MITSUBISHI
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February 10, 2011
CL11- 0013

Via Electronic Filing and U.S. Mail

Re: UM 1461- INVESTIGATION INTO RATE STRUCTURES FOR ELECTIC VEHICLE CHARGING INFRASTRUCTURE

Attention Filing Center:

Enclosed for filing in UM 1461 are an original and five copies of:

> Response to Opening Comments and ALJ Bench Request of Mitsubishi Motors R&D of America

This document is being filed by electronic mail with the Filing Center.

This document is being served upon the UM 1461 service list.

Thank you in advance for your assistance.

Sincerely,

David N. Patterson, P.E.
Chief Engineer
Regulatory Affairs and Certification

Enclosures
cc: Service List-UM 1461

BEFORE THE PUBLIC UTILITY COMMISSION
OF THE STATE OF OREGON
UM 1461

In the Matter of	)
	)
PUBLIC UTILITY COMMISSION OF OREGON	) RESPONSE TO OPENING) COMMENTS AND BENCH) REQUEST OF MITSUBISHI
Investigation of Matters Related to Electric Vehicle Charging	) MOTORS R&D OF) AMERICA

Mitsubishi Motors R&D of America ("MRDA") offers the following comments in response to the Oregon Public Utility Commission ("OPUC") Bench Request issued November 15, 2010. In the bench request, the Commission requests comments directed to five specific questions or issues. MRDA's comments are structured to respond to those five questions.

Mitsubishi Motors has a long history of development of electric-drive vehicles ("EVs") – Mitsubishi Motors first EVs were delivered to Japanese utility companies and government agencies in 1971. Since that beginning, Mitsubishi Motors has continued development work on EVs.

June 2009, Mitsubishi Motors delivered the first mass-produced EV in Japan. Since then, Mitsubishi Motors has produced and delivered over 5000 i-MiEVs ("MiEV – Mitsubishi innovative Electric Vehicle") in Japan, Hong Kong, and Great Britain. Recently, Mitsubishi Motors began sales in the balance of Europe through its dealers and rebadged as a Peugeot.

Most importantly, Mitsubishi Motors will begin sales of the North America version of the i-MiEV – simply called the "i" – in November 2011. Oregon,

Washington and California will be the initial launch areas followed by the Northeast states. Within one year, Mitsubishi Motors will sell "I" nationwide.

As a leader in EVs and EV technology, Mitsubishi Motors has determined three important actions necessary for the successful launch of EVs:

1. Infrastructure
2. Incentives
3. Public Education

Based on our experience, Mitsubishi Motors believes OPUC proceeding is an opportunity for the State of Oregon to:

- support the development of a sustainable infrastructure,
- provide short term incentives for consumer and long term benefits for Oregon citizens, and
- Educate the public demonstrating the common good shifting personal transportation to low carbon density electric power.

In summary, we are advocating a flexible, proactive approach. While the market is developing, early overly prescriptive regulation could adversely affect EV deployment and customer experience.

Utility Ownership of Electric Vehicle Supply Equipment ("EVSE" or charging station) Guideline

If the Commission permits utilities to own publicly available charging stations, what standards of review should the Commission use to determine when recovery of utility investment in publicly available charging stations is warranted? What are the implications, if any, of the used and useful standard (ORS 757.355) for utility investment in charging stations?

Response

The used and useful standard should not apply to the actual use of the charging station, but rather that it is in-service providing the opportunity of electricity to end user EV drivers. Mitsubishi Motors experience shows that EV drivers drive their EV more frequently in areas that EVSEs exist. Additionally, customers are more likely to replace their existing vehicle when EVSEs are readily available. In Japan, the utility companies (especially TEPCO) are currently installing thousands of EVSEs to reduce society's greenhouse gas emissions. This effort has lead private companies to quickly move to supplement the utilities. In the next phase, the utilities' effort is to directly address market gaps or a lack of supply (public areas such as parks/government facilities/highway rest areas and remote areas). In this case, the utilities are acting in as a provider of last resort.

Distribution System Upgrades Guidelines

Request:

1) Will it be possible to assign responsibility for a utility's need to make significant distribution system upgrades to one or a limited number of "last to the system" EV customers?

2) If so, should the last to the system EV customer(s) be burdened with the full cost of the distribution system upgrade?

3) If not, what are reasonable rate alternatives to assigning full cost responsibility to the last to the system EV customer(s)?

Response

The Commission need not distinguish EVSEs from other end uses for purposes of recovering costs for distribution system upgrades or changes. Utility practices, including line extension allowances, are adequate; however, as EV deployment increases, policies and allowances should be reviewed to

incorporate knowledge and experience gained from the advancement of EVSE infrastructure.

Rate Design Guideline

Request:
The Commission asks parties to further discuss both approaches - a seasonal/time of- use rate schedule separate or sub-metering for EV charging versus a time-of-use rates [sic] for the entire home or business with an EV charging station. The Commission also encourages parties to think more broadly about the issue to consider alternatives other than time-of-use rates that could be used by utilities and others to encourage off-peak charging. For example, Staff has considered whether a discounted rate class should be created for EV charging in exchange for service being interruptible during on-peak periods. The Commission asks parties to comment on the merits or disadvantages of this approach. Should any approach used to encourage off-peak charge of electrical vehicles be initially implemented as a pilot program? The Commission also asks parties to comment about the role of customer education with regard to EV charging during the off-peak.

Response

The deployment of EV s will create an experiment in consumer behavior and strategies to encourage off-peak charging. There are numerous unknowns about EV user behaviors and preferences about how and when EVs need to be charged to give the users assured transportation.

The concept of variable cost (time-of-use) may adversely affect workplace/daytime charging, and frequency of use of DC quick-charging stations. Mitsubishi Motors believes more information on customer preferences and habits needs to be collected before restrictive/behavior changing pricing is implemented on EV drivers. We know of several pilots throughout the United States that will provide useful information to determine how to effectively educating customers on its TOU rate and optimal charging habits. Until EVs reach the mass market

(greater than 2% of annual vehicles sales), the true nature of the average EV driver will not be known.

IRP Flexible Resources Guideline

Request:
The Commission asks parties to comment regarding the reasons to either adopt or reject Staff's proposed integrated resources plan (IRP) guideline for flexible resource planning?

Staff's proposed IRP guidelines to address the potential for EVs to provide ancillary services for the integration of renewable generation.

1. Forecast the supply of flexible capacity: The electric utility shall forecast the balancing reserves available at different time intervals (e.g. ramping available within 5 minutes) from existing generation resources over the 20 year planning period.

2. Forecast the supply of flexible capacity: The electric utility shall forecast the balancing reserves available at different time intervals (e.g. ramping available within 5 minutes) from existing generation resources over the 20 year planning period.

3. Evaluate flexible resources on a consistent and comparable basis: In planning to fill any gap between the available demand and supply of flexible capacity, the electric utilities shall evaluate all resource options including the use of EV s on a consistent and comparable basis.

Response:

Mitsubishi Motors is not able to provide an educated opinion Staff's proposed integrated resources plan (IRP) guideline for flexible resource planning in terms of electrical generation. We will discuss Staff's basic assumption of the widespread availability of "Vehicle-to-grid" ("V2G") capable EVs. **Our current i-MiEV is NOT capable of V2G operation and our owners' manual will exclude warranty coverage for any vehicle that was found to be modified for V2G**

operation. Mitsubishi Motors has no current plans to market a V2G capable vehicle.

Since the mass production of EV batteries is still in its infancy, battery costs are still relative high. Considering that batteries deteriorate slightly with each charge/discharge cycle, V2G operation could cause deterioration that could cost as high as $1 per kW-hr provided. Additionally, the current on-board charger is replaced with a two-way capable device and the vehicle operating system is developed to manage this type of non-functional discharge. Therefore, Mitsubishi Motors does not believe V2G will be commercially available in mass-production vehicles for at least 10 years.

EVs do provide another opportunity – reuse of used EV batteries for renewable storage. Mitsubishi Motors battery supplier, Lithium Energy Japan, is studying applications for re-using batteries from EVs. Typically, EV batteries are considered "worn-out" when no longer able to provide 80% of initial storage energy. Currently, there are a number of applications proposed for these high performance/slightly degraded batteries such as storing night time generated wind power or other renewable energy. Continued investigation/demonstration of such uses could provide additional reserves.

Additional Guidelines

MRDA submits no additional guidelines at this time.

DATED this 10th day of February, 2011.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have this day caused **Response to Opening Comments and ALJ Bench Request of Mitsubishi Motors R&D of America** to be served by electronic mail to those parties whose email addresses appear on the attached service list, and by First Class US Mail, postage prepaid and properly addressed, to those parties on the service list who have not waived paper service from OPUC Docket No. UM 1461.

DATED at Cypress, California this 10th day of February, 2011.

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