**BEFORE THE PUBLIC UTILITY COMMISSION**
**OF OREGON**

**UM 1746**

| | |
|---|---|
| In the Matter of<br><br>OREGON PUBLIC UTILITY COMMISSION<br><br>Examining a range of community solar programs and attributes to allow individual customers to share in the costs and benefits of solar facilities. | Community Solar Program Design Proposal and Comments of :<br><br>Northwest Sustainable Energy for Economic Development, Oregon Solar Energy Industries Association, Renewable Northwest, Environment Oregon, Northwest Energy Coalition, Portland Bureau of Planning and Sustainability, Oregonians for Renewable Energy Progress, _____ |

## I. INTRODUCTION

We welcome the opportunity to provide input to the Oregon Public Utility Commission (the Commission) regarding community solar programs and attributes for the development of recommendations to the Legislature. The undersigned parties ("the Parties") to UM 1746 have agreed on the following observations, comments and recommendations.

It is widely acknowledged that utility customers are interested in accessing solar energy, though only a fraction of customers have the site conditions, ownership, and/or access to financial resources necessary to install solar at their service location. Solar energy can provide a number of benefits to customers, including bill savings, energy cost predictability, tax savings, and access to an emission-free power source. There are also local economic development, investment, and community-building benefits associated with solar and programs that bring energy choices to a broader range of

customers. A number of names exist for programs and policies that seek to deliver tangible benefits to utility customers who are participants in an off-site or remotely-metered solar energy array. Among others, these nomenclature permutations include: community solar gardens, community net-metering, virtual net metering, and shared solar.

Broadly, these programs are all in the universe of “community solar”, though each has a different flavor and particular structure. These programs all share attributes that provide financial benefits over time to participating customers, with many programs structured to incentivize participation and make the value proposition (in principle) similar to that of on-site rooftop solar. Our goal is to provide model attributes for consideration in Oregon, taking into account our particular regulatory, solar resource, incentive, and cost environments.

At least ten states, including California, Massachusetts, New York, Washington, Vermont, and Colorado have passed legislation enabling some variation of community solar. In July 2015, the US Department of Energy launched the national Community Solar Partnership, to provide information sharing and best practices among the developing programs nationwide. Due to the greatly abbreviated timeframe required by this process, there are a number of elements and lessons learned from existing community/shared solar programs in other states that may not be able to be fully explored in this round of input. However, we feel that there is great value in PUC staff and the Commission exploring the national perspective on the issue, connecting with other jurisdictional regulatory staff, and understanding the goals and policies that other states have adopted. Also, we respectfully request that this not be the only venue where

program attributes can be added for consideration to a proposed community solar model design. The time between the initial UM 1746 docket announcement and the required submission of documents was very short, and parties would like the opportunity to bring further considerations into future meetings or proceedings.

In developing a response and proposed program model, it is important to take into account the level of incentives available to foster customer participation, as it has direct bearing on the flow of benefits envisioned. In order for a community solar program to effectively attract participants, there has to be a reasonable expectation of net benefit over time. As a group, ratepayers and taxpayers fund solar incentive programs in Oregon. Accordingly, as a matter of equity, solar energy programs should be designed in a manner that allows all contributors to participate. Many of the incentives available for on-site solar, including those at the Federal, state, and utility level, are not available at this time to participants in a community solar program. While we will address the creation of a community solar model within this current incentive reality, we will also identify options to address incentive changes in our program model attributes. We hope this is useful in the development of future policy.

## II. RESPONSE TO OPUC STAFF QUESTIONS

**Submitters**: Northwest Sustainable Energy for Economic Development, Oregon Solar Energy Industries Association, Renewable Northwest, Environment Oregon, Northwest Energy Coalition, Portland Bureau of Planning and Sustainability, Oregonians for Renewable Energy Progress, _____

**Brief definition for Community Solar in Oregon:**

For the purposes of this response, we will define Community Solar as a program by which Participants receive on-bill credits from a Utility for energy produced by a Community Solar Asset photovoltaic facility (CSA) located at a Site Host property, which is managed by a Subscriber Organization entity responsible for the maintenance and operation of the CSA as well as administering the CSA project with Participants.

**Describe your Community Solar Program Design Proposal:**

There are effectively four parties in the proposed Community Solar Program Design:

- Participants: Customers who are subscribers in a Community Solar Asset project.
- Utility: The Participant's electric utility that serves the account.
- Subscriber Organization: A non-profit or for-profit business entity responsible for the CSA development, ownership, operation, management, subscription, and reporting with a utility.
- Community Solar Asset Site Host: The property owner where the CSA is located.

A Participant customer would sign up for a subscription in a fixed amount (kW or kWh) of a community solar array developed by a Subscriber Organization. That subscription payment could be submitted all at once, or incrementally. The Subscriber Organization is responsible for all operations and maintenance of the system, which is interconnected directly to the utility and located on a Site Host property. The solar array will be metered, and the total generation output in kilowatt-hours (kWh) will be reported to the utility monthly. Every month, the Participant receives a bill credit from the Utility equal to their proportional output of their subscription (in kWh) multiplied by the community solar

production bill credit rate. In order to make this financially viable, the utility will offer a community solar bill credit rate ($/kWh) that is determined by a periodic capacity allocation. This mechanism could be similar in operation, (but at much lower incremental cost) to the Oregon Volumetric Incentive Rate Program, and fall into a similar regulatory framework. The Site Host would receive a lease payment to be negotiated with the Subscriber Organization, and could also be a Participant in the CSA.

**Questions related to Community Solar Attributes and Statutory Considerations:**

1. **Ownership structure –** The CSA can be owned by non-profit, for-profit, or cooperative business entities that are registered to operate in the State of Oregon. Utilities can also participate as Subscriber Organizations, through independent subsidiaries. For each CSA, the Subscriber Organization will serve as the designated owner/financing manager, and will also be responsible for the operations and maintenance of the facility. The electric Utility will have an interconnection agreement with the Subscriber Organization, who will be responsible for paying any applicable interconnection fees. The Subscriber Organization will be responsible for providing the Utility monthly information regarding the proportional allocation of the CSA output to Participants, or could partner with the utility in providing this service. The bill credits will be effectively apportioned to the Participants, and the Renewable Energy Certificates (RECs) will be transferred to Participants or retired on behalf of Participants.
2. **System characteristics –** Each individual CSA is limited to 2MW DC, and will be interconnected separately from the Site Host electrical service (if applicable).

They may be ground-mounted or located on buildings, and may use any PV modules and inverters that meet the utility interconnection standards. The CSA must be within the utility service territory, may be located on sites without existing electrical service, and may be limited in capacity based on objective interconnection constraints on a given feeder/branch. Any utility limiting factors for size or location should be shared broadly with the solar industry, and utilities may opt to provide additional incentives for locations where there is additional system benefit.

3. **Eligibility criteria** – Customers will be eligible to participate based on rate schedule and location. While it is not practical to list full schedule numbers for each utility, eligible customers will generally include: Residential General Service, Small Nonresidential Standard Service, Small Nonresidential Irrigation and Drainage Pumping Service. Participants must be located in the county, or an adjoining county, where the specified CSA is located.

   There will be a minimum subscription increment equivalent to the generation associated with 200 watts DC of peak capacity. Participant customers will be limited to a subscription in a CSA no greater than 90% of historic load (generally based on previous 12 months) at each assigned meter, and may not assign a meter to more than one CSA. Each CSA must have a low-income carve out where 10% of CSA capacity is allocated to customers that meet the criteria for the Federal Low Income Home Energy Assistance Program (LIHEAP). The Subscriber Organization would be responsible for meeting the low-income requirement, and could include discounted or granted subscriptions. Additionally,

to be qualified as a CSA, there must be at least 10 Participants, and greater than 50% of the capacity subscriptions must be held by Participants with a subscription no greater than 25kW DC.

4. **Length and terms of contracts -** In order to create an effective program, there needs to be a reasonable expectation of the level of benefit received from the CSA, for a defined minimum period of time. A contract to provide an on-bill credit to the Participant for a 20-year period would be appropriate, and fulfil many consumer expectations regarding solar technology. As the operational life of the CSA is likely to exceed 20 years, the Utility and Commission would also define a rate structure or methodology for payments to the Subscriber Organization beyond the 20-year window. We will focus our evaluation on the 20-year time window. The following provides a summary of the responsibilities of each party in a community solar program model and agreements between parties.

   **The Subscriber Organization** is responsible for:

   (a) Organizing development, construction and ownership of the CSA.

   (b) Meeting all interconnection and operations standards for the CSA, as described in relevant rules and regulations relating to similarly sized facilities.

   (b) All arrangements and contracts for subscriptions in the CSA. Such arrangements shall not be subject to the regulation of the Commission.

   (c) Providing the relevant Utility – on a monthly basis - all necessary information on the identity, eligibility, billing account numbers,

proportional allocation of subscriptions, and other information necessary to provide bill credits for Participants in the community solar program.

**The Utility** will be responsible for crediting Participant utility bills with the appropriate values. In order make this possible, a standardized mechanism allowing for electronic transmission of data between the utility and the Subscriber Organization will be required. In addition, the utility shall, in accordance with interconnection standards, install and own the requisite meter(s) to record the flow of electric energy in each direction at the CSA location. Electricity delivered to the CSA by the utility will be metered and charged to the Subscriber Organization at the regularly applicable rates. The Utility will continue to serve the Participant electricity needs at applicable billing rates.

**The Participant's** responsibilities will be based on the agreement between the Participant and Subscriber Organization. Broadly, these include notifying the Subscriber Organization of a change in address, eligibility, or utility customer status. The Participant will also have access to electricity generation information from the CSA. Participants will be responsible for timely payment of utility bills, and may not receive bill credits if their account is in a delinquent status.

## 5. Subscription price calculation

Subscription prices will be in set increments based on capacity (kW) using defined offerings and terms provided by Subscriber Organizations. Unlike the CSA bill credit rate calculation and values determined by the Commission, prices

paid for subscriptions and contractual matters in a CSA should not be subject to the jurisdiction of the Commission. Rather, community solar Subscriber Organizations should have the freedom to develop the design and pricing of their subscriptions and contractual agreements with Participants in a manner that falls within specified consumer protection requirements.

The option for Subscriber Organizations to differentiate fosters innovation and price competitiveness, and ultimately allows the market to choose the strongest program designs. Today there are a wide range of community solar subscription designs being implemented across the country. Some are based on upfront purchases in increments of capacity (e.g., Watts or modules), while others rely on ongoing payments at either fixed amounts or directly related to the system output (e.g., $/kWh). The example provided here is in a fixed capacity (Watts) increment, but we suggest allowing flexibility in subscription design, depending on the terms of the Subscriber Organization.

The actual subscription prices may also vary due to factors such as system size and location, and potentially the type of customer (e.g., residential, non-residential, low-income, etc.). Determining a subscription price is generally dependent on the cost to install the system – engineering, procurement, and construction (EPC), plus any incremental costs incurred by the Subscriber Organization to finance[1], market, deploy, and administer a program. Subscriber Organizations that are structured as non-profits may also have different financial considerations, tax situations, and administrative costs. Community solar projects

[1] May include monetization of tax benefits (i.e., Federal ITC and MACRS), unless the program opts to have individuals apply for residential ITC benefit (IRS Section 25D allows participants in community solar to leverage residential ITC).

may able to reduce costs for Participants compared to rooftop solar due to economies of scale and by aggregating customer demand (which reduces customer acquisition costs). That said, the relative newness of community solar and lack of familiarity may require significant time and costs associated with needed marketing and education of potential Participants.[2] In addition there are financing and subscription management overhead costs that may offset some of the savings relative to a rooftop solar installation.

**EXAMPLE: Steps to determining the upfront price of a 4 kW subscription to a 2 MW community solar facility.[3]**

**Step 1: Determine the typical EPC cost for a 2 MW project.** At the national level, SEIA-GTM's market analysis for the 1st quarter of 2015 estimated that a 10 MW-DC turnkey PV project would cost $1.58/W and $1.80/Watt for fixed tilt and tracking systems, respectively. For this example, we'll assume the 2 MW array is a fixed tilt system, however CSAs using tracking systems have the potential to increase the customer value proposition. Since our example is based on a 2 MW project, a slight increase should be expected in the average cost due to reduced economies of scale (this becomes more evident in utility-scale projects below 5 MW). To account for this, we conservatively adjust the cost up to $1.65/W (assuming a fixed tilt system). Economies of scale are not linear, so

[2] NREL. (2015) Shared Solar: Current Landscape, Market Potential, and the Impact of Federal Securities Regulation.
[3] Note: Values are in terms of "direct current (DC)" for simplicity. Actual numbers could vary substantially. The following data are for illustrative purposes only.

smaller systems (< 200kW) would likely be even more expensive on a marginal basis.

**Step 2: Determine the total subscription rate, and incremental costs associated with the financing, marketing, deployment, and administration of the community solar facility and program.** Based on input from the Oregon Solar Energy Industries Association (OSEIA), we determine that the incremental costs associated with a community solar facility could account for roughly 30%-40% of the subscription price. This may vary significantly based on whether the Subscriber Organization is a non-profit entity. In this example, if $1.65/W represents ~70% of the total upfront community solar project cost, the total project subscription cost would be about $2.36/W. This means the non-EPC costs are approximately $0.71/W.

**Step 3: Determine the subscription price.** At $2.36/W, a 4 kW subscription would cost $9,440. For comparison, SEIA-GTM modeled residential rooftop installed solar at a cost of $3.46/W in the first quarter of 2015, which would amount to $13,840 for a 4 kW project. It's worth noting that in this example the community solar subscription price already includes Federal tax benefits[4] that have been factored into the calculation by the Subscriber Organization, while the residential rooftop system cost does not. Depending on whether there is a Federal extension of the ITC, this may or may not be applicable for future community solar programs. When we adjust the residential rooftop system price by deducting 30% (assuming the current Federal Residential Renewable Energy Tax Credit), the cost per Watt drops to $2.42/W, and a total system cost of

[4] Includes Federal Investment Tax Credit (ITC) and Modified Accelerated Cost Recovery System (MACRS)

$9,688. Also, the cost to the rooftop system host could differ based on third-party ownership and financing, in which case the return on investment over the long run would likely be reduced compared to systems (or subscription interests) that are owned by the host.[5]

The cost of a community solar subscription and the cost of an individual rooftop solar system can be comparable. As mentioned previously, community solar projects can have significant "soft" costs associated with program development. Further, as a relatively nascent industry with few (though growing number of) competitors, there remains great opportunity for continued non-EPC cost declines. A recent report by GTM Research demonstrated that these declines are well underway and have continued sharply over the past couple years as more state programs and more companies engage in the market expansion of community solar. This point emphasizes the importance of allowing non-utility entities to develop community solar programs and compete in an open, diverse market that encourages innovation and competition and ultimately improves the customer's value proposition. For example, the GTM report showed that, for community solar programs underway in 2015, those led by third-party developers have an average subscription price of $2.73/W, while those led by utilities (with essentially no competition) have an average subscription price of $3.85/W.[6]

Other key costs that would be covered by the Participant include ongoing costs such as operations and maintenance, property taxes, and insurance. While

[5] NREL. (2015) Banking on Solar: An Analysis of Banking Opportunities in the U.S. Distributed PV Market.
[6] Honeyman, C., Shiao, M., and Camron, B. (June 2015) U.S. Community Solar Market Outlook 2015-2020. GTM Research.

these costs may be included in the upfront subscription cost for the Participant, they could instead be covered over the life of the project/contract, such as through a deduction from the Participant's bill credit value or paid for separately through monthly transactions. The program attributes should include flexibility to allow a range of mechanisms to ensure ongoing operation of the CSA and continued benefit for the Participants. The O&M costs for utility-scale solar projects can run about $10-15/kW-dc per year.[7],[8] A 2 MW project could cost in the range of $22,000 a year to maintain, not including property taxes, land lease and insurance. The subscription price either needs to include these costs, or a mechanism created to account for these costs over time.

6. **Bill credit calculation –** Participant community solar production bill credits should be determined by a periodic process where capacity is allocated by the Utility in a manner prescribed by the Commission, providing predictable bill credit rates for Participants over a 20-year period. In order to enable effective capacity allocation, there should be the establishment of an overall capacity goal (in MW) for the state of Oregon, including a target date, and with the authority for the Commission to set a community solar capacity allocation per Utility. This capacity allocation should also allow for a diversity of system sizes, to ensure that large systems are developed, but also leaving the market available to smaller Subscriber Organization entities. The mechanisms for determining this can be established by the Commission, with stakeholder input.

[7] LBNL. (2014) Utility-Scale Solar 2013: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the U.S.

[8] This range is based on industry feedback and reference to this LBNL report. Note – some adjustment was made to represent smaller projects compared to those evaluation in the report.

The most important aspects in the method for compensating community solar Participants are to: 1) use an on-bill crediting mechanism; and 2) use a credit rate or value that ensures participant interest in the program. It appears the Commission already recognizes the importance and value of on-bill crediting in this docket, as it would be nearly impossible to reach large numbers of participating customers without it, and it is a key aspect of avoiding securities law violations. At a high level, calculating the total on-bill credit value for a community solar Participant is relatively simple. At the end of each month, there would be a multiplication of the following three elements:

- the Participant's proportional subscription in the facility's capacity (%)
- that month's total solar production from the CSA (kWh)
- the CSA bill credit rate ($/kWh).

While the calculation above is straightforward, it's worth noting that there is potential to include additional elements. For example, there could be an agreement between the Subscriber Organization, Utility, and Participant to make a small deduction each month from the credit rate or at a fixed amount to go toward CSA O&M and other expenses such as property taxes and insurance. In addition, there may be different bill credit rates and/or calculations depending on the Participant's rate class or possibly relating to attributes of the CSA itself (e.g., location).

Regarding the mechanics of a bill credit mechanism, we envision that there would be some attributes similar to net-metering, including a provision that

credits carry over on a monthly basis, but are zeroed out annually in March. Any net generation credit from a CSA Participant in excess of the Participant's annual metered usage would be donated on a per kWh basis to low-income energy assistance funds, or to the Subscriber Organization for the purpose of supporting low-income participation, without compensation.

The crux of the bill credit question is likely about what components are contained within the bill credit rate. On that question, we will initially take an approach that evaluates the bill credit rates necessary to make a community solar program viable. Regardless of the calculation that goes into determining monthly bill credit values, the actual economic return for a subscriber is of paramount importance to ensuring a community solar program will be successful. National policy experts, surveys, and actual experience have contributed to this important finding. For example, the Interstate Renewable Energy Council (IREC) highlights "tangible economic benefits" as one of the key guiding principles for developing a shared/community renewable program, emphasizing that "programs should be designed such that participants receive a valuable hedge benefit by locking in a rate" to save money over time.[9] As evidence of this assertion by IREC, in a survey conducted by the Solar Electric Power Association (SEPA), utilities indicated that "price and value proposition" to their customers were the "most critical factor[s]" in driving community solar success.[10] Similarly, a separate survey conducted in Minnesota found that customer "interest in

[9] IREC. (2013) Model Rules for Shared Renewable Energy Programs.
[10] SEPA. (2014) Expanding Solar Access through Utility-Led Community Solar.

participation drops rapidly beyond a 10-year payback period" when considering whether to pursue a community solar opportunity.[11]

The bottom line is that economics are a primary driver of participation in community solar, similar to the interest that drives individuals and businesses to own or lease rooftop solar on their property, for those that are able. There are many options with regard to the type of credit utilized, so long as the determined rate is sufficient to provide Participants with an 8-12 year simple payback. The bill credit rate required is also highly dependent on the availability and applicability of additional incentives to the Participant. The following provides a simplified example in determining a range for bill-credit prices, absent any additional Participant incentive availability.

**EXAMPLE : Approximate the Participant bill credit rate needed for a Participant to recover their upfront subscription in a period of 12 years, where O&M costs are paid over time by Participants.**

Due to Oregon's significant variation in solar resource, we'll assume two scenarios, based on location:

– John Doe -- subscribes to a CSA located in Portland, OR

– Jane Doe – subscribes to a different CSA located in Bend, OR

Both John and Jane get subscriptions of 4 kW each, at a rate of $2.36 per Watt. They both pay upfront, with cash (though many national community solar providers offer some form of financing or payment plans). Total upfront cost is $9,440 for John and Jane, each.

[11] Hoffman, S. and High-Pippert, A. (2015) Attitudes and Preferences towards Community Solar Initiatives.

Based on estimated annual solar production rates, and using a 0.5% annual module degradation rate, different scenarios (i.e., different bill credit rate values) can be run to determine what bill credit rate is needed to recover the upfront cost in 12 years or less. Using default values in PVWatts[12] for a fixed-tilt system, we find that a 4 kW solar PV capacity could be expected to initially produce approximately 4,557 kWh in Portland; and 5,804 kWh in Bend.[13] As mentioned, over time the output of these systems will slowly degrade, and an industry standard 0.5% per year value is assumed.[14]

Additional assumptions need to be made regarding ongoing expenses that the subscriber may need to pay as a reduction in their monthly bill credit or separate transaction with the Subscriber Organization. A survey of some members in OSEIA and published studies maintain that $10-15 per kilowatt per year is a reasonable assumption for O&M costs.[15] However, this cost should include a small escalator due to labor and monetary inflation, so for this example analysis we'll assume O&M costs increase by 2% per year. Likewise, there are other costs not typically captured in O&M, but which are ongoing, such as property taxes, lease payments, and insurance. A rough estimate of these "operating expenses" is that they're equal to the cost of O&M, and that it also escalates at a rate of 2% a year. For simplicity we will assume that the combined cost of O&M and additional operating expenses is $20 per kW per year, escalating at 2% a year.

[12] http://pvwatts.nrel.gov/index.php
[13] Closest location where a solar resource has been monitored was Redmond, OR – 15 miles from Bend.
[14] NREL. (2012) Photovoltaic Degradation Rates – An Analytical Review.
[15] LBNL. (2014) Utility-Scale Solar 2013: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the U.S.

Assuming these expenses were allocated proportional to the subscription interest, John and Jane's 4 kW subscriptions would result in a cost of $80 in the first year, slowly escalating each year thereafter. Spread out over a monthly basis, they would each be paying a little less than $7 per month in the first year, slowly rising thereafter.

With all of these assumptions in place, the final test is to run the basic model with different rates to determine at what point the upfront cost - $9,440 – would be fully covered by the end of Year 12. Based on this rough analysis it appears that a bill credit rate of 15 cents/kWh, without any escalation rate, could achieve a 12-year payback in Bend, whereas a 19 cent/kWh bill credit rate would be needed in Portland. If a 2% annual escalation was added to the bill credit rate, it appears Bend could achieve a 12-year payback at an initial value of 13 cents/kWh, while Portland would achieve the same payback starting at 17 cents/kWh. It's important to note that this rough analysis is based on a fixed-tilt system, and that a 1-axis tracking system could potentially require a lesser rate to achieve the same payback periods, particularly for Bend and areas east of the Cascades with greater solar resource potential. Also, these results calculate simple payback to the Participant, and do not attempt to assign a discount rate or net-present value to the benefits of a bill credit over time.

These figures should not be viewed as definitive results and it is important to re-emphasize that this analysis is not based on a competitive analysis of the market, but instead utilizes existing publications and general statistics – most of which pertain to national trends, not local installation costs.

Also, an important consideration pertaining to the necessary bill credit rates is the potential interaction of other incentive programs, if they were to be made available to CSA Participants. For residential on-site solar PV installations in Portland General Electric and Pacific Power service territory, public purpose Energy Trust of Oregon (ETO) rebates are available which currently provides an up-front reduction of costs between $0.66 to $0.80 per watt. An Oregon state Residential Energy Tax Credit (RETC) is also available for qualifying residents who install solar equipment on their property. Though subject to change, the current value of this credit is $1.70 per watt, taken at a maximum of $1,500 per year over four years, and not to exceed 50% of total project costs. It is difficult to predict the applicability and incentive rates that would be available in the future, as they would require legislative and administrative changes by ETO and Oregon Department of Energy. Were these accessible, they could reduce the effective net Participant subscription price to well under $1.00 per watt. Therefore a significantly lower bill credit rate would be necessary to provide reasonable payback periods. Depending on the structure, it is possible that the value proposition for residential customers would be favorable compared to commercial entities – a somewhat rare occurrence. Regardless of the exact bill credit rate, we envision that the Commission would be involved in setting that rate through appropriate mechanisms to facilitate customer adoption, taking into account the broader incentive context.

7. **Minimizing Cost-Shifting** – An effective community solar program should be allow for broad participation and benefit, including to residential and low-income customers. In having a mandatory ten percent capacity carve-out for low income Participants for each CSA, it helps ensure that there is some social benefit and equity built into the program. The Subscriber Organization would be responsible for establishing a mechanism to meet the required low-income requirement, which could be fulfilled by granting subscriptions, reduced cost subscriptions, a lottery mechanism, or other allocation tool. We recognize that there will likely be elements of the costs of a community solar program to the utility that should be recoverable by rates.

We recommend a methodology to calculate the recoverable impact to the general rate base, using the Value of Solar (VoS) as an indexing tool. UM 1716 is an active docket that seeks to explore costs and benefits of solar generation to various parties, including the utility, customers, and society. Some element subset of a VoS could be identified as being applicable to the benefits and costs of off-site generation in this context. This would be a useful tool to determine the differential impact (to the extent there is one) that community solar bill credits have on the broader ratepayers. The impact (positive or negative) to all customers in the rate base would effectively be the differential between the total community solar bill credit rates and the applicable VoS rate components, multiplied by the total generation from CSAs.

Separate from the bill credit rate/VoS differential, a utility may incur costs in facilitating a community solar program. While it is generally the responsibility of

the Subscriber Organization to provide necessary information on the identity, eligibility, billing account numbers, size of subscription, and other information necessary to provide bill credits, the Utility will need to process and distribute those credits based on the CSA output. In some cases a Utility may be able to modify their existing software and have the in-house resources to adapt to the needs of the community solar program in an efficient and cost-effective manner. However it's also possible that a Utility may need or desire updates and//or new software tools to improve their capabilities.

Utilities may also be responsible for standardizing the application and interconnection processes for community solar facilities and programs. For example, utilities should establish uniform formats and procedures for requesting customer usage (with customer's written consent), and establishing a uniform format for the Subscriber Organization's submission of the information on membership and distribution credits. In addition, utilities would be responsible for meter expenses similar to any commercial interconnection.

Incremental costs incurred by the Utility that are attributable to enabling efficient and cost-effective facilitation of community solar Participant needs would likely be recovered through rate cases, since the program would be open to all customers of that rate class. We suggest that the Commission create a threshold limit to the impact of community solar programs as a percentage of the total utility revenue requirement, in order to minimize the impact of a community solar program on non-participants.

8. **Risk assessment** – It is important in a new program such as community solar to have protection of consumer interests, clarity in the regulatory structure, and an understanding of risks between all parties. As a general principle, those with the least resources should be protected to a greater degree from any risk factors.

   **Solar System Performance Risk** - All CSAs shall be designed to interconnect and operate in parallel with the relevant utility system without adversely affecting the operations of its customers and without presenting safety hazards. The CSA and the interconnection equipment must be in compliance with national and state standards and local building codes. Subscriber Organizations should be responsible for submitting a plan to cover operations and maintenance over the life of the program, including potential decommissioning plans. These plans and expectations should be part of any disclosures provided to Participants, as well as a detailed schedule of expected energy generation output. Typical photovoltaic module manufacturer warranties include a 25 year performance guarantee which warranties the energy produced.[16]

   Subscriber Organizations may make annualized performance guarantees as part of contracts with Participants, and structures that involve an ongoing O&M payments should be contingent on fulfilment of those performance expectations. As a best practice, Subscriber Organizations are recommended to work with a third-party – such as an escrow – where O&M, property taxes, land lease payments, insurance, and any other ongoing expenses can be allocated over the life of the CSA.

   **Risk of subscription rate fluctuations in under or over subscription -**

[16] NREL (2013) Continuing Developments in PV Risk Management: Strategies Solutions and Implications

A Subscriber Organization shall obtain a minimum of 10 Participants to be eligible to interconnect as a CSA, with at least half of those Participants holding subscriptions of 25kW or less. However, a mechanism for a CSA capacity reservation from the Utility should be established, allowing a Subscriber Organization certainty of the applicable bill credit rates prior to development, and a fixed time window to complete interconnection. A Utility may require a reasonable, capacity-based reservation deposit, refundable after successful interconnection.

Participants should be protected from risk by mechanisms that are reflective of their relative vulnerability. Residential Participants should either have their subscription payments deposited in an escrow, or collected only after successful interconnection. Commercial Participants should be able to subscribe prior to interconnection, and their funds may indeed be necessary to help launch a project. Subscriptions should be able to be transferred or assigned to anyone meeting the subscriber definition, based on approved processes and subscription fees, and should be portable to new addresses within the CSA utility territory. In general, the expectation should be that the Participant is in a continuing relationship with the Subscriber Organization and Utility for the full term of the 20 year bill credit. However, qualifying events such as a change of address outside the utility or CSA territory may trigger a de-subscription event, and subsequent transfer. A subscription compensation schedule based on remaining years of bill credits should be established up front by Subscriber Organizations to account for this potential, which could happen with relative frequency for renters.

The goal should be for the Subscriber Organization to have full subscription once operational, but provide a transition period to gain Participants. Utilities shall compensate Subscriber Organizations at the CSA bill credit rate for the first two years of operations to ensure project financing viability and ensure adequate marketing time. Any electricity production not attributable to a Participant subscription following the first two years of operation shall be compensated to the Subscriber Organization at the applicable avoided cost rate. This should create a necessary motivation for Subscriber Organizations to fully subscribe the CSA in a reasonable timeframe, and keep it subscribed.

**Other Risk categories**

The Subscriber Organization shall take on the project development and operational risk, generally indemnifying the Utility and carrying applicable insurance required by the Site Host.

As additional assurance for the Utility and Participants, the Subscriber Organization shall:

- self-certify that their program structure and subscription model is compliant with securities and tax laws;
- disclose all applicable information to the customer regarding costs, benefits, expected performance, regulations, and risks;
- establish a plan for operations and maintenance; and
- obey all existing state consumer protection laws.

## III. CONCLUSION

The Parties appreciate the opportunity to submit a proposal for a community solar program design in advance of the first workshop of UM 1746. We acknowledge the remarkably short timeframe and look forward to working efficiently with the Commission, Staff and other stakeholders.

Solar energy can provide a number of benefits to customers, including bill savings, energy cost predictability, tax savings, and access to an emission-free electricity source. While many utility customers are interested in accessing solar energy, not all are in a position to have solar PV installed on their own property. Appropriately designed community solar programs can enable utility customers to gain access to—and share in—tangible benefits from solar energy arrays that are not necessarily located on their property. The Parties submit this proposal as example of one such program.

The Parties look forward to discussing the submitted program design proposals, as well as providing clarification about our program design, at Staff Workshop 1 on August 11, 2015.

RESPECTFULLY SUBMITTED this 7th day of August, 2015.

NORTHWEST SUSTAINABLE ENERGY FOR ECONOMIC DEVELOPMENT
OREGON SOLAR ENERGY INDUSTRIES ASSOCIATION
ENVIRONMENT OREGON
RENEWABLE NORTHWEST
NORTHWEST ENERGY COALITION
OREGONIANS FOR RENEWABLE ENERGY PROGRESS
PORTLAND BUREAU OF PLANNING AND SUSTAINABILITY

/s/ Jaimes Valdez

Jaimes Valdez
Policy Manager
Northwest SEED
206-914-3510
jaimes@nwseed.org

# Oregon Community Solar Model