Clean Coalition
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May 23, 2014

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Public Utility Commission of Oregon
3930 Fairview Industrial Dr. SE
Salem, Oregon 97302-1166

RE: Comments on May 2014 Draft Report, Investigation into the Effectiveness of Solar Programs in Oregon

The Clean Coalition respectfully submits the following comments on the Commission's Draft Report into the Investigation into the Effectiveness of Solar Programs in Oregon (the "Draft Report"). The Clean Coalition's comments focus on quantifying the value of distributed solar power to the ratepayers and the energy system.

The Clean Coalition is a California-based nonprofit organization whose mission is to accelerate the transition to renewable energy and a modern grid through technical, policy, and project development expertise. The Clean Coalition drives policy innovation to remove barriers to procurement, interconnection, and realizing the full potential of integrated distributed energy resources, such as distributed generation, advanced inverters, and energy storage. The Clean Coalition's Resource Hub includes many resources that reveal the value of distributed generation[1] and provide guidance and developing local renewables programs, including the Local CLEAN Program Guide, a seven-volume guide to evaluating, enacting and implementing utility programs for procuring and interconnecting local renewables.[2] This comprehensive guide includes step-by-step guidance and national and global best practices for estimating the net value of local renewables, estimating economic benefits, and designing policies and procedures for local renewables programs. The Clean Coalition participates in proceedings before state and federal agencies throughout the United States. The Clean Coalition has also produced

Throughout the country, state regulators and utilities generally include in distributed solar value calculations all quantifiable, direct benefits to ratepayers. The following quantifiable, direct benefits to ratepayers should be considered "hard" benefits to Oregon ratepayers.[3] We also recommend that Oregon

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[1] See http://www.clean-coalition.org/resource/the-resource-hub/state-level-resources/value-of-distributed-generation/

[2] The Clean Coalition's Local CLEAN Program Guide is available at http://www.clean-coalition.org/resource/the-resource-hub/single-utility-resources/

[3] See the Clean Coalition's Local CLEAN Program Guide, Module 3: Evaluating Avoided Costs for more details on determining the full value of distributed renewable generation

policymakers consider additional societal benefits, such as those included in our catalogue of benefits of distributed generation,[4] or as calculated by the Clean Coalition for the Hunters Point substation of San Francisco, California.[5]

I. Renewable energy compliance value

The report lists Oregon's avoided energy cost as 3.7 cents per kWh. Oregon has a Renewable Portfolio Standard, and therefore the cost of any distributed solar program that meets RPS requirements should be compared with the cost of renewable energy that could meet the RPS.[6]

II. Environmental compliance value

To the extent that distributed solar generation can save ratepayer dollars by cost-effectively meeting federal, state or local environmental legal requirements, these savings should be included in benefits calculations. For example, on June 2, the Environmental Protection Agency is expected to propose sweeping new Clean Air Act regulations designed to cut emissions of carbon dioxide from power plants. After the regulations are announced, states will have a year to develop a plan to comply with the rules. Experts expect that the regulations will allow states to comply by promoting increased renewable energy generation.[7]

III. Peak demand value

The report notes that avoided investments in generating capacity refers to the amount of generating resources needed to meet peak load. However, this is different from peak demand value, which refers to the higher value of energy during periods of high demand and low supply. Accordingly, the market price of electricity is higher during times of the day and times of the year when customers have greater demand for electricity. When assessing the value of replacement generation, it is important to account for how generation profiles align with demand for electricity.[8]

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[4] The Clean Coalition's Catalogue of Benefits of Distributed Generation is available at http://www.clean-coalition.org/site/wp-content/uploads/2014/02/DG-Catalog-of-Benefits-07-tk-9-Aug-2013.pdf

[5] The Clean Coalition's Hunters Point Project Benefits Analysis is available at http://www.clean-coalition.org/site/wp-content/uploads/2012/10/HPP-Benefits-Analysis-Summary-22_zf-9-April-2014.pdf

[6] For an example from Colorado, see Clean Coalition's Local CLEAN Program Guide, Module 3: Evaluating Avoided Costs, at 8-9

[7] See Susan F. Tierney, "Greenhouse Gas Emissions Reductions from Existing Power Plants: Options to Ensure Electric System Reliability", available at http://www.analysisgroup.com/article.aspx?id=14915

[8] Clean Coalition's Local CLEAN Program Guide, Module 3: Evaluating Avoided Costs, at 6-7

Utilities generally must pay extra for electricity during peak demand periods in accordance with time-of-delivery (TOD) price schedules. In addition to or as an alternative to these TOD schedules, suppliers may impose "demand charges" to offset their cost of maintaining sufficient generating and delivery capacity to meet peak demand. These charges are often substantial and are sometimes even higher than the procurement cost of the energy itself. It is possible that values for avoided TOD adders and demand charges have already been calculated for local demand response or other programs. Hence, current data is often readily available in published rate tables through the utility, the transmission operator, and/or the energy supplier.

IV. Hedge or price certainty value

As the report noted, many states have acknowledge the value of renewable energy contracts as a hedge against fuel volatility. In addition to the studies noted in the report, it is worth noting that many states regularly forecast expected fuel volatility for planning purposes. The California Energy Commission, for example, recently updated its projections of future fuel and solar costs.[9]

V. Locational value

Distributed generation has significant quantifiable locational value to ratepayers beyond line losses, including avoided transmission costs and transmission and distribution upgrade costs.[10] As the Clean Coalition has testified before the California Public Utilities Commission, such value especially applies to any portion of the generation that is deemed "deliverable" and does not exceed 100% of the coincident load at the substation, as all such generation avoids use of transmission system and associated access charges.[11] Further, as described below, Oregon can proactively guide distributed solar to the most cost-effective locations on the grid to maximize locational value of its distributed solar programs.

Utilities across the country have quantified how local solar capacity may avoid, reduce, or defer the need for additional new transmission capacity. For example,

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[9] California Energy Commission Draft report on Estimated Cost of New Renewable and Fossil Generation in California available at http://www.energy.ca.gov/2014publications/CEC-200-2014-003/CEC-200-2014-003-SD.pdf

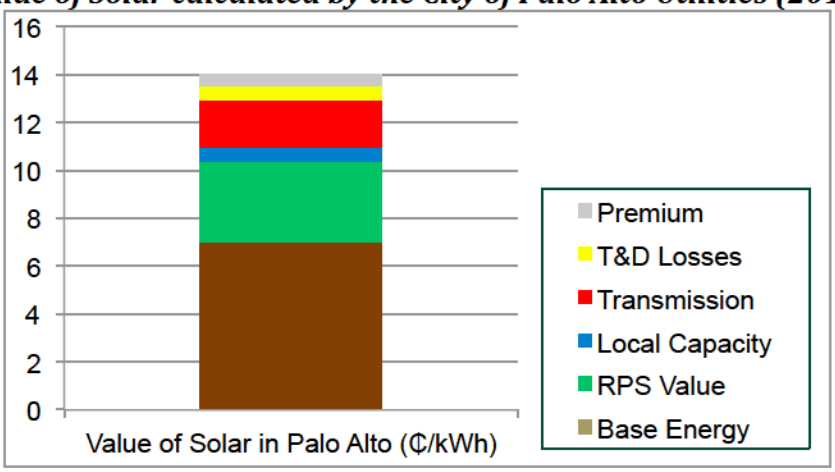
[10] See Clean Coalition's Locational Benefits brief, available at http://www.clean-coalition.org/site/wp-content/uploads/2013/11/Locational-Benefits-Brief-08_tk-6-Nov-2013.pdf

[11] Clean Coalition, A.14-01-007 et. al., Opening Brief regarding Southern California Edison's Application to Establish Green Rate and Community Renewables Programs, available at http://www.clean-coalition.org/site/wp-content/uploads/2014/05/SB-43-SCE-Clean-Coalition-Opening-Brief-2-ddp-2-May-2014.pdf

the Long Island Power Authority (LIPA) recently offered a 7¢/kWh premium to 40 MW of appropriately sited solar DG facilities to encourage locational capacity sufficient to avoid $84,000,000 in new transmission costs that would otherwise be incurred, expecting a net savings of $60,000,000.[12]

As shown in the graphic below, the City of Palo Alto Utilities estimated in 2012 that avoided transmission costs had a value of 1.94 cents per kWh, about 14% of the total value of local solar energy.[13]

Value of Solar calculated by the City of Palo Alto Utilities (2012)



Similarly, a May 2012 study by Southern California Edison found that transmission upgrade costs for their share of the Governor's goal of 12,000 MW of distributed generation could be reduced by over $2 billion from the trajectory scenario. The lower costs were associated with the "guided case" where 70 percent of projects would be located in urban areas, and the higher costs were associated with the "unguided case" where 70 percent of projects would be located in rural areas.[14]

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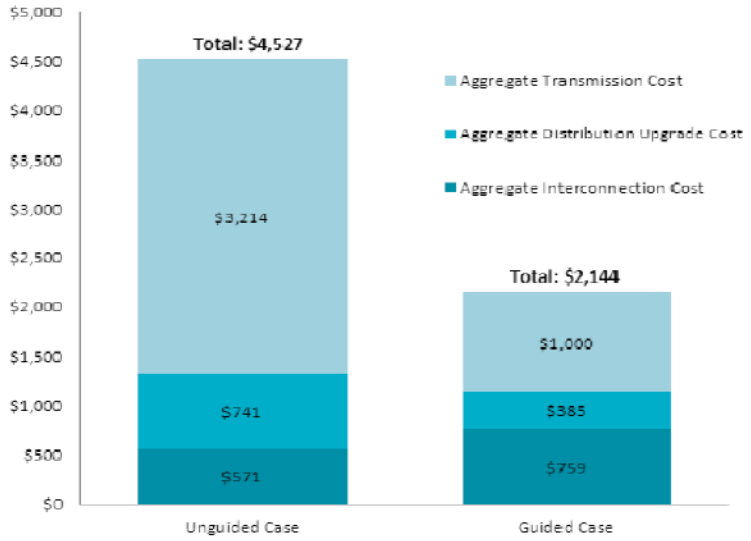
[12] Proposal Concerning Modifications to LIPA's Tariff for Electric Service, available at http://www.lipower.org/pdfs/company/tariff/proposals-FIT070113.pdf. LIPA's guidance states: "The rate will be a fixed price expressed in $/kWh to the nearest $0.0000 for 20 years applicable to all projects as determined by the bidding process defined below, plus a premium of $0.070 per kWh paid to projects connected to substations east of the Canal Substation on the South Fork of Long Island."

[13] Clean Coalition, A.14-01-007 et. al., Opening Brief regarding Southern California Edison's Application to Establish Green Rate and Community Renewables Programs

[14] The Impact of Localized Energy Resources on Southern California Edison's Transmission and Distribution System, SCE, May 2012



Southern California Edison Comparison of Costs of Primarily Local vs. Primarily Rural Distributed Generation[15]

The Clean Coalition recommends that Oregon policymakers proactively guide distributed solar projects to the most cost-effective locations on the grid, as required in California.[16] The California Public Utilities Code also recognizes locational value and requires utilities to submit plans to maximize locational benefits of distributed resources. AB 327 (2013) added Public Utilities Code Section 769, which requires utilities to submit Distribution Resource Plans by July 1, 2015 to identify optimal locations on the distribution grid through cost-benefit analyses,[17] and guide distributed resources towards optimal locations on the grid.

The Clean Coalition is currently working with California policymakers to leverage advanced grid modeling tools to help utilities develop interactive Distribution Resources Plans that guide distributed energy resources to the best locations on the grid and reduce the timeframes and uncertainty involved in grid interconnection.

The Clean Coalition is currently working on the Hunters Point Project, a Community Microgrid Initiative project in collaboration with Pacific Gas & Electric.[18] This

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[15] Id.

[16] See Clean Coalition, Planning Distributed Generation for Transmission Savings, available at http://www.clean-coalition.org/site/wp-content/uploads/2014/02/Planning-Distributed-Generation-for-Transmission-Savings-1-ssw-19-Mar-2014.pdf

[17] Each Distribution Resource Plan must "Evaluate locational benefits and costs of distributed resources located on the distribution system. This evaluation shall be based on reductions or increases in local generation capacity needs, avoided or increased investments in distribution infrastructure, safety benefits, reliability benefits, and any other savings the distributed resources provides to the electric grid or costs to ratepayers of the electrical corporation." Public Utilities Code Section 769(b)(1).

[18] For more info, see http://www.clean-coalition.org/our-work/community-microgrids/

project will serve 25% of total energy consumed at the Hunters Point substation in San Francisco with local renewables, balanced with intelligent grid solutions like advanced inverters, demand response, and energy storage. The Clean Coalition uses sophisticated powerflow modeling and cost-benefit analysis tools to reveal how – and precisely where – local renewable energy can be supported in the distribution grid by intelligent grid solutions. The Clean Coalition team works with utilities and modeling tools providers to improve tools for seeing, and planning enhancements for, the distribution grid. For the Hunters Point project, we are working with PG&E's modeling tool provider Cyme. Our team has experience with a broad range of powerflow modeling tools, but we've found that it's important to be able to show that utilities' favored tools can meet these new challenges once they have the right specifications to move forward. We are also developing standard specifications for modeling tools providers, so that our lessons learned from this experience can be applied to any other modeling tool.

Respectfully submitted,

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