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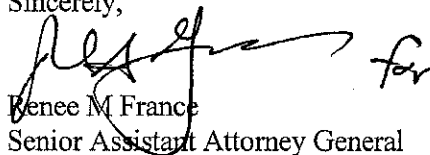
December 18, 2013

Attention: Filing Center
Public Utility Commission of Oregon
3930 Fairview Industrial Drive SE
P.O. Box 1088
Salem OR 97308-1088
puc.filingcenter@state.or.us

Re: *In the Matter of PUBLIC UTILITY COMMISSION OF OREGON, Report to the
Legislature on Effectiveness of Incentive Programs for Solar Photovoltaic Energy*
OPUC Docket No.: UM 1673
DOJ File No.: 330030-GN0371-13

Enclosed for filing with the Commission today are an original and five copies of Oregon
Department of Energy's Comments in the above-captioned matter.

Sincerely,



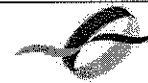
Renee M. France
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Enclosures
RMF:jrs/#4854570
c: UM 1673 Service list



Oregon

John A. Kitzhaber, MD, Governor



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December 18, 2013

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Re: Oregon Department of Energy comments on UM 1673 - House Bill 2893 Solar Incentive Report to Legislature

Oregon Department of Energy (ODOE) offers the followings answers to PUC Staff questions presented to stakeholders November 21, 2013. Questions not answered in these comments appear in grey font.

General Questions

1. What is the primary goal in promoting solar?

The legislature has established mechanisms to promote solar through financing via the State Energy Loan Program and direct financial incentives including state tax credits, the public purpose charge and the volumetric incentive rate. The incentive programs are designed to overcome market barriers, primarily the up-front cost, that prevent widespread installation of solar. At the same time, incentives result in the long-term development of the local expertise (among utilities, consumers, developers, distributors, installers, building officials, real estate professionals and policy makers) that will be needed in the future to support rapid deployment of solar generation.

The legislature has provided reasons to reduce Oregon's consumption of fossil fuel energy, in part by promoting new energy generation from renewable resources, including:

ORS 469B.133 In the interest of the public health, safety and welfare, it is the policy of the State of Oregon to encourage the conservation of electricity, petroleum and natural gas by providing tax relief for Oregon facilities that conserve energy resources or meet energy requirements through the use of renewable resources.

ORS 468A.200(8) ... Significant opportunities remain to reduce greenhouse gas emissions statewide, especially from major contributors of greenhouse gas emissions, including electricity production... (9) Actions to reduce greenhouse gas emissions will reduce Oregon's reliance on foreign sources of energy, lead to the development of technology, attract new businesses to Oregon and increase energy efficiency throughout the state, resulting in benefits to the economy and to individual businesses and residents.

Energy Trust of Oregon describes its solar program purpose and design as follows:

Solar energy has the potential to be Oregon's greatest source of renewable energy generation. Its availability throughout the state offers the advantage of distributed generation by producing power at the point of use.

In order to develop the solar market across all sectors and gain long-term solar electricity generation to benefit the customers of PGE and Pacific Power in Oregon, Energy Trust has structured the Program to address the primary market barriers of cost, quality and awareness.¹

2. What is the proper role of the utility in developing solar?

- Support interconnection and provide distribution services necessary to accept solar electricity into the grid. Best practices for interconnection include transparent and uniform requirements, industry-supported technical standards, certainty of interconnection when requirements are met, uniform and reasonable fees based on actual costs, and standard timeframes that mitigate delays.
- Thoroughly evaluate solar in integrated resource planning.
- Analyze and invest as appropriate in energy storage and smart grid technologies to support integration of increasing amounts of solar generation.
- Value solar generation based on its generation characteristics relative to network needs, such as reducing peak demand and mitigating transmission and distribution constraints.

3. What are the solar incentive programs under evaluation?

a. Programs currently in place in Oregon?

Energy Trust of Oregon incentives and ODOE tax credits or grants as a combined offering, in addition to the Volumetric Incentive Rate (VIR) program offered by each investor-owned utility.

b. Programs outside of Oregon that may be worth examining?

Austin Energy value-of-solar tariff:

Program information:

<http://www.austinenergy.com/Energy%20Efficiency/Programs/Rebates/Solar%20Rebates/residential.htm>

Tariff calculation: http://www.cleanpower.com/wp-content/uploads/090_DesigningAustinEnergySolarTariff.pdf

Minnesota value-of-solar tariff: <http://mn.gov/commerce/energy/images/DRAFT-MN-VOS-Methodology-111913.pdf>

4. How should solar incentive programs be evaluated?

a. What evaluation criteria should be used (e.g. cost per kwh, cost per installed KW, cost per unit of carbon displaced, other)?

House Bill 2893 directs the Commission to investigate the “costs and benefits of the programs for retail electricity consumers and how those costs and benefits are distributed among retail electricity consumers.” Therefore, the programs should be evaluated primarily from the ratepayer perspective. The HB 2893 report should analyze the value to ratepayers of the solar energy acquired through the programs and the cost to ratepayers to acquire that energy (cost per kWh). This will require conducting a study to develop a better estimate of the solar resource value than currently exists (see response to question #5 below). The HB 2893 report should similarly analyze the value of the capacity contribution of the solar installations and the cost to acquire it (cost per kW).

¹ Energy Trust of Oregon Program Guide for Solar Electric Allies, v6, 9/2012, available at: http://energytrust.org/library/forms/SLE_PG_PV_ProgGuide.pdf.

It will be important to consider not only the cost-effectiveness of the programs, but also the effectiveness of the programs in achieving their goals. This was done in the Commission's report to the 2013 Legislative Assembly on the Solar Photovoltaic Volumetric Incentive Rate program² ("UM 1505 report"). That report included quantitative and qualitative comparisons between the VIR program and the Energy Trust plus state tax credit and grant programs, primarily from the perspective of the participating customer. That information should be retained and summarized in this report.

Finally, the total societal costs of each program should be considered because the programs under comparison utilize different funding mechanisms. Notwithstanding the federal tax credit, the costs of the VIR program are borne entirely by ratepayers while the costs of the Energy Trust plus state tax credits or state grants are shared by ratepayers and taxpayers. Total societal costs will be one more metric by which to compare the programs.

b. How can the evaluation criteria be selected so that different programs are compared on an apples to apples basis?

It may be necessary to normalize the incentive rates offered by the programs before comparing the programs' costs to ratepayers. Since the major cost of the incentive programs is the incentive payment itself (rather than administrative costs), the incentive rate is the primary determinant of the program cost. Incentive rates within the VIR and Energy Trust programs are set based on the program's available capacity or incentive budget relative to market demand. Incentive normalization would need to be done separately for each investor-owned utility and for each customer class or system size category, since the programs each have different allocations for each category.

c. What data is needed and how should it be gathered?

The investor-owned utilities, Energy Trust and ODOE will need to provide program data available since the UM 1505 report.

The Commission should order a joint study of the solar resource value (see response to question #5 below).

Questions related to Resource Value (HB 2893 (4)(1)(a))

5. In UM 1559, the Commission chose not to require utilities to report certain elements of Resource Value, such as avoided CO₂, fuel price volatility, integration, and transmission and distribution costs.³ Should we calculate them now? If so, how should we do so with the data available?

The Commission should require the utilities to jointly fund an independent study on solar resource value, funded by the utilities and overseen by OPUC staff with a broad stakeholder advisory work group. A potential model in part for this process is used for independent evaluators that evaluate utility competitive bidding processes. In that model, an RFP for an independent evaluator is approved by the Commission and staff recommends for Commission approval the winning bidder, with input from the utilities and ratepayer interest groups. The Commission acts on the recommendation at a public meeting. The utilities contract with and pay for the service provider. PUC staff has direct access to all information and technical assistance.

² The 2013 Legislative Assembly on the Solar Photovoltaic Volumetric Incentive Rate program is available at: <http://library.state.or.us/repository/2013/201301101142514/>.

³ See Order 12-396 at 5.

6. *How does the resource value of distributed solar compare with utility scale solar? To make this comparison, what factors do we take into account, and what data would be needed?*

The definition of "resource value" for solar in ORS 757.360 (5) includes "the costs of firming and shaping" in (a) and "Avoided distribution and transmission cost" in (b). These cost elements differ systematically between distributed and utility-scale systems. The independent study of solar resource value recommended in response to question #5 should address these cost elements for distributed and utility-scale systems.

Questions related to Costs and Benefits of Programs and their Distribution among retail electricity customers (HB 2893 (4)(1)(b))

These questions are important. They cannot be carefully addressed in the time allotted for these comments. Instead, they should be addressed in the independent study discussed in the response to #5 above.

7. *How does cost effectiveness match up with the overall goal of promoting solar energy in question 1?*

8. *How are the benefits of incentive programs distributed among non-participating retail customers?*

9. *Can those benefits be quantified? If so, how? What studies would need to be done and what data would be needed?*

10. *What available studies on benefits of SPV (national or from other states) might be applicable to Oregon, and how would the results be adjusted so that the dollar value of the benefits is realistic for Oregon?*

11. *Do incentive programs create cross subsidies?*

a. *Who pays them?*

b. *Are some ratepayer classes more affected than others?*

c. *How are low income ratepayers protected?*

d. *Do some types of programs create less of a cross subsidy than others?*

12. *Do VIR and Net Metering participants pay their full share of the fixed costs of maintaining the grid? How are fixed costs recovered, and how should they be recovered?*

13. *At what level of penetration does the impact on utility revenue become a significant factor?*

Questions about Forecast Costs associated with solar photovoltaic systems in Oregon (HB 2893 (4)(1)(c))

14. *What are sources of forecasts of solar panel prices? How big is the range of estimates?*

PV Magazine publishes the monthly module price index developed by PV Exchange: <http://www.pv-magazine.com/investors/module-price-index/#axzz2nCpxPbs4>.

15. *How much of SPV system costs are soft costs (interconnection, permitting, code compliance, other)?*

The following is an excerpt from the latest National Renewable Energy Laboratory (NREL) report on soft costs.

"According to our analysis, the soft costs accounted for a significant portion of total installed PV system prices in the first half of 2012: 64% of the total residential system price, 57% of the small (less than 250 kW) commercial system price, and 52% of the large (250 kW or larger) commercial system price."

The full report can be viewed here: <http://www.nrel.gov/docs/fy14osti/60412.pdf>.

16. *What initiatives are underway to lower soft costs? Is the trend in soft costs going down at the same pace as panel costs? Do soft costs create a "floor"?*

A partnership between stakeholders in Washington and Oregon has just received a USDOE SunShot grant to help evaluate and reduce solar soft costs in the region. The partnership includes Washington Department of Commerce, Oregon Department of Energy, Energy Trust of Oregon, Solar Oregon and NW SEED, among others. Activities in Oregon will include efforts to streamline and harmonize permitting across jurisdictions, streamline interconnection agreements and streamline incentive applications.

Questions about Barriers within the programs to providing incentives (HB 2893 (4)(1)(d))

17. *List perceived barriers within the incentive programs in Oregon.*

- Uncertainty in long term program funding may keep some players out of the market
- Uncertainty in "winning" incentives in competitive programs
- Administrative soft costs associated with incentive program application processes

18. *List "other" barriers unrelated to incentive programs (e.g. local permitting, building codes, other)*

- Uncertainty in federal incentive programs
- Soft costs associated with permitting, inspections, and interconnection
- Soft costs associated with customer acquisition
- High capital costs of projects
- Lack of financing opportunities
- Low cost of conventional energy

Questions about Future Development of Solar Energy

19. *At what penetration does solar generation affect local distribution reliability?*

It would be useful to know the relative impact of penetration level by distribution feeder. This question could be addressed in the independent study discussed in the response to #5 above.

Here are three research papers that investigate integration of solar at different penetration levels:

Maximum Photovoltaic Penetration Levels on Typical Distribution Feeders:

<http://www.nrel.gov/docs/fy12osti/55094.pdf>

Quantifying the Cost of High Photovoltaic Penetration: http://www.cleanpower.com/wp-content/uploads/2012/02/031_CostHighPVPenetration.pdf

Distributed Generation Benefits and Planning Challenges:

http://www.westgov.org/wieb/meetings/crepcf2012/briefing/present/a_olson1.pdf

20. *What initiatives are in place to prepare for greater solar penetration, and what initiatives might be considered?*

One key question is what orientations would be best for non-residential systems and how those orientations could be incented. The systems being installed now will likely last for 20 years or more.

There are key lessons to be learned from the experiences in Germany and California. Each company's integrated resource plan should include research to address these questions.

21. Looking forward, what initiatives are in place to reduce solar integration costs, and what initiatives should be considered?

One of the key issues is reducing the cost of integrating solar generation, especially the cost of necessary incremental regulating reserves. Current efforts to establish energy imbalance markets should be encouraged, especially through coordinated efforts such as those underway among western utility commissions.

Using demand response to provide regulating reserves should also be encouraged. Physical storage of thermal energy (or cold) at customers' sites can provide the equivalent of electrical storage on the electric system. Better understanding of optimal orientation of non-residential systems is also needed.

Oregon utilities need to better understand how solar PVs at non-residential sites might provide local VARs and voltage support. If this effort is useful, the question should be raised for residential PVs as well.

22. What business models would best meet the overall goals in Questions 1 and 2?

This concludes ODOE's comments.

These comments are respectfully submitted by:

/s/ Kacia Brockman

Kacia Brockman, Energy Policy Analyst

CERTIFICATE OF SERVICE/SERVICE LIST

I hereby certify that on December 18, 2013, I served the foregoing OREGON DEPARTMENT OF ENERGY'S COMMENTS upon the persons named on the service list, by electronic mail only as all parties have waived paper service.

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