BEFORE THE PUBLIC UTILITY COMMISSION OF OREGON

UM 1746

In the Matter of	)	
	)	
OREGON PUBLIC UTILITY COMMISSION	)	PORTLAND GENERAL ELECTRIC'S
Legislative Report HB 2941 Solar Program	)	COMMENTS
Designs and Attributes	)	

Context and History

The Oregon legislature passed HB 2941 on June 25, 2015. The law directs the Oregon Public Utility Commission (OPUC) to allow utility voluntary programs like Portland General Electric's (PGE) new Solar Shares renewable portfolio program. It also directs the OPUC to make recommendations to the legislature on the future of solar programs based on the outcome of OPUC Docket No. UM 1716 on the Resource Value of Solar.

During the legislative session, solar advocates (representing Environment Oregon, Northwest Sustainable Energy for Economic Development, and Oregonians for Renewable Energy Progress) testified with concerns regarding PGE's amendment to the bill. The solar advocates asserted that PGE's Solar Shares program is not a real 'community solar' program and that the legislature should pass legislation to enact a more comprehensive program incorporating bill crediting, mandatory capacity amounts, and other elements similar to Colorado's program. PGE also worked with the OPUC to include language in Section 3 of the amendment to HB 2941 requiring the OPUC to hold a proceeding, including public comment, to examine a range of community solar programs and attributes to allow individual customers to share in the costs and benefits of solar facilities.

The OPUC opened Docket No. UM 1746 in July 2015 to implement Section 3 of HB 2941 and deliver its recommendation of a community solar program design or a set of preferred attributes to the legislature by November 1, 2015. PGE appreciates the opportunity to participate and engage with OPUC Staff and other stakeholders during this proceeding.

Principles

Prior to defining community solar in Oregon, PGE offers the following principles to guide the discussion of community solar:

- Define community solar broadly to encompass multiple approaches to solar deployment that connect with community stakeholders.
- Community solar program participation should be voluntary.
- Participating customers should have a financial stake in the community solar project.
- The resource value of solar to the utility system, defined as the utility system's avoided costs due to solar, net of the utility system's incremental costs due to solar, should be the basis for determining the participating customer's bill credit, if applicable.[1] PGE anticipates that the referenced resource value of solar will be dependent on the context in which it is applied, for example, whether the utility is resource sufficient and not in need of Renewable Energy Credits (RECs).
- There should be no undue cost shifting from community solar participants to nonparticipants.
- Ownership of a community solar project should be made available to all market participants, including utilities.

Definition for Community Solar in Oregon

PGE encourages a broad definition of Community Solar in Oregon, rather than focusing on a specific design model. The National Renewable Energy Laboratory (NREL) published a report

[1] See PGE Comments on July 20, 2015, UM 1716 (Resource Value of Solar)

on the broad array of community solar models.[2] There is also an ongoing effort by the Solar Electric Power Association (SEPA) seeking to derive a standard definition of community solar. SEPA's working definition is "a program through which individual members of a community have the opportunity to 'buy in' to a nearby solar installation. As part of the buy-in, customers typically receive a proportionate share of the financial or energy output of the system.[3]" The work of NREL and SEPA should inform this process.

Describe Your Community Solar Design Proposal

PGE is not offering a specific community solar design proposal as the community solar concept should be flexible enough to enable a variety of designs. House Bill 2941 allows the Public Utility Commission to recommend a community solar program design **or** a set of preferred attributes of different community solar designs. PGE recommends the latter approach.

In lieu of a specific community solar design proposal, PGE has included SEPA's September 2014 overview of community solar programs with these comments as Attachment A. Although many of the community solar program designs are not applicable to an investor-owned utility, Attachment A illustrates the diversity of models that could be applied in Oregon. Using a specific community solar design recommendation limits innovation in community solar program design.

Questions Related to Community Solar Attributes and Statutory Considerations

1. **Ownership structure**:

    a. *Who will develop, own, and maintain the solar facility?*

[2] See *Shared Solar: Current Landscape, Market Potential and the Impact of Federal Securities Regulation,* National Renewable Energy Laboratory, by Felman, Brockway, Ulrich and Margolis, April 2015, page 3.
[3] *See Expanding Solar Access Through Utility-Led Community Solar*, September 2014, Solar Electric Power Association, executive summary, page 4.

PGE recommends that the Commission allow for flexibility as to who develops, owns, and maintains a community solar facility. Projects across the country that fall under the "community solar" label are hosted and administered by a variety of entities, including utilities, solar developers, residential or commercial landlords, municipalities, community and nonprofit organizations, and sometimes a combination of those entities. PGE believes a variety of models are possible in Oregon.

b. *Who will own the RECs and power?*

PGE recommends that the Commission allow for flexibility here as well. The owner of the RECs will depend on how the community solar program is designed. While PGE recognizes that any program marketing renewable energy under the statutory definition must provide the environmental attributes of the renewable energy – the RECs – to participating customers, there are community solar programs that do not offer RECs to participating customers. For example, in Colorado, Clean Energy Collective, working with Xcel Energy, has a number of community solar projects.[4] Customers enrolled in those programs do not receive the environmental benefits of the solar energy because the RECs are used by the utility for compliance with the state's Renewable Energy Standard.[5]

Closer to home, the City of Portland recently offered its "Solar Forward" program[6] which was a voluntary, donation based program that the City described

[4] http://www.coloradocommunitysolar.com/
[5] See 40-2-127, Colorado Revised Statutes.
[6] http://www.portlandoregon.gov/bps/article/365294

as "community solar." In the City's program, the participants received neither the RECs nor the energy for their investment.

c. *What is the utility's role in this ownership design?*

It depends. The utility may serve one or a combination of roles under different community solar designs. The utility could be the owner and developer of a community solar facility. The utility could also act as an aggregator of demand for a community solar program. In addition, the utility is well-positioned to help market and recruit customers for programs. The utility could also administer a community solar program or serve as the qualified reporting entity to the Western Renewable Energy Generation Information System, which tracks RECs in the Western Electricity Coordinating Council region. Finally, the utility could play no active program role, and just purchase the energy from a community solar project. The Commission should maintain flexibility in defining the utility's role.

2. System characteristics:

a. *Does your proposal include constraints to system characteristics, such as size, location, interconnection level, etc., on the community solar facility?*

With regard to size, it may be appropriate to size a community solar project up to 2 MW, given that a generator above the 2 MW threshold falls under PGE's partial requirements service, tariff Schedule 75. We note that our recently approved solar portfolio option is supported by a solar Qualifying Facility (QF) that is 2.9 MW (dc) and the threshold size for a standard QF is 10 MW. If a community solar offering were to be made, we recommend starting with a pilot to estimate the market for community solar and size projects based on the demand.

In addition to size, PGE recommends that the solar project should be offered to the "community" geographically proximate to the project's location. At the least, customers and projects should be in the same utility service territory. Interconnection should be to the utility's distribution system.

3. Eligibility criteria:

a. *What criteria to determine customer eligibility (e.g. customer class, location, size) are included and are there carve-outs for specific groups (e.g. low income, multi-family, renters)?*

PGE sees community solar as a program available to any customer. However, similar to the sizing limitations for the net-metering and solar payment option programs, a participating customer should not be eligible to purchase capacity (kW) or energy (kWh) that would equate to more than the customer's annual average capacity or energy load, respectively. The minimum number of customers and percentage stakes in the project, for a given project, should be determined based on the loads of interested customers.

There should be carve outs for customer classes, specifically residential, small commercial, large commercial, and industrial customers. Carve outs for customers that are low-income, multi-family, or renters are a policy issue and may raise cost-shifting issues.

4. Length and terms of contracts:

a. *Describe each agreement between parties in your proposal, including the parties' commitments, term lengths, penalties (e.g. early termination), and agreement formation (e.g. RFP)?*

The long term nature of contracts between solar developers and financiers (generally between 20-30 years) may inform the requirements for customer commitment terms for community solar participants. Offering participating customers a range of term-lengths, may help subscriptions and mitigate risk of churn. Agreements should be made with the community solar participant's electricity service account and thus be transferrable so long as the participant is within the "community." Agreements should also be eligible for transfer within the "community." It may be appropriate to have an early termination penalty to mitigate the risk of churn and under subscription.

5. Subscription price calculation:

a. *Is the subscription price based on a capacity product (kW) or an energy product (kWh) and how is the price determined? Provide a simplified example showing cost assumptions (e.g. capital, operational, and maintenance costs, program administration costs, costs related to data collection and modification to utility billing systems).*

PGE recommends the subscription price be flexible, either on a capacity product (kW) or an energy product (kWh). The price of the product should be determined based on the total cost (capital, operating, and maintenance) of the facility, including the administrative costs of running the program.

6. Bill credits calculation:

a. *How are bill credits determined and applied (e.g. retail rate, avoided resource cost rate, avoided power cost rate, future resource value of solar rate, etc.)? Provide a simplified example.*

If bill credits are applicable to a given community solar program design, they should be determined based on the resource value of solar to the utility system, defined as the utility system's avoided costs due to solar, net of the utility

system's incremental costs due to solar. Of the community solar utility-programs PGE has reviewed in Attachment A, the vast majority of programs include some form of a bill credit or fixed rate, but a bill credit or fixed rate should not be a requirement in order for a program to be considered a 'community solar.'

7. Minimizing Cost-Shifting:

a. *Break out the cost components that will be charged to subscribers. How does this allocation of cost components minimize costs to non-subscribers?*

So long as participating customers are credited for the resource value of the community solar project to the utility system, defined as the utility system's avoided costs due to solar, net of the utility system's incremental costs due to solar, there should not be undue cost-shifting to non-participating customers. If participating customers are to be credited for societal benefits of the community solar facility, utility customers should not be responsible for paying for those benefits.

8. Risk assessment:

a. *Who bears the burden of risk in the following categories and how is this risk mitigated:*

i. *Solar facility system performance*

The developer and participating customers bear this risk because collectively, they own the community solar facility.

ii. *Subscription rate and fluctuations in under or over subscription*

The owner of the solar facility or participating customers could bear this risk. The program, when offered, should identify who bears the risk of under-subscription, over-subscription, and/or churn.

These comments are respectfully submitted by:

/s/_____
Karla Wenzel, Portland General Electric

SEPA solar electric power association

Community Solar Program Comparison Chart
Updated 9-16-14

IREC Interstate Renewable Energy Council

State	Start Date	Utility or Project Sponsor Name	Type	Program Name	Participant Information/Eligibility	Participation Mechanism	Customer Benefits	Supply Size (MW)	Webpage
TX	TBD	**Austin Energy****	Public Power	**Community Solar**	TBD	TBD	TBD	up to 4 (based on RFP)	http://austinenergy.com/wps/portal/ae/about/news/press-releases/austin-energy-issues-request-for-proposals-for-community-solar-project/!ut/p/a0/04_Sj9CPykssy0xPLMnMz0vMAfGjzOINjCyMPJwNjDzdzY0sDBzdnZ28TcP8DC19jfSDU4v1C7IdFQH5wDpn/
KY	2011	**Berea Municipal Utilities**	Public Power	**Berea Solar Farm**	Open to anyone, including people who don't live in Berea, KY. For those not located with the utility's service territory, panels can be leased and donated to a customer within the Berea Municipal Utilities service area.	Customer purchases 235-watt panel units.	In return, customers will receive Panel Production Credit (PPC) every billing period for the electricity generated by their panels. The PPC is calculated by dividing the total generation from the system by the number of panels and providing a kWh credit at the customer's rate, on the participant's monthly bill.	0.0282	http://bereautilities.com/?page_id=348
CO	TBD	**Black Hills Energy****	IOU	**Community Solar Garden**	For Phase 1, at least 40 kW of the program will be reserved for residential customers and the remaining 80 kW will be reserved for either residential or commercial customers. 10 kW of the total capacity is to be allocated for low-income residential customers.	TBD	Customers receive monetary bill credit based on kWh production of subsrcibed panels.	TBD	https://www.blackhillsenergy.com/save-money-energy/rebate-information/residential/colorado-electric-solar-power-program/community

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MA	2012	**Brewster Community Solar Garden Cooperative, Inc.***	non-profit	**Brewster Community Solar Garden**	Brewster, MA residents	Participants purchase a SunSharefor $5000, and the value of the energy transfers as a "net metering credit" on participants electric bill each month	A SunShare entitles participants to the value of energy created by 28 solar panels. Each SunShare will transfer at least $6,400 of credit (or possibly more) over the next 5 years, as an anticipated average monthly credit of over $100 to participants' electric bills.	345.6 kW	http://www.brewstercommunitysolargarden.com/
NY	TBD	**Central Hudson Gas & Electric****	IOU	**TBD**	TBD	TBD	TBD	TBD	http://www.centralhudson.com/valueforourvalley/index.html#smartertab
MI	2013	**Cherryland Electric Cooperative**	Co-op	**Solar Up North (SUN) Alliance Program**	Eligible to members of Cherryland Electric Cooperative or Traverse City Light and Power	Customer purchases 235-watt panel.	CEC members that commit to a lease will receive a monthly billing credit for the solar electricity produced in that particular month. One solar panel is estimated to produce 25 kWh per month on average.	0.056	http://www.cecelec.com/content/community-solar
OR	2007	**City of Ashland (Ashland Municipal Utilities)**	Public Power	**Solar Pioneers II**	City of Ashland residents	Customer purchases upfront full, half, and quarter PV panel output for 18 years.	Customer receives monthly bill credit at retail rate for the power output that the system produce. One panel is estimated to produce $480 in savings over 20 years.	0.0635	http://www.ashland.or.us/Page.asp?NavID=13368
WA	2006	**City of Ellensburg**	Public Power	**Community Renewable Park**	Must own, rent, or lease a business or residence that has an electric service with the city of Ellensburg	Customers pay an initial up-front investment to co-own a share of the system.	Customers receive quarterly credit on their electric bill at the BPA wholesale energy rate based on kWh's derived from % of system investment.	0.0816	http://www.ci.ellensburg.wa.us/index.aspx?NID=310

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DE	2014	**City of Newark Delaware**	Public Power	**City of Newark Community Solar Program**	Available to City of Newark residential customers only.	Customers must make an up-front contribution of $50 for each 100 kWh block of energy purchased.	Customers receive a 1 cent/kWh credit each month for each 100 kWh block purchased. The credit remains in effect for a 10 year period.	0.2295	http://cityofnewarkde.us/index.aspx?nid=900
UT	2014	**City of St. George**	Public Power	**SunSmart Program**	The purchaser must be the owner or in lawful possession of residential property located within the geographical boundaries of the City of St. George, Utah.	Customer purchases 'units' in 0.5 and 1 kW increments.	Customers receive a monthly credit on their electric bill based on the monthly kWh derived from % of system investment and retail rate. A minimum output of 800 kWh is guaranteed.	0.25	http://www.sgsunsmart.com/index.htm
MO	2014	**City Utilities (Springfield, MO)**	Public Power	**CU Solar Initiative**	Residential and small commercial customers	Customers subscribe to 1 kW blocks of energy at a solar rate (which amounts to the normal energy rate, plus a special, fixed fuel adjustment factor). The fuel adjustment factor remains fixed for the 20 year duration of participation, making it possible to hedge future fuel adjustment factor increases.	Customers receive credits for amount of energy they've subscribed to purchase.	4.95	http://www.cityutilities.net/renewable/rnw-solar.htm
WA	2014	**Clark Public Utilities****	Public Power	**Clark Public Utilities Community Solar**	Customers of Clark Public Utilities may participate	The system would offer customers a total of 2,750 shares at $150 per share, or one-tenth of a solar panel. Customers could voluntarily buy up to 100 shares, or 10 panels.	Participants will see bill credits expected to reimburse their investment in about four years	74.25	http://www.columbian.com/news/2014/sep/02/community-solar-program-clark-public-utilities/
GA	2014	**Coastal Electric Cooperative**	Co-op	**Renewables Solar Farm (pilot program)**	Open to members of Coastal Electric Cooperative	Customers lease 230-watt panel for 25 years.	Customers receive kilowatt-hour credit for the energy generated by the panel. It is estimated to produce about $40 per year in electricity credits.	0.002	http://www.coastalemc.com/CoastalElectricRenewables.aspx

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CO	2012	**Colorado Springs Utilities**	Public Power	**Community Solar Gardens Pilot / Community Solar garden**	Residential and educational institutions only / All electric customers	Customers lease or purchase panels directly from developer. Pricing is negotiated between developer and Customer. Each unit represents 0.4 kW.	Allows participation in solar for customers not otherwise eligible due to HOA or landlord restrictions or property constraints. Customer receives payments from Utility to offset costs.	1.5	https://www.csu.org/CSUDocuments/csgtariffsheets.pdf
TX	TBD	**CPS Energy****	Public Power	**TBD**	TBD	TBD	TBD	TBD	http://newsroom.cpsenergy.com/blog/cps-energy-grow-rooftop-solar/
CO	2011	**Delta Montrose Electric Association**	Co-op	**The Community Solar Array Program**	Co-op members may lease any portion of the array they wish - provided adequate capacity remains - in lease increments of $10.	Customers lease 2.7-Watt blocks.	Customers receive a credit to their bill each month for the electricity their portion of the array produces.	0.020	http://www.dmea.com/index.php?option=com_content&view=article&id=156&Itemid=101
UT	2008	**Dixie Escalante Electric**	Co-op	**SunSmart Program**	The purchaser must be the owner or in lawful possession of residential property located within the geographical boundaries of the City of St. George, Utah.	Customer purchases 'units' in 0.5 and 1 kW increments.	Customers receive a monthly credit on their electric bill based on the monthly kWh derived from % of system investment and retail rate. A minimum output of 800 kWh is guaranteed.	0.25	http://www.sgsunsmart.com/index.htm
TN	2012	**Duck River Electric Cooperative**	Co-op	**DREMC Solar Farm**	Any Duck River Co-op member that is currently in good standing	Customer purchases half of a 240-Watt solar panel unit.	Customer receives premium price of $.12/ kWh plus retail rate of electricity, totals about $0.22 per kWh	0.0259	http://www.dremc.com/community/solar-farm/
WI	Exp. 2015	**Eau Claire Energy Co-op****	Co-op	**Community Solar Project**	TBD	TBD	TBD	Up to 1	http://www.leadertelegram.com/news/front_page/article_8c582cc8-b568-11e3-85a4-0019bb2963f4.html
CO	2011	**Empire Electric Association**	Co-op	**Solar Assist Cooperative Garden**	Participation is open to Empire Electric members	Customers lease units in full panel increments.	Customers receive a bill credit at $0.11 kWh and Empire Electric will pay for the operations and maintenance of the system	0.01	http://www.eea.coop/solar-garden.html

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IA	2011	**Farmers Electric Co-op**	Co-op	**FEC Community Solar Graden**	Open to Farmers Electric Cooperative members	Customers purchase solar panels for an up-front fee and receive retail rate credit for energy produced by their share of the system. Customers can purchase up to 10 modules each.	Customers receive monthly retail rate credit for energy produced by their share of the system.	0.0404	https://f13b981a-a-62cb3a1a-s-sites.googlegroups.com/site/feckalona/services/documents/pdf-files/flyer500-c.pdf.pdf?attachauth=ANoY7coWRpuCyJPlSrdJeFyHn_u773HOJK8AJ-lOQ6OAW6qgxzGN_AYlBDLktjeBjlOX7ttlFUc8EMIeWC4M6tFM--EbNPmN_wNRA4QmUNsC2EeFOUEzRQXXVSLJnGYV376lMwhQj2NhlIGemz664LLwFhJg1jhGgY_jRI42JsDxjYoGnKk0-rOiKLiy2nfT73Wz19ms7_5vw_LeN6mcX2ZSOwyI8oMeyw1K1fHk53gFHpkd3VXdjSv6-VthTEFNV9DV1c-YsCV&attredirects=0
FL	2010	**Florida Keys Electric Co-op**	Co-op	**Simple Solar Program**	Open to FKEC members.	Customer lease 175-watt panels	Customers receives full retail value of the electricity produced by their leased panels each month.	0.097	http://www.fkec.com/Green/simplesolar.cfm
CO	TBD	**Fort Collins Utilities****	Public Power	**Fort Collins Community Solar program**	Residential customers only	Participants purchase 305 Watt panels	Customers receive a credit to their bill each month for the electricity their portion of the array produces.	0.333	http://www.fortcollinscommunitysolar.com/
CO	2011	**Grand Valley Power**	Co-op	**Solar Farm**	Participation is open to Grand Valley Power members	Customers lease the production from solar panels.	Customers receive a monthly bill credit that amounts to about $50 annualy for 1 panel. The PPC is calculated by dividing the total generation from the system by the number of panels and providing a kWh credit to a participant's monthly bill.	.020	http://www.gvp.org/content/solar-farm

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VT	2013	**Green Mountain Power (GMP Solar)***	IOU	**Putney Solar Garden (CEC) / The Farm at South Village (South Burlington, VT)**	Open to ownership by all GMP customers	Customers purchase units in increments of full solar panels.	Customers are credited at full retail rate (not-fixed) plus $0.06 fixed performance based incentive.	0.194	http://www.vtsolargardens.com/
CO	2010	**Holy Cross Energy**	Co-op	**Community-owned Solar Farm/ El Jebel, Garfield Count Airport**	Anyone with a Holy Cross electric bill is eligible to purchase solar panels, including homeowners, businesses, renters, community organizations, etc.	Customers can purchase shares (watts) of the solar array upfront at a cost of $3.15 per watt or ($725 per 230-watt panel).	Monthly bill credit of 11 cents/kWh, or 37% more than the $0.08/kWh for traditional solar systems. As rates increase, power credits will remain 37% greater than the standard credit rate.	0.944	http://www.easycleanenergy.com/faq.aspx
CA	TBD	**Imperial Irrigation District****	Public Power	**TBD**	TBD	TBD	TBD	TBD	http://www.iid.com/index.aspx?page=690
NM	2012	**Kit Carson Electric Cooperative**	Co-op	**Toas Charter School Project**	Open to members of Kit Carson Co-op	Customers purchase 235-watt panels and retain ownership.	Credit on monthly bills for proportion of energy produced, $0.1087/kWh ($0.112 within city of Taos)	0.0987	http://www.kcecsolar.com/
MN	2013	**Lake Region Electric Co-op**	Co-op	**HQ Paire**	Open to members of Lake Region Electric Cooperative	Lake Region Electric Cooperative members purchase panel production of 410-Watt panels in half-panel increments.	Customers receive monthly bill credit based on system output. Half panel is estimated to produce 294kWh annually, while full panel produce about 588kWh annually.	0.0394	http://www.lrec.coop/solar
KS	TBD	**Midwest Energy****	Co-op	**TBD**	TBD	TBD	TBD	1	http://www.mwenergy.com/news.aspx?id=142
MA	2014	**National Grid***	IOU	**CEC Ngrid Solar Array 1 (West Central, Northeast, and Southeast)**	Open to all residential and commercial customers of National Grid in Massachusetts	Customers purchase panels up-front for a cost of $1,215 per 300 Watts panel.	Customers receive bill credit got the energy produced by their panel(s).	1.992	http://www.easycleanenergy.com/communitysolarprojects.aspx
MA	Exp 2014	**NSTAR*, ****	IOU	**Community Solar**	Open to all residential and commercial customers of NStar in Massachusetts	TBD	Customers receive bill credit got the energy produced by their panel(s).	0.996	http://www.easycleanenergy.com/communitysolarprojects.aspx

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FL	2013	**Orlando Utilities Commission**	Public Power	**Share the Sun**	Residential and Non-demand Commercial	Customer subscribes to 1 kW blocks. Allows up to 15 kW blocks.	Customer receives credit based on the amount of energy produced from the kW block subsribce. OUC use a virtual method to calculate the customers energy usafe with the energy production of the kW solar blocks.	0.4	http://www.ouc.com/environment-community/solar/community-solar
CA	TBD	**Pacific Gas and Electric*, ****	IOU	**Green Tariff Shared Renewables Program**	PG&E residential and commercial customers	2 Options: Customers purchase up to 100% of their usage from a pool of solar projects within PG&E service territory, or customers purchase a set capacity from 1 project near them of their choosing.	TBD	272 (proposed)	http://www.pge.com/greenoption/
CA	Exp 2015	**Palo Alto Utilities****	Public Power	**TBD**	TBD	TBD	TBD	1-3 MW (based on RFP)	http://usd.solarelectricpower.org/download?downloadkey=DF75A3F1AA92E95CCC37719C91AD074A
WI	TBD	**Polk Burnett Cooperative**	Co-op	**Polk-Burnett Community Solar**	The program is open to members on the single-phase general service and/or the controlled off-peak service with Polk-Burnett Electric Cooperative. Interested members must sign up by October 31, 2014, at which time the project size will be determined and the project will move into the construction phase.	Customers purchase either 250-watt or 500-watt units. There is no limit to the number of units a member can purchase.	Participants receive credit for the actual energy produced by their share of the system.	0.080 (minimum proposed)	http://solarcooperative.coop/polk-burnett/

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CO	2012	**Poudre Valley Rural Electric Association**	Co-op	**Poudre Valley REA Communit y Solar Farm I and II**	The panels are purchased and are owned by individual consumers who receive electricity from PVREA.	Customers purchase panels.	Credits from the electricity generated are applied, in proportion to the number of panels purchased, directly to the electric bills of each participating consumer. ,Phase 2 has $0.04 PBI	.616	http://www.pvrea.com/solar
CA	2008	**Sacramento Municipal Utility District**	Public Power	**SolarShares Program**	Customers of SMUD.	Customers purchase shares of 0.5-kW system.	Customer receives kWh credit on monthly bill based on the amount of power generated from shared investment and the fixed energy rate they qualify for.	1	https://www.smud.org/en/residential/environment/solar-for-your-home/solarshares/
AZ	2011	**Salt River Project**	Public Power	**SRP Community Solar Program**	Schools, Residents, and Businesses that are SRP customers	Customers purchases renewable electricity in monthly kW blocks (estimated 2,700 kWh annual generation per kW block).	Each block replaces an equivalent amount of traditional power at a fixed price for 5 years.	20	http://www.srpnet.com/environment/communitysolar/home.aspx
CA	TBD	**San Diego Gas & Electric****	IOU	**Share the Sun**	Solar providers sign up participants not to exceed 100% of a facility's nameplate capacity's eligibility in the program; customers can meet up to 120% of their annual usage; all residential and non-residential bundled customers of SDG&E are eligible to participate.	Share the Sun participating solar providers will sell the participating facility's energy to SDG&E and will contract with SDG&E customers to sell the rights to the capacity produced by such projects. The solar provider agrees to assign its payment for energy sold to SDG&E to the customer and SDG&E will credit the customer's monthly bill for the contracted value of the energy produced by the customer's subscribed portion of the solar facility's capacity.	Customer receives kWh credit on monthly bill based on the customer's subscription to the facility's actual output. The cost of local solar and the value of solar are fixed at the time of the customer's application for the customer's selected contract term. Customers are also contributing to the growth of new local renewable energy.	10	http://www.sdge.com/clean-energy-options/solar-pilot-programs

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IREC Interstate Renewable Energy Council

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CO	2012	**San Miguel Power Association**	Co-op	**SMPA Community Solar**	Open to members of San Miguel Power Association (SMPA)	Customers purchase 240-watt panel per share.	Monthly monetary credit for the energy each panel(s) produces. Each panel will produce approximately $45 worth of electricity per year.	1.1	http://smpasolar.com/
WA	2012	**Seattle City Light**	Public Power	**Seattle Community Solar**	All Seattle City Light Customers	Customers purchase solar panel units (fixed # watts) for program term (currently all end 6/30/2020).	Customers receive annual credit through 2020 based on the amount of amount of electricity generated by the Customer's portion.	0.1434	http://www.seattle.gov/light/solar/community.asp
CA	TBD	**Southern California Edison*, ****	IOU	**Optional Green Rate Program**	All bundled service electricity customers. A minimum of 1/6 of total capacity will be reserved for residential customers.	SCE has proposed that customers subscribe in kWh blocks equal to either 50% or 100% of their monthly energy consumption.	SCE estimates that residential customers will be credited $0.059493/kWh for participating. This rate will be adjusted annually.	269	http://www3.sce.com/sscc/law/dis/dbattach5e.nsf/0/CD22E59FFBB9750888257C760068E096/$FILE/A.14-01-007_Green%20Rate-%20SCE-01%20Testimony%20in%20Support%20of%20App%20for%20Approval%20of%20Optional%20Green%20Rate.pdf
WI	2014	**St. Croix Electric Cooperative**	Co-op	**Sunflower 1**	Co-op members	Customers subscribe to panels and receive monthly energy credits for the output of their units.	Customers receive monthly output credit throughout the lifetime of the array.	0.103	https://www.scecnet.net/content/sunflower-1
MI	2013	**Traverse City Light and Power**	Public Power	**Solar Up North (SUN) Alliance Program**	Eligible to members of Cherryland Electric Cooperative or Traverse City Light and Power	Customers purchase 235-watt panel.	Members and customers that commit to a lease will receive a monthly billing credit for the solar electricity produced in that particular month. One solar panel is estimated to produce 25 kWh per month on average.	0.056	http://www.tclp.org/Mutual/CommunitySolar/EnergySmart

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AZ	2011	**Trico Electric Cooperative**	Co-op	**Sunwatts Sun Farm Program**	All Trico Customers	Customer can purchase upfront full, half, or quarter of a 270 watt PV panel.	Customer receives fixed kWh on monthly bill by panel shares owned at 36 kWh per full panel, 18 kWh per 1/2 panel, and 9 kWh per 1/4 panel	0.227	http://www.trico.coop/images/TRICO_RESF.pdf
MN	2014	**Tri-County Electric Cooperative**	Co-op	**Renewable Rays**	TEC Member in good standing with an active electric account	Members purchase unit(s) of production to obtain a monthly energy credit for 20 years.	Members lock in the cost of their renewable energy for a 20 year period. No additional costs. The co-op owns, manages, insures and maintains the PV system.	0.0738	https://www.tec.coop/programs/renewable-rays.php#RR3
AZ	2011	**Tucson Electric Power**	IOU	**Bright Tucson Community Solar Program & TEP Bright Roofs Program**	All customers except those who are currently enrolled in net metering	Customer purchases solar electricity in 150-kWh monthly blocks.	Each block replaces an equivalent amount of traditional power at an additional cost of $3 in utility bill. Customers will eventually see savings when traditional power increase because the price remains fixed for 20 years. Blocks are exempt from two surcharges: REST and PPFAC.	22.31	https://www.tep.com/Renewable/Home/Bright/
AZ	2012	**UniSource Energy Services**	IOU	**Bright Arizona Buildout/ Bright Arizona Community Solar Program**	Available to customers on tariffs: Residential Tariffs, Small General Services, and Large General Service	Customer purchases solar electrcity in 150-kWh monthly blocks.	Each block replaces an equivalent amount of traditional power at an additional cost of $3 in utility bill. Customers will eventually see savings when traditional power increase because the price remains fixed for 20 years. Blocks are exempt from tow surcharges: REST and PPFAC.	1.7	https://www.uesaz.com/renewable/home/bright/

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CO	2009	**United Power**	Co-op	**Sol Partners Program**	Open to all members of United Power, including those who net meter.	Customers purchase 210-Watt panels.	Customers receive a monthly bill credit for the value of their panel's production at a solar rate slightly above the retail credit rate. During the 1st year, the original 48 panels produced 17,504 kWh. Energy credits totaled $40.12 per panel, equal to a 3.8% return.	0.021	http://www.unitedpower.com/mainNav/greenPower/solPartners.aspx
VT	Exp. 2015	**Vermont Electric Cooperative****	Co-op	**Grand Isle Community Solar Array**	VEC residential and commercial customers	Customers subscribe to panels and receive monthly energy credits for the output of their units.	Customers receive monthly output credit from purchased system, customers also receive the same rebates and incentives as rooftop system owners.	0.155	http://www.vermontelectric.coop/community-solar/
WI	2014	**Vernon Electric Cooperative**	Co-op	**Community Solar Farm**	Residential and commercial customers	Customers make an upfront payment to purchase panels (305 Watts each). Customers receive bill credit for the energy produced by their panel(s).	Customers receive monthly bill credits for the electricity produced by their panel(s)	0.305	http://www.vernonelectric.org/node/191
MA	Exp 2014	**Western Massachussetts***	IOU	**Solar Array 1 Huntington / Solar Array 2 Breckenridge**	All residential and commercial customers of Western Massachusetts Electric Company	Customers purchase 300-Watt panels for an up-front fee..	Customer receive monthly bill credits for the electricity produced by their panel(s)	1.992	http://www.easycleanenergy.com/communitysolarprojects.aspx
MN	2013	**Wright-Hennepin Cooperative**	Co-op	**WH Solar Community project (CEC)**	Open to members of Wright-Hennepin Co-op	Customers purchase individual panels.	Credit on monthly bills for proportion of energy produced	0.03249	http://www.whe.org/for-my-home/products-services/wh-solar-community.html

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CO	2013	**Xcel Energy CO***	IOU	**Solar Rewards Community**	There must be at least 10 subscribers per garden Subscribers must be Xcel Energy retail electricity customers in Colorado. Subscriber must live in the same county as the solar garden, unless the subscriber's county has less than 20,000 residents and the solar garden is located in an adjacent county where the population is also less than 20,000 residents.	Customers purchase subscription in the community garden; details differ by garden owner contract terms. Customer receives bill credit from utility. Garden owner receives REC payment from utility.	Total aggregate retail rate less T&D costs ("reasonable charge") less RESA charge less TCA charge. Range from about $0.055 to $0.07, depending on customer class plus an $0.00 - $0.11 / kWh PBI to garden owner.	18	http://www.xcelenergy.com/Save_Money_&_Energy/Business/Renewable_Energy_Programs/Solar*Rewards_Community_-_CO
CO	Exp 2015	**Xcel Energy CO****	IOU	**Solar*Connect**	TBD	TBD	Bill credit will be closer to Xcel avoided costs than its other solar programs	50	http://www.xcelenergy.com/About_Us/Our_Company/Projects_and__RFPs/2014_Public_Service_Company_of_Colorado_Solar*Connect_Resource_Request_for_Proposals
MN	2014	**Xcel Energy MN*, ****	IOU	**Solar Gardens Community Solar**	TBD	Customers purchase shares in the solar garden. Details differ by garden owner contract terms. Customer receives bill credit from utility.	Customer receives monthly credit on their power bill based on their shared panel output.	2.5 MW/quarter, up to 20 MW (proposed)	http://www.xcelenergy.com/Save_Money_&_Energy/Business/Renewable_Energy_Programs/Solar_Gardens_-_MN
CO	2014	**Yampa Valley Electric Association**	Co-op	**(YVEA) Community Solar Array**	Open to YVEA members.	Customers purchase and own solar panels mounted in a community array, operated and maintained by Clean Energy Collective.	Customers receive monthly bill credits for the power produced from the purchased panel/s	0.577	http://www.yveasolar.com/faq.aspx

*** = Program operating under state community solar/renewables law**
****=Pending, planned or announced**

Color coding
- **Investor-Owned Utility program**
- **Public Power Utility Program**
- **Electric Cooperative Program**
- **Other program**