as the pilot unfolds and could be considered in a future rate case.

3. **Free charging for drivers at workplace and multifamily residential settings is problematic. The utility should explore mixed models where a per session or per kWh fee is charged to the end user, and the utility nets out the site host's energy costs on their utility bill.**

   At 12,000 miles of driving, efficiency of 4 miles / kWh, and $0.10 / kWh energy price, an EV driver can easily incur $300 a year in energy costs. Avista's filing suggests that the site host (apartment or workplace employee parking settings, in particular) must pay this cost on the electricity bill and not collect payment from the end user at the plug. It may be possible in some instances to collect this cost bundled into a parking fee or in rent. In others cases, however, this represents a significant value transfer from the site host to the driver.

   Price signals at the plug play an important regulatory function for many parking and charging behaviors. Most public and workplace charging today incurs a fee, but of course these stations are not owned by utilities. ChargePoint frequently collects $1 or $2 per hour of charging time at its public stations. The Blink network charges $0.39 / kWh at many of its Washington Level 2 stations. Free charging may create a "tragedy of the commons" where utility-provided plugs are overused by some users who do not need a charge today, making them unavailable to other users who do. There have also been ethics complaints (in Oregon) at state offices about the free distribution of state-purchased electricity as fuel to some employees. It's not inconceivable that free fuel could be construed as a workplace benefit and become the subject of union negotiation or grievance as well. Finally, apartment owners or condominium boards may not be willing to pay costs of $300 per driver annually to participate in this program if they cannot recover that cost somewhere.

   RCW 80.28.320 states that: "The commission shall not regulate the rates, services, facilities, and practices of an entity that offers battery charging facilities to the public for hire; if: (1) That entity is not otherwise subject to commission jurisdiction as an electrical company; or (2) that entity is otherwise subject to commission jurisdiction as an electrical company, but its battery charging facilities and services are not subsidized by any regulated service. An electrical company may offer battery charging facilities as a regulated service, subject to commission approval."

   Under this statute, it would appear to be allowable for the utility to collect payment at the regulated energy rate from the EV driver at the plug and remit that payment to the site host as a credit on their electricity bill. Networked smart chargers should enable this model, which may boost site host participation and minimize conflicts.

4. **The Commission should support Avista's proposal to deploy DC fast charging. All charging modes are important to create a comprehensive system to support transportation electrification**. Only when the base of home charging is supported by a network of DC fast charging for extended trips can transportation electrification be

serviceable to drivers, boosting adoption rates.

In their meeting memo, regulatory staff object to Avista's DC fast charge proposal on the basis that 1) it's not behind the customer meter, and 2) dwell times are not greater than 2 hours. **We contest these factual assertions in both cases**.

DC fast charging can often be behind the customer meter of the site host. Indeed, installers often are flexible on this point, working with whatever power setup they find at the site. We are aware of multiple installations in Washington state where DC fast charging is part of the building's regular electrical supply and served by the building meter. The REO Flats apartment building on Capitol Hill in Seattle is one such example – DC fast charging is located at a paid, ground-level parking lot for public use, and the power supply is common with the building. Similar setups exist at shopping malls and other retail locations that are often near major highways. The 2200 Westlake complex, for example, has two Greenlots 25 kW DC fast charge units located in the parking structure under the Whole Foods, part of the building's regular power supply. Other examples include NRG stations in shopping malls in Tulalip and Tacoma, where the DC fast charging is served by the mall's power supply.

Dwell times for DC fast charging may exceed 2 hours in some cases. It's possible that a user could remain at a parking spot for more than two hours at a retail or commercial site and also receive a DC fast charge. Some DC fast charge units supply 25 kW of power (see Greenlots units in Seattle), so a vehicle with a more than 50 kWh battery pack would need more than 2 hours to fully charge. This scenario could include the Tesla Model S and also the forthcoming Chevy Bolt, Nissan Leaf or Tesla Model 3, which are slated to feature larger batteries and longer ranges. As any EV driver can attest, fast charging gets markedly slower the more full the battery pack is, due to rising electrical impedance. The last 20% of charge can take as much time as the first 80% did. So even with the 50kW stations that Avista is proposing, any battery pack of 85 kWh or 100 kWh (which several manufacturers are contemplating in future models) could require more than 2 hours to fully charge.

5. **The utility should plan to routinely co-locate Level 1 charging in appropriate workplace and residential settings that feature long (>4 hour) dwell times.** If the site host is already bringing power connections to the parking area, then co-locating cheap Level 1 (120V) outlets, which require no additional equipment other than conduit and an electrical outlet, can be a very cost-effective multiplier for vehicle charging. (Note: all EVs come with a Level 1 charging cord as standard equipment). For example, the Port of Seattle features several banks of Level 1 charging at SeaTac airport at its paid parking, where vehicles sit for multiple days typically. Level 1 charging can provide about 4 miles of range per hour of charging, so over the course of an 8-hour workday, it could support many commutes of 30 miles or less. Level 1 (1.4 kW) has low impact on peak loads and can help the utility avoid capacity or distribution constraints. In addition, it may minimize parking conflicts and serve employer/employee needs better, as workers will not be called out from their desks mid-day to move their vehicles to free up a Level 2 charger for another driver after an allotted 4-hour parking time. Similarly, in residential and multi-family settings, which often feature 10-14 hour overnight dwell times, a mixture of Level 1 and Level 2 can minimize parking conflicts and incremental loads. A Level 1/Level 2 ratio of 1:1 or more may be highly cost-effective and flexible for the site hosts and their users.

6. **The minimum Level 2 power specification is too low. All Level 2 installations should be capable of 6.6 kW (30A/240V) minimum.** In the cover letter p. 16, the utility says that "Level 2 EVSE will be capable of charging at a minimum of 3 kW output power." This minimum is too low for current vehicles and far too low for future vehicles. New equipment should all be capable of 6.6 kW power rates, which is now standard in Washington State Building Code, which requires 30A/240V EV readiness in new construction (see http://apps.leg.wa.gov/wac/default.aspx?cite=51-50-0427).

   The power trend on vehicle charging is going one way: up! Current model Nissan Leafs are being sold with 6.6 kW chargers. Other manufacturers such as Tesla and Volkswagen are fitting their EVs with more powerful 45A (10 kW) chargers, and the Level 2 specification is expandable up to 19.2 kW (80A), which is currently an option on the Tesla Model S. Battery pack sizes are expected to increase from 24-30 kWh today to perhaps 50 or 65 kWh on the forthcoming Chevy Bolt and other 200-mile range cars. Higher power charge rates will be needed to service these cars in reasonable amounts of time, as 3 kW will is completely inadequate to the task, requiring over 20 hours to fully charge a 65 kWh pack, for example.

7. **The utility should pursue new buildings (required by the 2015 Washington Building Code to be EV ready) as potential low-cost sites.** The most recent Washington building code requires new apartments, condominiums and some commercial buildings to be "EV ready" to serve 5% of parking spaces. That is, they must have capacity and conduit in place to serve the spaces with Level 2 charging. New construction projects may provide the utility with an opportunity to avoid some or all of the "site property and premises wiring" costs listed on p. 2 and install more ports under the 0.25% rate cap.

8. **The utility and the Commission should not presume that "smart charging" presents the best business case for charge management and moving flexible transportation load off peak**. All EVs sold today have onboard charge timers installed, allowing the user to direct off-peak charging through the vehicle. Consequently, time-of-use rates, which are widely used in other states and can migrate load off peak via a price signal, may prove more advantageous than smart charging built into the charging station at an incremental cost of $2,000 per port. A full cost analysis of the capital, programmatic costs, utility cost savings, and environmental performance of daytime and nighttime power sources should be conducted before either mode is adopted as standard.

9. **The utility should commit to conforming with state EV parking regulations and Building Code ADA accessibility rules**. State parking regulations require that parking spots with EV charging equipment be striped with green paint and designated with WSDOT standard signage as exclusively for electric vehicles while charging (see http://app.leg.wa.gov/RCW/default.aspx?cite=46.08.185). In addition, the recent 2015 State Building Code (again see http://apps.leg.wa.gov/wac/default.aspx?cite=51-50-0427) requires that some EV charging infrastructure be located adjacent to ADA accessible parking spaces so that the charging infrastructure is also accessible. Avista's proposal is silent on both these topics. We would encourage them to commit to addressing both in their operational plan.

Other Comments

- **The cost discussion on p. 2 and p. 9 vs p. 3 is somewhat unclear**. As shown in the summary table below, the utility proposes about $1.75 million in capital cost in one view, but $2.3 million in costs in another. The reason for the difference is not explained. In addition, it's not clear how the incremental "smart charger" costs overlay on this discussion. The text says smart chargers add $2000 to the EVSE equipment costs, but the tables on p. 2 to not appear to break out or reflect the share of smart and other chargers. It's possible that these two discrepancies are related, but a more precise cost discussion would be helpful.

	Number Proposed	Cost Per Port	Total (p. 2 and p. 9)	Capital Cost (p.3)	Difference?
SF Home L2	120	$1,375	$165,000		
Workplace/Fleet/MF L2	100	$3,500	$350,000		
Public L2	45	$8,000	$360,000		
Public DC Fast	7	$125,000	$875,000		
Total			$1,750,000	$2,315,250	$565,250

Thank you for your consideration, and feel free to contact me at (206) 295-0196 or jj@nwenergy.org if you would like to discuss these issues further.

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