Frequently Asked Questions and Answers about Community Solar Facilities

1. Isn't utility scale solar 4-5 times less expensive than a community solar facility?

No. The table below (from Lawrence Berkeley National Lab's Annual Tracking the Sun Report) shows national-average benchmark prices in $/Watt for projects ranging in size from 5MW to 100MW (considered utility-scale).

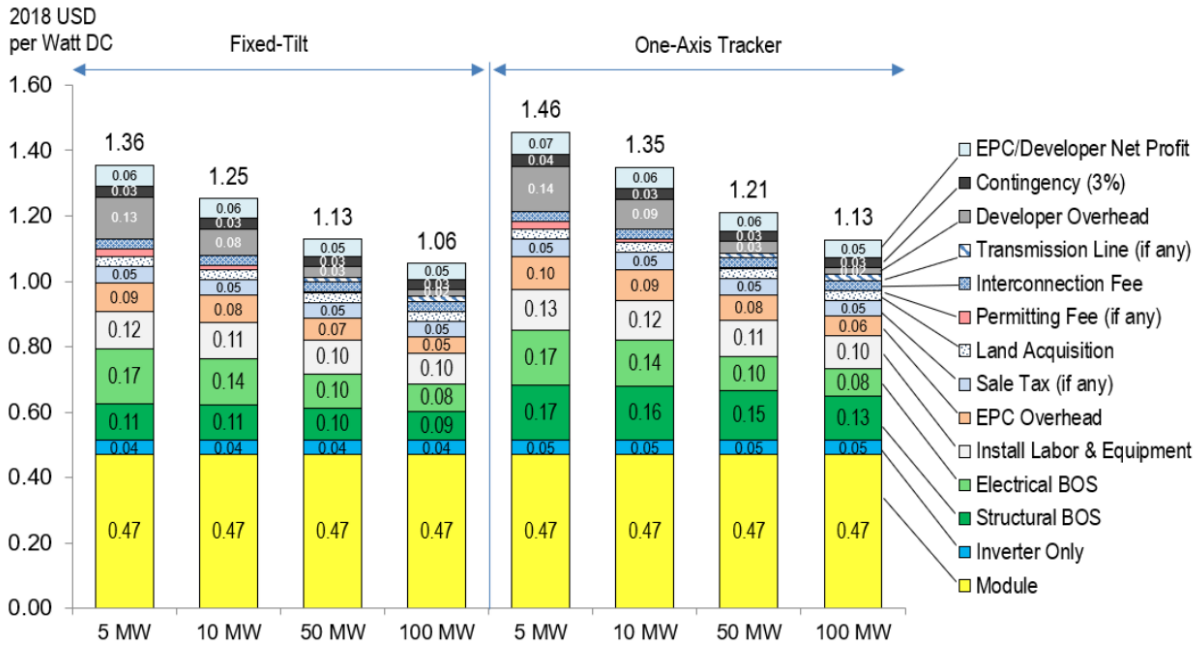


Figure 1: Q1 2018 U.S. benchmark: utility-scale solar photovoltaic total installed cost (project development, engineering, procurement, & construction), 2018 cost per installed Watt ($/W-dc). Source: https://emp.lbl.gov/tracking-the-sun

5MW is the cap for the largest community solar facilities allowed under HB9. For comparison, between 2011 and 2018, PNM added 17 solar projects, ranging in size from 0.5 MW (2011) to 10 MW (2018). As can be seen in the figure, there is only a marginal price difference (10%) between the installed costs for a 5 MW (1.36 $/W) and a 10 MW (1.25 $/W) project in 2018.

The same report has benchmark prices for commercial scale projects (200kW systems typically installed on top of a building) coming in at 1.83 $/W. Thus, if we compare the price between a 200kW and a 100MW utility-scale system (500x bigger) the installed cost difference is only 1.7x more expensive (1.83 $/W vs 1.06 $/W).

Looking at recent data in New Mexico, in 2017 the Otero County Electric Cooperative signed a 25-year Power Purchase Agreement (PPA) to receive electricity from the **3 MW** capacity Carrizozo project for **4.5**

cents/kWh. Compare this with Facebook's PPA with PNM to receive power from **two** 50 MW-AC solar plants for **3 cents/kWh** (the smaller 3 MW PPA is only 1.5x more expensive).

There is an economy of scale for larger solar projects, but in many ways, the benefits of distribution scale projects are unique and important. Local generation can directly address local reliability problems; it may help reduce transmission congestion and related costs, and it may complement strategies to integrate energy efficiency, load management and new electric uses, such as electric vehicles. Many states are working toward greater diversity, with both centralized and decentralized distribution-scale projects in their energy supply portfolios.

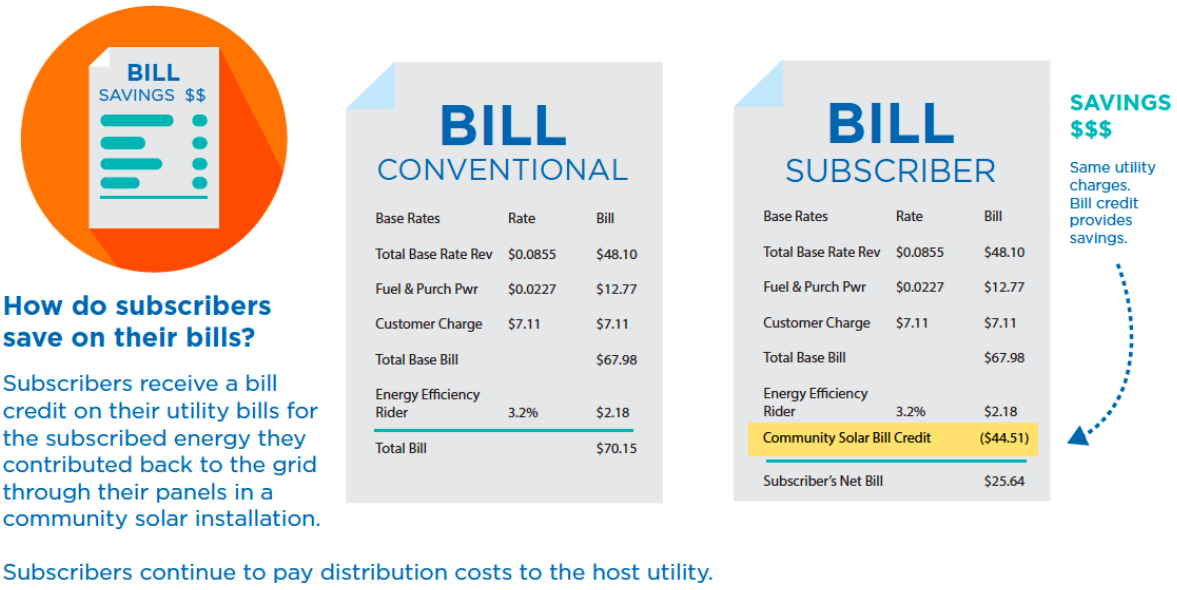
2. Utility-scale projects are still cheaper -- but do individuals get that benefit? How does that compare to the type of benefit community solar can provide subscribers?

Utility scale solar projects provide low-cost power as part of the state's overall energy supply portfolio, but it is currently only a small portion of the energy individuals receive. Community solar, on the other hand, can help individual subscribers subscribe up to 100% of their electricity from a local distributed energy resource.

90% of generation in New Mexico comes from coal, gas, and nuclear. This will change over time as nearly 75% of coal is retired, but of course the San Juan Generating Station cost will still be recovered from customers, albeit at a lower rate. 3% solar represents 177 MW, so adding 200 MW more of solar, even if half the average cost of all other resources, will not have a significant effect on retail rates.

In contrast, community solar offers a near-term solution to provide individuals, nonprofits, governments, local businesses, and other entities an opportunity to participate in, or have ownership of, local projects. Utility-scale, community solar, and rooftop solar all play a role in helping New Mexico transition to 50% renewable by 2030 and 80% by 2040.

3. How do subscribers receive savings on their electric utility bills with a community solar subscription?



4. **How can subscribers, especially low-income subscribers, see greater financial benefits with community solar facilities than with much larger solar facilities built by utilities?**

Utility rates are set through a case filing at the PRC. The rate is based upon the utility's operating expenses, and the total value of ALL of the utility's assets (minus their depreciation) multiplied by an allowed rate of return. So every time a new generation asset is built or retired by the utility, it typically impacts ratepayer costs in a marginal way, as the costs/savings are impacted by all of the utility's debts and assets spread across all ratepayers.

Community Solar, in contrast, may be built at a smaller scale, but the savings – relative to utility rates - are shared among a relatively small pool of subscribers and would therefore be more significant per household. The motivation for many subscribers is this cost savings on their utility bill.

For example, a 2018 1 MW-AC system proposed for Los Alamos County had a Power Purchase Agreement of 0.06 $/kWh. If a subscriber organization built a similar community solar facility, it might choose to offer subscriptions at a price of 0.09 $/kWh, which is 10% cheaper than the average retail energy charge of the utility. Thus, the subscriber organization earns its profit and the household subscriber may save over 100 $/year on their utility bill.

Low-income households' primary motivations are tangible economic savings:

Figure 2: Average Score to "Rate the Importance of the Following Attributes to Potential Low- and Moderate-Income Customers / Constituents You Work With (Source: GTM Wood Mackenzie (2018). *The Vision for U.S. Community Solar).*

Examples of Low Income Households benefiting from statewide community solar programs:

- In 2017, Denver Housing Authority (DHA) partnered with GRID Alternatives Colorado and Namaste Solar to develop and install a 2 MW DC community solar project through Xcel Energy's Solar*Rewards Community Program. The project's output will benefit DHA housing as well as other Low-income Housing Tax Credit (LIHTC) and Public Housing Buildings in the Denver metro region – properties housing over 700 low-income residents in total. The project will generate an estimated savings of 15-20% for these properties on their average monthly utility bills, which will flow to residents through reduced and predictable energy rates and additional supportive services.
- Developers voluntarily offer greater discounts for participating low-income households with a fixed 15% - 20% discount on their electric utility bills (For more info, visit: https://www.forefrontpower.com/md-cs-costs-explained
- Insights from the Colorado Energy Office Low-Income Community Solar Demonstration Project: https://www.colorado.gov/pacific/sites/default/files/Insights%20from%20the%20CEO%20Low-Income%20Community%20Solar%20Demonstration%20Project.pdf

5. How do community solar bill credits work and how are they calculated?

A bill credit is a monetary credit to the project subscriber on the utility's monthly billing cycle. The bill credit is calculated by multiplying the subscriber's portion of the solar facility's kilowatt-hour electricity production by the bill credit rate, which is the utility's total aggregate retail rate minus a Public Regulatory Commission (PRC) approved distribution cost rate (Committee Sub HB9, p. 7, lines 5-10):

Bill Credit = Ownership Fraction (%) x Monthly facility energy generation (kWh) x (Total Aggregate Retail Rate – Approved Distribution Cost ($/kWh))

6. How can a utility apply bill credits without Advanced Metering Infrastructure (AMI or smart meters) on all subscribers?

Section 4 of the Committee Substitute for HB9 (CS/HB9) details responsibilities of qualifying utilities and subscriber organizations to properly apply bill credits.

P. 8, lines 9-11 requires each community solar facility to supply real-time production data to the qualifying utility (provided by a single revenue-grade production meter at the point of interconnection with the utility's distribution system). In most markets this meter is supplied by the utility just like any other load customer and read via the same method (usually monthly to align with standard billing cycles). Developer's typically install monitoring equipment on their community solar facilities which can also be used to remotely collect the data. Once the monthly production data is collected, the bill credits are then determined by a simple formula (see above) either by the developer using technology as simple as a spreadsheet or within the utility's administrative software if they have that capability. This doesn't require smart meters for subscribers or the community solar facilities

P. 8, lines 4-8, clearly places the requirement on the subscriber organization to supply a qualifying utility "on a monthly basis and in a standardized electronic format, a subscriber list indicating the proportional output of a community solar facility attributable to each subscriber. Subscriber lists may be updated monthly to reflect canceling subscribers and to add new subscribers".

P. 7, lines 15-17, also states that qualifying utilities shall "apply bill credits to subscriber bills within one billing cycle following the cycle during which the energy was generated by the community solar facility". This is not an instantaneous netting, rather an administrative process that aligns with subscribers' standard billing cycles.

Lastly, p. 11, lines 23-24 clearly indicates that a qualifying utility is able to "recover reasonable costs of administering the community solar program" which could include subscriber management software. Several versions of this type of software are available off the shelf and in many cases can even be white labeled under a utility's brand.

2. How will the 50 MW/year cap be allocated?

CS/HB9 section 6 (p. 10, lines 6-9) requires the Commission to "allocate a statewide annual capacity cap of fifty megawatts alternating current of community solar facility capacity proportionately across the state's investor-owned electric public utilities". The capacity allocation process is left up to the PRC in the rulemaking; however, capacity is typically allocated proportionally across IOUs based on peak load or retail sales. If it is based on retail sales, the cap allocation could look like those in the table below:

Investor Owned Utilities	2018 Retail Sales (MWh)	Allocation of Cap (MW/yr)
PNM	8,853,054	26.5
Xcel	6,181,142	18.5
El Paso Electric	1,682,520	5.0

3. Will the need for large areas of land pose an issue for development of community solar facilities?

The development of community solar facilities will provide economic opportunities for state and private landholders of all sizes through the sale and leasing of land. In contrast to utility scale solar, community solar spreads the benefits across many more landholders and tax jurisdictions. The facility has to be located within the utility service territory of the subscribers, but does not have to be collocated with subscribers. Therefore, the facilities can be built where there is available land and where interconnection is strategically relevant for utilities (e.g., where it can contribute to reducing transmission congestion, and where distribution feeders are appropriately sized).

The State Land Office stands in support of community solar and leases land for solar and wind projects of various sizes. According to the Land Office, with about nine million acres of surface estate throughout New Mexico, it is well-positioned to offer land for renewable energy projects of all sizes.

4. Given the scale of an IOU's service territory in which subscribers and subscriber organizations must be located, won't the electricity from one end of that territory to subscribers at the other end require the transmission system to be employed?

No, good interconnection locations are generally associated with local load (at the feeder or substation level) which utilizes the electrons being produced by the projects. Interconnection costs are paid for by the developers so they are naturally incentivized to seek out the best locations near local load.

In cases such as PNM, whose service territory extends across the state, it is possible that a community solar facility which is built in one part of the state could have subscribers in another part of the state, far from any generation assets. In that case, it could be argued that the distant subscribers are receiving credited electricity that is reliant on transmission.

However, one could also have the opposite case, in which a community solar facility is built on a distribution feeder far away from any generation assets, providing benefit by freeing up transmission capacity for the utility.

Lastly, the request for proposals process described in Section 6 (B) 4. starting on p. 10 could provide preference for locally-sited community solar facilities or those sited in strategic or grid-beneficial locations. The RFP evaluation criteria and weight associated with each criterion will be established through the Commission's rulemaking process.

5. How can community solar help satisfy the Renewable Portfolio Standards (RPS) of the Energy Transition Act?

CS/HB9 (p. 9, lines 1-6) provides options for utilities to obtain renewable energy credits (RECs) to meet their RPS obligations. Text reads:

" the environmental attributes may be sold, accumulated, retired or transferred to subscribers or to a qualifying utility. A qualifying utility may develop, and file with the commission, a standard offer to purchase renewable energy credits from community solar facilities to help meet the state's renewable portfolio standard"

The renewable energy from community solar facilities can help utilities meet their RPS obligations if they develop a standard offer or other mechanism to purchase RECs from subscriber organizations. In addition, the State's RPS obligation is calculated based on retail sales. If retail sales are reduced by community solar then the utility RPS requirement is also reduced.

However, once again, it's also important to keep in mind that the capacity cap (50 MW per year) is just a small portion of the total renewable energy generation that is needed to come online to replace current fossil fuel generation.

6. Will community solar provide more or less job opportunities for local companies, compared to solar projects built by utilities?

Projects of the sizes (under 5-MW) that are targeted for community solar are more likely to attract participation by local installers, who have experience developing such projects. Large utility-scale projects, by contrast, tend to attract more large, out-of-state developers. New Mexico solar developers and installers will be well-prepared to compete through the relationships that most of them already have established with landowners, leading suppliers and value-chain partners. They also have first-hand knowledge of our state's utilities and the communities they serve.

Beyond that, many national developers do not perform the engineering/procurement/construction (EPC) functions and tend to hire local companies to do that work. Additionally, it is common for them to establish a local office in the more successful markets.

7. Would the energy from the community solar facilities be integrated into a utility's existing grid?

Yes. The Bill requires that the IOUs accept all of the power generated by CSFs in their service area into their existing Distribution systems. It also would provide that the IOUs purchase any "unsubscribed" energy from a CSF in its service area at its "avoided energy cost" rate filed annually with, and approved by, the PRC. That provision is intended to ensure that community solar facilities will not adversely affect the energy costs the IOU recovers from customers that do not subscribe to them.

8. Why are utilities required to purchase excess unsubscribed energy from a community solar provider? Isn't that a big burden on utilities and their ratepayers?

Every unit of energy produced by a community solar facility feeds into the electric grid, meeting nearby consumer demands, in the same way any generation source that is located on the distribution system would. Every unit of energy from a community solar facility is therefore a unit of energy that the utility's own generation sources don't have to produce (often decreasing transmission losses and capacity constraints since community solar will be located on the distribution system).

The cost of the energy produced by the subscribed portion of the community solar facility is paid for by the subscriber (which is why they receive a credit from the utility). However, for the unsubscribed portion, the energy is feeding into the grid and being consumed by the utility's customers, and reducing the need for the utility's own generation. The "avoided cost" is the price the utility would have otherwise paid to produce the same power itself or purchase it from another source, which is the fair market-based price.

In Xcel's 2018 Renewable Energy Standard Compliance Report for Colorado, 32 of 40 community solar facilities had over 98% subscribed energy, with only 1 facility having less than 89% of its energy fully subscribed.

9. Are there any benefits to utilities (and their ratepayers) from community solar?

Yes. There are well-documented benefits that distribution-level generation can provide. Some of those benefits, documented in a 2007 FERC report (https://www.ferc.gov/legal/fed-sta/exp-study.pdf), include:

- Increased electric system reliability
- Reduction of peak power requirements
- Improvements in power quality
- Reductions in land-use effects and rights-of-way acquisition costs
- Reduction in vulnerability to cyber-security threats or terrorism and improvements in infrastructure resilience

10. Will community solar burden non-participating ratepayers? What are the protections for them?

Utilities will recover program administration, interconnection, and distribution-level costs associated with community solar projects. In addition, there are well documented monetary benefits from distributed generation, such as reducing transmission constraints, reducing risk by increasing generation diversity across the grid, and delaying the need for investing in near term generation assets.

11. What are current interconnection standards and processes?

New Mexico has an existing interconnection manual that outlines standards and processes for interconnecting distributed solar generation up to 10 MW in size. This interconnection manual would also apply to community solar. The utility interconnection review ensures that distributed solar projects can be "interconnected consistent with safety, reliability, and power quality standards" of the state's interconnection manual.

12. What happens if an investor owned utility (IOU) determines, after receiving an application for interconnection of a community solar facility (CSF), that it cannot safely interconnect a CSF at a proposed point of interconnection on its existing distribution (typically "feeder") lines due to voltage considerations or other technical reasons unless the capacity of its distribution system at that point is upgraded?

In such a case, pursuant to the "New Mexico Interconnection Manual," which is part of PRC Rule 568 governing "Interconnection of Generating Facilities with a Rated Capacity up to and Including 10 MW Connecting to a Utility System," the IOU would not be required to interconnect the CSF to its Distribution System unless the developer/owner of that CSF first agrees to pay the IOU for all costs necessary to complete system upgrades necessary to mitigate the issues.

Because CSF developers will be required to pay system upgrades, CS/HB9 p. 16, lines 9-10, clearly indicates the need to capture "interconnection costs paid by subscriber organizations" as part of the five-year program review and reporting process outlined in Section 7.

Language in CS/HB9, (p. 11, lines 18-22), does prove a backstop for IOUs. Through rulemaking, the Commission will "establish reasonable, uniform, efficient and non-discriminatory standards, fees and processes for the interconnection of community solar facilities that allow a qualifying utility to recover reasonable interconnection costs for each community solar facility". However, it is not expected that the utilities will have to recover significant costs for the interconnection of community solar facilities since those costs are borne by subscriber organizations.

13. Does the current language in HB9 provide customer protections against potential unfair trade practices by developers of community solar facilities?

CS/HB9 (p. 12, lines 15 - 23) would require the PRC to implement rules that establish uniform "subscription forms" in the English and Spanish languages and, when appropriate, "Native or indigenous languages," and subscription requirements "to ensure fair disclosure of future costs and benefits of subscriptions, key contract terms and other relevant but reasonable information pertaining to the subscription". The Bill would also allow the PRC to implement additional customer protection rules applicable to community solar facilities.

Furthermore, the 5-year program evaluation report submitted to the appropriate interim legislative committee "would require consultation with the consumer and environmental protection division of the office of the attorney general" and an assessment of "the adequacy of existing consumer protection measures" (Ref p. 14, lines 17-20).

As the Bill mandates that the PRC adopt such consumer protection rules, the best approach to address the details of those protections via the Commission's rulemaking process with the benefit of input by all interested stakeholders including, for example, the Attorney General's Office and the PRC's Utility Division Staff which are responsible for protecting the interests of residential and small commercial customers of electric utilities, as well as representatives of low-income resident and affordable housing advocates.