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**RE: NW Energy Coalition statement of issues in Docket No. UE-101521 -
Regulatory Issues Relating to Electric Vehicles**

In accordance with the Commission's September 27, 2010 Notice, the NW Energy Coalition submits the following statement of issues in Docket UE-101521 regarding regulatory issues relating to electric vehicles (EV).

We have been actively participating in a similar proceeding in front of the Oregon Public Utility Commission (UM-1461), and offer many of the same initial comments here.

We are pleased that the Commission is proactively addressing how best to deal with what we believe will be a rapid transformation of the transportation sector. With increasing concerns over energy independence and over-reliance on oil and global warming, we expect that electric vehicle use will grow more quickly than some predict. We have seen rapid market transformation for other energy end-uses such as horizontal-axis washers and compact fluorescent lightbulbs that have achieved penetrations in this region two to three times faster than other parts of the country. There is every reason to believe that this will be true for electric vehicles as well.

The results of this docket can help encourage this trend, or put up serious roadblocks. We hope that the utilities and regulators not only design rules to *accommodate* EVs, but also *encourage* their use. One major way to do this is to tap into the extraordinary value that EVs can bring to the grid if tariffs and other policies are done right.

First, the Coalition urges the Commission to adopt policies regarding EVs that are flexible and encouraging of third-party participation. One cannot yet know the business models that will evolve around EVs, so we cannot predict the final roles for the utility. While it might seem easy at first to allow utilities a direct role in developing charging infrastructure, that role should not become a barrier to entry for innovative business ideas. Instead we believe that the utility's role should best be one of facilitation and support incentives for activities that reduce utility costs.

Second, we urge the Commission to take a broad view regarding allocation of the costs— and benefits—of accommodating and encouraging EV use. Many of the benefits of expanded EV use will be environmental, so it is reasonable for ratepayers as a whole to contribute to costs that may be incurred to incorporate EVs. Likewise, many of the benefits that a utility can obtain through

the ancillary services it can acquire through smart charging are the result of general investments made by all ratepayers, so the value of those benefits should be shared widely. It would be counterproductive to discourage early adopters and the experience that will be gained by the utility and its customers. At the same time, we encourage the Commission to ensure that potential cost impacts on low-income ratepayers are considered and addressed.

Third, we urge the Commission to consider the potential for EVs to provide ancillary services. As more wind is added to the grid, we are finding that key integration challenges occur during high ramp periods. Most often this occurs in the evening when loads decrease while the wind is picking up, and in the morning when the opposite occurs. The problem is one of intra-hour balancing due to the difficulty of accurately forecasting rapid wind ramps. This problem is causing some utilities to need more reserves than usual. Reserves could be provided by controlled charging of EVs.

Another challenge involves over-generation during very low load periods. Due to the asymmetric nature of wind turbine output (having average generation of only a third of peak generation), there could be times, in theory, that wind provides *all* of a utility's load, forcing it to back down all of its other generation.¹ Backing down all other generation is impossible, given minimum hydro and thermal requirements, so the ability of EV batteries to be charged during these periods would be valuable.

The value of smart charging EVs is much more than just controlling peaks, and should include the ability of the utility to both increase and decrease the charging pace. Any rate schedule that allows the utility to "dispatch" EVs by controlling the charging pace must reflect the value of the ancillary service the EV is providing to the grid.

Fourth, of special interest to us, and we predict to the early adopters of EVs, is the ability of using their vehicles to help integrate renewable resources and reduce their and society's carbon footprint. The knowledge that their vehicle can help their utility integrate renewable resources can be an additional motivation for purchase. We propose that utilities be required to offer a rate schedule that gives EV owners the option to allow their utility to actively manage the charging pace to maximize its consumption of renewable energy. That is, it would use as a control signal a measure of the generation output of its renewable resources. A recent announcement from BPA about a pilot (using hot water heaters) at Mason County PUD #3 in Washington whose heating rate is guided by a wind generation signal is evidence that this is possible. The Coalition believes EV owners will be much more motivated to choose such a renewable integration control scheme than simply a time-of-use or peak period control scheme—which can have the unintended consequence of actually causing the charging to come mainly from baseload coal plants.

Fifth, we propose the Commission assess the value to the grid of smart charging. Attached to our comments is a report from the December 2006 issue of Public Utilities Fortnightly (Attachment A) that provides a preliminary estimate of the value to the utility of the ancillary services provided by a plugged-in vehicle. The article uses the (optimistic) assumption that the entire battery pack could be put under grid control, both for charging and discharging. This is usually

¹ This is somewhat simplistic; in reality, geographic diversity would mean it is highly unlikely for *every* turbine to produce maximum output at once.

known as "Vehicle to Grid" or V2G. While ultimately this model might be realized, most people believe that at least for now, discharging the batteries into the grid will not be practical due to battery design and lifetime concerns.

But this does not mean that most, if not all of the ancillary services discussed in the article cannot essentially be secured via variable charging rates (or "acceptance rates") controlled by the utility. There is little difference, on an aggregate basis, between slowing down or halting charging on many vehicles and discharging those vehicles into the grid. The effect is much the same: a drop in net load served from the utility's resources. This provides up regulation, while increasing the rate of charging provides instantaneous down regulation.

The article's bottom line is this (Table 3, p. 33): controlling an EV battery is worth from \$184 to \$3,285 per year. Obviously this study is somewhat dated and contains assumptions that may not apply to our region or control technologies. However, it is a good indication of the potential value to the grid of smart charging.

Sixth, we recommend that integrated resource plans include an evaluation of: (a) the potential of controlled charging of EVs for the provision of ancillary services; and (b) the value of those services consistent with other sources of the services.

Seventh, in addition to determining whether the resale of electricity at public charging stations is subject to economic regulation, we believe this process should address the rate paid for charging EVs and how that rate will be consistently applied. In addition, this process could consider how costs are allocated (e.g., will the owner of the EV always be responsible for payment? Or will the household at which an EV is plugged in pay all the costs?)

In conclusion, the NW Energy Coalition urges the Commission and parties to think broadly regarding the potential value of controlled charging of EVs (and other devices, such as hot water heaters, freezers and HVAC). In our opinion, EVs are not a problem utilities must solve, but a possible solution to other utility challenges, especially the low-cost integration of renewables. Ultimately, we envision an approach to EVs that balances environmental and ancillary services benefits with protection of all ratepayers.

Thank you for the opportunity to provide this statement of issues. Coalition staff will attend the work session on October 28.

Sincerely,

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