Focusing the Sun: State Considerations for Designing Community Solar Policy

Jeffrey J. Cook and Monisha Shah
National Renewable Energy Laboratory

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January 2018

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Executive Summary

Through 2016, community solar programs in 35 states and the District of Columbia had a cumulative total capacity of 275 megawatts (MW) (O'Shaughnessy et al. 2017). To build on the recent momentum around community solar and to facilitate widespread adoption, the National Community Solar Partnership (NCSP) was launched in 2015, led by the U.S. Department of Energy (The White House 2015). The NCSP included four working groups focused on different topics associated with expanding the community solar market, including Community Building, Federal Resources, Finance and Business Models, and State Best Practices.

This report summarizes outcomes from the NCSP State Best Practices working group by identifying key differences in state policies that enable community solar and illustrating how various policy design approaches may impact the market. For the latter question, it is too early to quantify a relationship between policy design and market impacts, because most state programs have not been fully implemented. So, the authors conducted interviews with 19 subject matter experts, including project developers, regulators, and utilities to better understand how various policy design approaches may impact community solar markets. These perspectives, along with those gleaned from the working group and relevant literature were synthesized to identify key considerations for policymakers designing community solar programs.

Though state community solar policies vary in numerous ways, this report focuses on the following critical elements:

- **Program cap** is the overall capacity limit established for a statewide community solar program.
- **Project size cap** is the limitation on individual project size.
- **Subscriber location requirements** identify which subscribers can participate in a community solar project based on where customers are located.
- **Subscriber eligibility requirements** clarify the quantity of subscribers required and how much capacity individual customers can purchase.
- **Low- and moderate-income (LMI) stipulations** establish certain thresholds for lower income customer participation in community solar projects.
- **Subscriber compensation** determines the value that customers are paid for the generation from their subscription in a project.

Table ES-1 displays the variation in policy across these six components and the 18 states that have adopted a community solar policy via legislation or regulation. There is a fair amount of variation across the states in how each component is designed. For example, four states have uncapped community solar programs, while the remaining states have established a cap. In addition, 8 states have adopted certain LMI stipulations, while 11 others have not.

Table ES-1. State Community Solar Policy Variation by Component as of December 2017

State	Program Cap	Project Size Cap	Subscriber Location[a]	Subscriber Eligibility	LMI Stipulations	Subscriber Compensation
California	600 MW	20 MW	Yes	Yes	Yes	Avoided cost of generation
Colorado	Varies by utility	2 MW	Yes	Yes	Yes	Retail rate
Connecticut	6 MW	≤4 MW	No	Yes	Yes	In development
Delaware	Net metering cap applies	2 MW	No	Yes	No	Retail rate
Hawaii	In development	In development	No	In development	No	In development
Illinois	In development	In development	No	In development	Yes	Value-of-solar-energy
Maine	Uncapped	≤660 kW	No	Yes	No	Retail rate
Maryland	200 MW	2 MW	No	Yes	Yes	Retail rate
Massachusetts	1,280 MW[b]	5 MW	Yes	Yes	Yes	Limited retail rate
Minnesota	Uncapped	1 MW	Yes	Yes	No	Value-of-solar-energy
New Hampshire	Net metering cap applies	1 MW	No	No	No	Avoided cost of generation rate (projects >100 kW)
New York	Uncapped	2 MW	No	Yes	No	Value-of-solar-energy
North Carolina	40 MW	5 MW	Yes	Yes	No	Avoided cost of generation
Oregon	Uncapped	3 MW[c]	No	Yes	Yes	Value-of-solar-energy
Rhode Island	30 MW	10 MW	No	Yes	Yes	Retail rate
Vermont	Net metering cap applies	500 kW	No	No	No	Retail rate
Virginia	40 MW	2 MW[d]	No	No	No	In development
Washington	Incentive cap applies	1 MW	No	No	No	In development

[a] Geographic limits listed in the table refer to any additional restrictions outside the requirement that a customer be located within the same electric service territory as the project.

[b] This cap applies to the Solar Massachusetts Renewable Target (SMART) Program overall, excluding the minimum carve-out for small (<25-kW) PV systems of 320 MW. Community solar projects must compete with a variety of other distributed projects under this cap.

[c] Oregon allows colocation of projects up to 3 MW in certain to-be-determined urban areas.

[d] For certain utilities, projects can be larger than 2 MW, provided the excess capacity is not dedicated to the pilot program.

Variation in policy design often reflects policymakers' perspectives on the intended scope of deployment and their definition of what constitutes "community solar." Interviewees suggested that how policymakers address these and other factors when designing community solar programs impact the overall market. Table ES-2, which is based on interviewees' experiences with existing community solar policies, outlines some key questions policymakers may wish to consider when developing or reforming existing community solar policies.

Table ES-2. Community Solar Policy Considerations for Policymakers by Component

Policy Design Component	Key Questions and Considerations
Program Cap	• Should the program be designed to allow the market to determine future deployment or should deployment be capped? • If the program is capped, should legislators or regulators have the authority to set the cap? • If the program is capped, should a process be in place to adjust that cap and inform developers of how much capacity under the cap is available at a given time?
Project Size Cap	• What size project warrants the definition "community solar"? • How does this definition effect the potential for economies of scale and benefits to participants?
Subscriber Location Requirement	• Should geographic distribution of projects be a policy goal? • If so, what geographic and/or locational considerations should be incorporated?
Subscriber Eligibility Requirement	• How many and what type of subscribers are necessary to consider a project "community solar"? • Should an individual customer's subscribed generation be limited, or should there be a minimum subscription size? • If individual customer's subscriptions are limited, how might these limits influence the viability of including anchor tenants?
LMI Stipulations	• Should community solar programs require project developers to increase LMI customer participation? • If so, how should these requirements be implemented?
Subscriber Compensation	• How should generation be compensated? • If a resource valuation method is used, what costs and benefits should be included in the compensation method and how should analysis be carried out? • How should renewable energy certificates be treated?

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1 Introduction

Community solar programs can be designed in several ways (Figure 1), but the ultimate goal is to provide the public more options to participate in solar projects. These programs can be attractive because they allow renters and others with insufficient roof space to participate in the solar market. One of the most common community solar models is off-site shared solar (Feldman et al. 2015), and this approach is the focus of this report. In this model, individuals, businesses, or other entities subscribe to a portion of generation from a solar project that is not located on their home or property.

Figure 1. Four community solar program models

Source: Feldman et al. 2015

To date, 18 states and the District of Columbia have implemented an off-site community solar policy or program, while utilities across many other states have voluntarily adopted their own program (Figure 2).[1] Projects related to these programs added 275 MW of solar across the United States through 2016 (O'Shaughnessy et al. 2017).

[1] The remainder of this report refers to off-site shared solar policy as community solar.

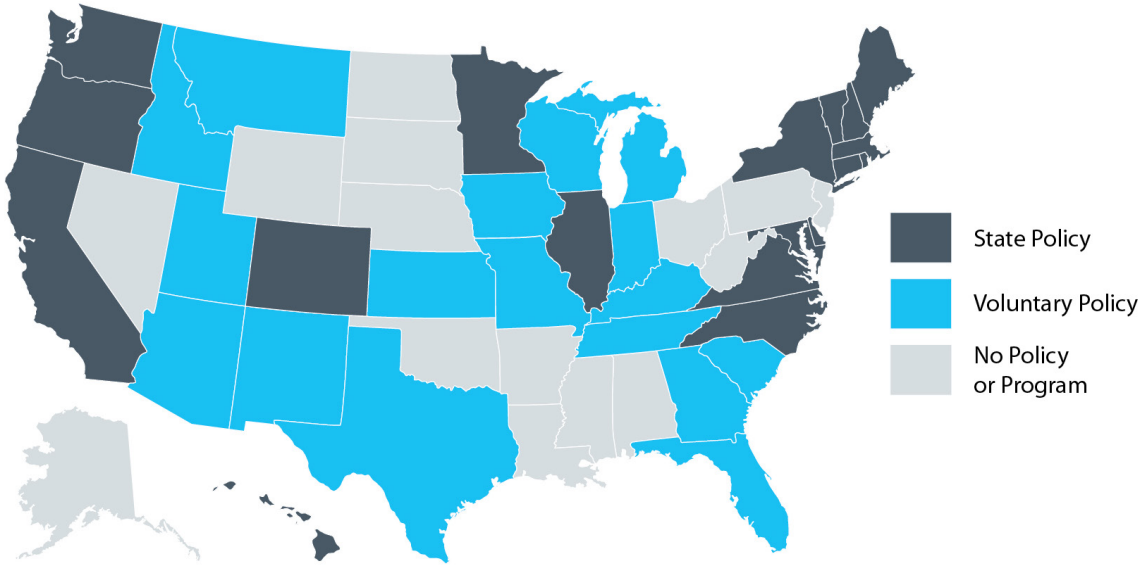

Figure 2. States with community solar policy or utility-driven programs as of December 2017

(Adapted from NC Clean Energy Technology Center 2016)

Idaho Power received approval to develop a pilot community solar program in 2016 (Idaho Public Utilities Commission 2016). Virginia and North Carolina also recently enacted legislation to community solar programs (see the appendix). These states are added to the data collected via the NC Clean Energy Technology Center (2016).

To build on the recent momentum around community solar and to facilitate widespread adoption, the National Community Solar Partnership (NCSP) was launched in 2015 (The White House 2015). The mission of NCSP is to expand solar access to new markets and remove barriers to adoption with an emphasis on underserved households such as those in low- and moderate-income (LMI) communities. The Department of Energy (DOE) led the partnership in collaboration with other federal agencies and a diverse set of stakeholders including solar companies, community leaders, financial institutions, and non-profit organizations.

In 2016, the NCSP held four regional workshops in Atlanta, Boston, Denver, and Minneapolis to discuss success stories and challenges with implementing community solar (DOE n.d. A). The NCSP also established four working groups including the Community Building, Federal Resources, Finance and Business Models, and State Best Practices working groups to focus on key topics to expand the community solar market.

The Community Building working group focuses on understanding existing customer acquisition methods and which ones foster the most participation, especially in LMI communities. The Federal Resources working group was tasked with identifying federal programs and funding opportunities that could be applied toward community solar efforts (DOE n.d. A). This working group identified at least 15 programs, incentives, and initiatives at seven federal agencies that could help support community solar (DOE n.d. B). The objective of the Finance and Business Models working group was to review existing business models that have been successfully applied to finance community solar. The group identified several financing options and supported the development of the Community Solar Business Case Tool (Elevate Energy n.d.). Finally, the State Best Practices working group was charged with examining existing state policies to identify differences and the impact of these differences on community solar markets.

This group was also tasked with evaluating how the design of state policies impact customer participation, including LMI customers, as well as documenting ongoing challenges and best practices associated with policy design (DOE n.d. A).

This report supports the goals of the State Best Practices working group, by documenting existing policy variation across state programs and generating policy considerations for program design. Though community solar policies differ across a variety of metrics, the report focuses on six key components:

- **Program cap** is the overall capacity limit established for a statewide community solar program.
- **Project size cap** is the individual project size limitation.
- **Subscriber location requirements** identify which subscribers can participate in a community solar project based on where the customer is located.
- **Subscriber eligibility requirements** clarify the quantity of subscribers required and how much capacity individual customers can purchase.
- **LMI stipulations** establish certain thresholds for lower income customer participation in community solar projects.
- **Subscriber compensation** determines the value that customers are paid for the generation from their subscription in a project.

The list of primary policy design elements was generated by the authors and then validated through external interviews with subject-matter experts. The authors interviewed 19 individuals with direct involvement in state community solar programs, including project developers, regulators, and utilities.[2] The goal of these interviews was to better understand how various policy design approaches might impact community solar markets.

The interview data were augmented by information from the working group and community solar literature to identify key considerations policymakers may wish to address when designing community solar programs. Overall, this research can serve as both a guide for policymakers actively involved with designing community solar policies and a foundation to develop best practices for community solar policies.

[2] The interviewees remain anonymous in this study, to foster a more candid discussion on the impacts of different policy design approaches on community solar markets.

2 State Policy Variation

Though community solar policies have operated across 35 states and the District of Columbia, this report focuses on the policy variation across the 18 states that have established mandatory community solar programs via regulation or legislation.[3] Massachusetts was the first state to adopt a community solar policy in 2008, while North Carolina and Virginia were the most recent states enacting legislation, in 2017 (Figure 3).[4] Though the general intent of these policies is the same—to enable community solar deployment—they can vary somewhat significantly in their content and scope.

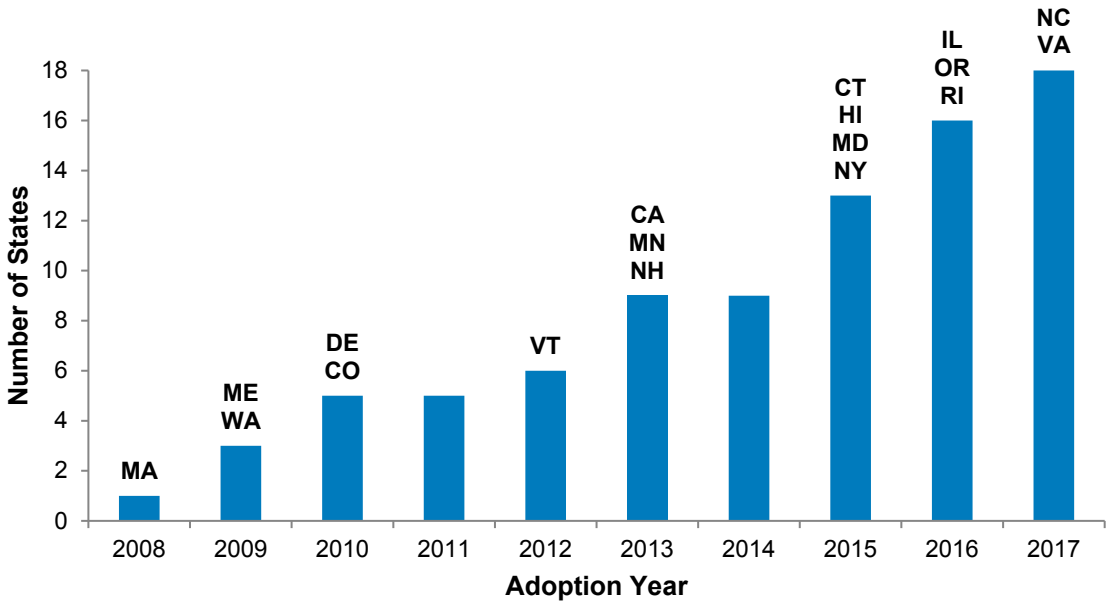

Figure 3. State adoption of community solar by year

Of the states that have adopted mandatory programs, California was the largest community solar market in 2016, followed by Minnesota and Colorado (Table 1). In 2016, many states had few or no community solar projects installed. In most cases, this is because state community solar programs were not yet adopted (Illinois, Rhode Island, Oregon and Virginia) or implemented (Connecticut, Hawaii, and Maryland). As these and other state programs ramp up, it is likely that more community solar projects will be constructed.

[3] The programs in the other states have been voluntarily proposed by individual utilities and are not subject to statewide program design requirements.

[4] The appendix offers a full list of the reference material and adoption year for each of the state's included in this report.

Table 1. Total Community Solar Capacity by State in 2016[a]

State	Enacted Year	Cumulative Capacity (MW)
California	2013	101
Minnesota	2013	50
Colorado	2010	32
Massachusetts	2008	13
Vermont	2012	2
New York	2015	2
Washington	2009	1
Maine	2009	1
North Carolina[b]	2017	0.5
Delaware	2010	0.2
Oregon	2016	0.2
Maryland	2015	0.02
Connecticut	2015	0
Hawaii	2015	0
Illinois	2016	0
New Hampshire	2013	0
Rhode Island	2016	0
Virginia	2017	0

[a] Data are from O'Shaughnessy et al. 2017.

[b] This capacity predates North Carolina's mandatory state policy and is largely related to voluntary electric cooperative programs.

For those states with constructed projects, variations in community solar policies have likely influenced community solar deployment. However, a variety of factors (e.g., voluntary utility-driven programs, state size, and adoption year) influence why some states have more capacity than others. Thus, the intent of this paper is not to draw direct correlations between specific policy design elements and community solar deployment levels in these states. Rather, the focus is on explaining how policy design varies across the states and qualitatively describing the key issues or concepts that policymakers might consider in future policies.

This study discusses six key policy components, including program cap, project size cap, geographic location requirements, subscriber eligibility requirements, LMI stipulations, and subscriber compensation. The study also highlights key questions or issues that policymakers might consider for each component when considering policy design and its potential impacts on the market. Though some states have adopted multiple policies that address community solar, this report focuses on the policy within each state that either has driven the most solar deployment or has the potential to drive the most deployment. Each policy included in this report is referenced in the appendix.

2.1 Program Caps

One primary design consideration for a state community solar program is whether a limit is placed on capacity and how that cap is designed. Current state program capacity caps are documented in Table 2. States can generally take one of three different approaches: (1) a stand-alone cap, (2) a net metering cap, or (3) no capacity cap. With stand-alone capacity caps, once community solar programs meet the cap, utilities cannot add additional capacity unless the cap is increased. Nine states have adopted stand-alone capacity caps, including three states with a pilot program (Connecticut, Maryland, and Virginia). Another three states have nested their community solar programs within a broader net metering program cap for all types of distributed solar.[5] In these cases, utilities may be able to refuse to interconnect additional community solar projects or offer less favorable compensation once the cap is reached. Finally, four states have not capped their programs, thereby requiring obligated utilities to offer programs and interconnect projects in perpetuity (Table 2). Oregon is one of these four states, but it has developed a unique capacity tiers concept whereby regulators can reevaluate and adjust the program after 160 MW of community solar have been deployed.

Table 2. Community Solar Capacity or Program Cap by State as of December 2017

State	Capacity or Program Cap
California	600 MW
Colorado	Varies by utility
Connecticut	6 MW
Delaware	Net metering cap applies
Hawaii	In development
Illinois	In development
Maine	Uncapped
Maryland	200 MW
Massachusetts	1,280 MW[a]
Minnesota	Uncapped
New Hampshire	Net metering cap applies
New York	Uncapped
North Carolina	40 MW
Oregon	Uncapped, but includes capacity tiers
Rhode Island	30 MW
Vermont	Net metering cap applies
Virginia	40 MW
Washington	$110 million incentive cap[b]

[5] For a full accounting of relevant net metering caps and requirements by state, see www.dsireusa.org.

[a] This cap applies to the Solar Massachusetts Renewable Target (SMART) program overall, excluding the minimum carve-out for small <25 kW PV systems of 320 MW. Community solar projects must compete with a variety of other distributed projects under this cap.

[b] Incentive cap applies across multiple solar production incentives, not just community solar

Key Considerations for Program Caps

With respect to program caps, interviewees said that the key decision for policymakers is whether they would like to (1) uncap the program and allow the market to decide the scale of community solar deployment or (2) cap and monitor that deployment.

Uncapped programs allow the market to determine how much community solar may be supported in a state. Though this approach may enable greater market deployment, it can cause implementation issues if growth far exceeds expectations, as was the case in Minnesota (Shaffer 2015). In the first two years of the Minnesota program, there were more than 2,000 MW of proposed community solar projects (Honeyman, Shiao, and Krulewitz 2017). This unexpected influx of projects caused application review challenges as well as interconnection disputes among other issues (Hughlett 2016). Through September 2017, 35 projects totaling 116 MW of capacity had been installed, while 288 projects with a total capacity of 651 MW are in the application phase (Xcel Energy 2017). Though this is a significant improvement from the early years of the program, 80 projects totaling 1,451 MW have been withdrawn since the program launched in 2014 (Xcel Energy 2017). Not all uncapped programs have resulted in similar implementation issues, and interviewees asserted that disagreements regarding project eligibility and regulatory requirements also caused issues for the Minnesota market. Nevertheless, interviewees suggested an uncapped program might be more effective if paired with strong stakeholder engagement, clear expectations regarding regulatory requirements, and targeted interconnection planning and management.

Policymakers may also consider designing pilot programs in lieu of or in tandem with a program cap. Some interviewees suggested this approach is useful because it can give policymakers the opportunity to adjust the program and build on lessons learned. Policymakers can then adjust caps, depending on how the program is operating. If policymakers cap the program, they should also clarify which government entity has the authority to expand those caps, according to interviewees. Interviewees did not have strong preferences on which entity (legislators or regulators) should set and review these caps, but there was some concern that legislative approval would result in additional delays, while regulatory proceedings can lack transparency.

Though these caps may offer benefits to ensure programs are operating smoothly, interviewees noted that this approach can also have drawbacks. Once program caps are approaching, developers may reduce investments associated with expanding the market. The concern is that developers will not be certain that utilities will accept their projects, and relatedly, that financiers would bear that risk. In addition, if regulators or legislators allow caps to be met and then later expand program caps, disruptions in the market can result. As a result, the Coalition for Community Solar Access (CCSA), a trade organization that represents a diverse array of market participants, argues that policymakers should consider the potential impact that program caps may have on investors that favor a stable and predictable policy environment (CCSA 2016). One way to help developers make investment decisions, particularly with an impending cap

is to require utilities to use an interconnection queue with a transparent process that can help developers weigh the risks of pursuing program capacity.

In summary, program caps can influence solar deployment, ease of implementation, and overall market certainty. And, policymakers may wish to consider these issues when developing programs.

2.2 Individual Project Size Cap

State community solar policies also vary in terms of individual project size limitations. In Vermont, which has the lowest project limit, eligible community solar projects may not exceed 500 kilowatts (kW) (Table 3). In comparison, California allows a maximum project size of 20 MW. Within this range, five states have set individual project capacity limits at 2 MW.

Table 3. Individual Project Size Cap by State as of December 2017

State	Project Size Cap
California	20 MW
Colorado	2 MW
Connecticut	≤4 MW
Delaware	2 MW
Hawaii	In development
Illinois	In development
Maine	≤660 kW
Maryland	2 MW
Massachusetts	5 MW
Minnesota	1 MW
New Hampshire	1 MW
New York	2 MW
North Carolina	5 MW
Oregon	3 MW[a]
Rhode Island	10 MW
Vermont	500 kW
Virginia	2 MW[b]
Washington	1 MW

[a] Oregon allows colocation of projects up to 3 MW in certain urban areas that are yet to be determined.

[b] For certain utilities, projects can be larger than 2 MW, provided excess capacity is not dedicated to the pilot program.

Key Considerations for Project Size Caps

Project size limits are one factor that can influence the economics of individual projects, because larger projects may cost less per subscriber than smaller projects as a result of economies of scale. Interviewees noted this issue but argued this economic consideration needs to be balanced

with how policymakers define the "community" aspect of community solar. These interviewees argue that if projects get too big, they lose the community-based "feel" and may resemble utility-scale projects that warrant utility-scale compensation (see Section 2.6 for a broader discussion of compensation issues). Interviewees therefore suggested policymakers need to consider this tradeoff when designing programs.

As Table 3 illustrates, policymakers have balanced these considerations differently, and interviewees suggested this is in part related to existing net metering program design and/or varying perceptions of what size project qualifies as community solar. Interviewees noted that in some cases, project size caps are set by preexisting net metering programs, as is the case in New Hampshire. In other cases, project caps were adopted via statute. Some interviewees suggested that project caps at 2 MW or lower may be a legacy of policymakers' perception that these are large distributed projects. CCSA (2016) argues that project limits could be set as high as 20 MW, as is the case in California, because these projects can achieve economies of scale while still being considered distribution-scale projects (i.e. they are smaller than utility projects).

Even if a 20-MW project is considered a distribution-scale project on the electricity grid, interviewees noted that ensuring projects stayed small was important for some policymakers. Interviewees highlighted three key reasons that smaller projects might be preferable;

1. *Ease of siting smaller projects closer to subscribers*—Larger projects may be more difficult to locate near population centers, and interviewees suggested that siting smaller projects closer to subscribers supports the sense of community ownership or connection to the energy produced
2. *Increasing the geographic distribution of projects*— Smaller project size limits might result in more geographically dispersed systems throughout the state. This can be important to policymakers as a means of more broadly distribute benefits and increase the opportunities for the public to see and learn from community solar.
3. *Enhancing developer competition across the state*—Smaller projects may foster more competition and innovation by allowing small and mid-scale developers to offer customers more product options.

Policymakers may want to consider the objectives they hope to achieve with their community solar program, how those objectives can shape their definition of community solar, and how that definition may impact the economics of projects and overall market deployment.

2.3 Subscriber Location Requirements

In addition to placing project size requirements, each state program restricts the types of customers that can subscribe to a community solar project. One of these limitations is based on a customer's location. All states require customers be located within the same electric utility service territory as the facility, but five states have additional requirements (Table 4). Three states (Colorado, Minnesota, and North Carolina) require subscribers be in the same electric utility service territory and within the same or an adjacent county of the project. The other two states (California and Massachusetts) also impose some limitations, but each is unique. California requires community solar facilities be within a utility service territory and

"reasonably proximate" to subscribers, but legislators did not define this concept.[6] In comparison, Massachusetts limits participation to those within the same electric service territory and load zone (there are three in the state).

Table 4. Subscriber Eligibility for Certain Community Solar Facilities by State and Location as of December 2017

State	Same Electric Utility Service Territory as Facility	Same or Adjacent County as Facility	Additional Requirements
California	✓		✓
Colorado	✓	✓	
Connecticut	✓		
Delaware	✓		
Hawaii	✓		
Illinois	✓		
Maine	✓		
Maryland	✓		
Massachusetts	✓		✓
Minnesota	✓	✓	
New Hampshire	✓		
New York	✓		
North Carolina	✓	✓	
Oregon	✓		
Rhode Island	✓		
Vermont	✓		
Virginia	Unclear[a]		
Washington	✓		

[a] The Virginia legislation is silent on this subject, though it emphasizes geographic diversity.

Key Considerations for Subscriber Location Requirements

Every state has determined that subscribers must reside in the same electric service territory as the project. Interviewees illustrated the importance of this requirement, as utility service territories may cross through municipalities. Allowing a community member to participate in a project located in another utility's service territory can cause significant administrative

[6] The California Public Utilities Commission has since determined that developers must demonstrate that members within 10 miles of the project have either committed to 30% of the projects capacity or reach a 50% subscription rate with at minimum three subscribers for an investor-owned utility to select the project for procurement. Developers are not held to these requirements after the project is selected and subsequently constructed. See D 15-01-051: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M146/K250/146250314.PDF and D 16-05-006 http://docs.cpuc.ca.gov/SearchRes.aspx?DocFormat=ALL&DocID=162142830.

challenges, including billing issues. Thus, this electric service territory requirement serves as a minimum and consistent threshold across the states.

Five states have adopted additional requirements, and interviewees suggested this is caused by differing perspectives on what constitutes "community solar." Interviewees suggested that policymakers have been concerned that if projects are located far from the community, subscribers might lose their sense of ownership or partnership in the community-based project. This may be one reason states such as Colorado require projects be in the same or adjacent county as subscribers. For other states, this consideration may also be important, but the smaller geographic size of other states or their utility service territories may mitigate the need for more specific requirements.

On the other hand, interviewees—typically those with a developer's perspective—emphasized that geographic limits can make finding enough land for projects difficult and thus increase the overall cost of the project, given higher real estate costs.[7] In addition, interconnection may be more challenging, depending on the congestion on transmission lines within or near metropolitan areas. Given these issues, CCSA (2016) maintains that geographic limitations should be established at the electric service provider level to ensure access and provide the most flexibility for developers to efficiently site projects. On the other hand, some interviewees suggested that developers may not have immense difficulty siting solar closer to subscribers, particularly for states that require projects locate in the same or adjacent counties.

Therefore, policymakers may want to define geographic requirements that reflect their concept of community solar, while considering the impact of those limitations on project siting, costs, and overall deployment. One way to help policymakers understand the impact of these decisions and to help developers make project siting decisions within these parameters is to require utilities to publish a capacity-hosting map, as was done in Minnesota. Such maps can help project developers and policymakers see where community solar projects might be feasibly added to the distribution system allowing both to understand how geographic constraints might influence the market.[8]

2.4 Subscriber Eligibility Requirements

To ensure projects are truly shared in nature and the benefits are not funneled to one or two primary customers, 12 states have established minimum subscriber requirements and/or maximum subscription limits for individual subscribers participating in community solar projects (Table 5). Eleven states have adopted minimum subscriber requirements, including four that set the minimum requirement at two subscribers. Ten states have limited the ability of certain large customers to procure majority interests in the output of facilities, including six states that have prohibited participants from subscribing to more than 40% of a project's capacity. Of the six states that do not have subscriber eligibility requirements, two, Hawaii and Illinois, may adopt requirements once their programs are finalized.

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[7] For example, before adopting its adjacent county language, Colorado required projects be located in the same county, which can make siting projects in large metropolitan areas challenging.

[8] Xcel Energy's capacity hosting map in Minnesota can be seen at https://www.xcelenergy.com/working_with_us/how_to_interconnect/hosting_capacity_map_disclaimer.

Table 5. Subscriber Eligibility Requirements by State as of December 2017

State	Minimum Subscriber Requirements	Maximum Subscription
California	No minimum requirement, though some residential customer interest requirements must be met for a utility to select a developer project for procurement	No customer can exceed a 2-MW subscription.
Colorado	Each facility must have at least 10 subscribers.	No more than 40% of a facility's generation can be attributed to one subscriber.
Connecticut	Each facility must have at least two subscribers.	No more than 40% of a facility's generation can be attributed to one subscriber.
Delaware	Each facility must have at least two subscribers.	
Hawaii	Program is under development; subscriber requirements may be established.	
Illinois	Program is under development; subscriber requirements may be established.	
Maine	Each facility may have up to 10 subscribers.	
Maryland	Each facility must have at least two subscribers and utilities may establish minimum 2 kW subscriptions.	Subscriptions larger than 200 kW must not make up more than 60% of a facility's subscriptions.
Massachusetts	Each facility must have at least three subscribers.	No more than 2 participants can receive credits from more than 25 kW of capacity, and the combined share of those subscriptions cannot exceed 50% of project capacity.
Minnesota	Each facility must have at least five subscribers.	No more than 40% of a facility's generation can be attributed to one subscriber.
New Hampshire	New Hampshire has not established subscriber requirements.	
New York	Each facility must have at least 10 subscribers.	No more than 40% of a facility's generation can be subscribed to customers with demand of 25 kW or greater.
North Carolina	Each facility must have at least five subscribers.	No more than 40% of the facility's generation can be subscribed to one customer.
Oregon	50% of individual projects must be subscribed by residential and small commercial customers.	No individual can subscribe to more than 40% of output and subscribers and their affiliates are limited to 4 MW of capacity per utility territory.
Rhode Island	Each facility must have at least two residential, LMI, or educational institution subscribers.	Subscriptions larger than 25 kW cannot exceed 50% of project capacity.
Vermont	Vermont has not established subscriber requirements.	
Virginia	Virginia has not established subscriber requirements.	
Washington	Washington has not established subscriber requirements.	

Key Considerations for Subscriber Eligibility Requirements

According to interviewees, the key challenge for policymakers is balancing their goal of supporting diversity in the types of subscribers participating in a project with the financial and economic concerns of developers. Policymakers may want to ensure a variety of community members, including residential, commercial, and governmental customers participate in a project, while project developers may be interested in pursuing a few large customers to reduce customer acquisition and financing costs. Given these varying objectives, interviewees suggested some subscriber eligibility requirements may be necessary.

Absent these requirements, interviewees noted that it is more cost-effective to pursue a few large commercial customers rather than a larger number of residential customers. At the same time, commercial customers are considered less likely to default on their contract obligations, so financiers are more likely to invest in these projects under favorable terms. These dynamics then incentivize developers to pursue commercial customers absent policy constraints. For example, previous iterations of Minnesota's program did not fully address subscriber eligibility requirements, and residential customers account for about 12% of community solar capacity as compared to 88% for commercial customers (Xcel Energy 2017). According to some interviewees, establishing individual subscription caps to avoid a situation where large commercial customers dominate community solar programs is a good practice.

Nevertheless, interviewees said policymakers need to think about how they set these maximum subscription thresholds. This is because of the aforementioned customer acquisition and financing benefits that commercial customers can offer developers, as anchor tenants. Interviewees said this can be important to ensure developers pursue projects and can lower the cost to all subscribers. Thus, policymakers may want to consider minimum subscriber and maximum subscription requirements to ensure resulting projects reflect their perception of community solar. At the same time, policymakers should consider the potential impact of these requirements on project costs.

2.5 LMI Stipulations

Eight states have additional stipulations to prioritize or encourage the inclusion of LMI subscribers in community solar programs (Figure 4). Four states have enacted an LMI target for either individual projects or overall programs. Colorado originally required that each project include 5% LMI subscribers. Regulators have since approved a new portfolio-based approach that more closely aligns with approaches in Connecticut and Maryland. Connecticut established a 20% carve-out of annual generation, and Maryland has set aside 30% of its program (60 MW of the 200-MW pilot program). In comparison, Oregon takes a hybrid approach whereby it requires 5% of each project be allocated to LMI customers, and an additional 5% of the total program must serve LMI customers, for a total minimum generation carve-out of 10%.

California, Illinois, Massachusetts, and Rhode Island have taken different approaches to promote low income-related priorities. Massachusetts offers an additional one cent per kilowatt-hour adder for projects that incorporate at least 50% low-income customers in a community solar project. In comparison, Rhode Island's policy explicitly allows LMI housing providers, such as a public housing authority to participate in community solar projects. If a housing provider is a subscriber to the project, the developer does not need to comply with other minimum

subscription requirements, including the requirement that at least 50% of the system be allocated in subscriptions no larger than 25 kW. Finally, California's and Illinois' policies are somewhat similar. California requires that 100 MW of the 600-MW program be located in "disadvantaged communities" but does not require the participation of LMI subscribers. And, the Illinois program, though not yet fully developed, will include incentives to locate community solar projects in disadvantaged communities designated as "environmental justice communities." This program will also include a more comprehensive programmatic approach to drive LMI participation and will include funding for outreach to eligible customers.[9]

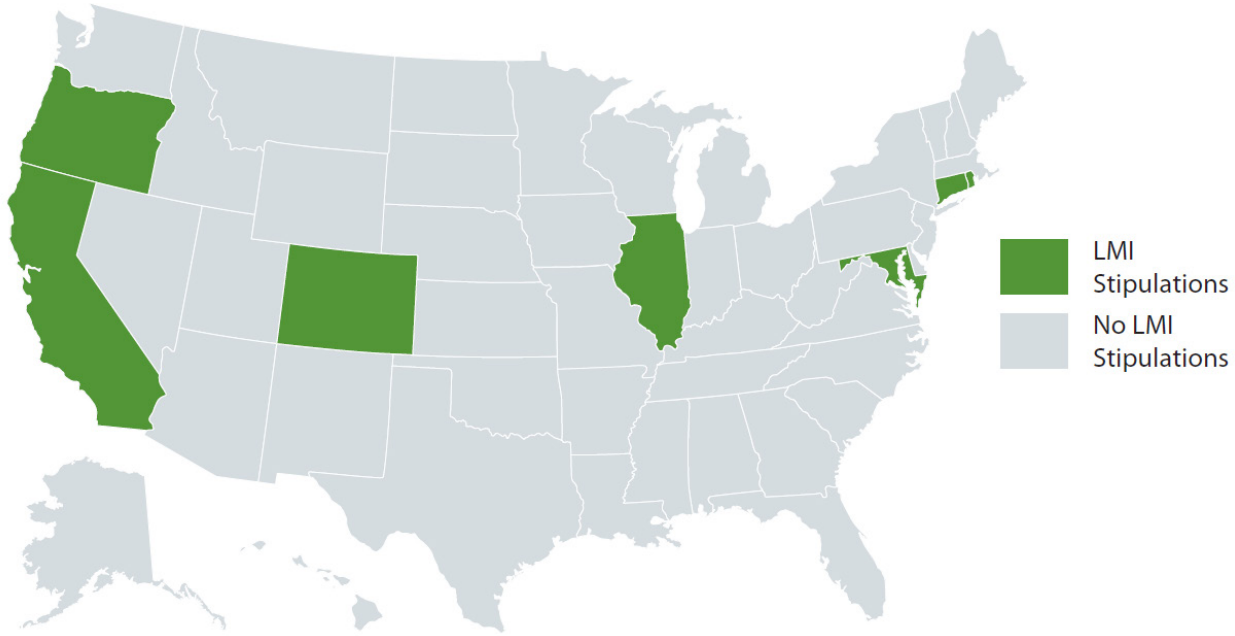

Figure 4. States with LMI stipulations (in green) as of December 2017

Key Considerations for LMI Stipulations

One cited benefit of community solar is that it can address some of the barriers LMI customers face when trying to access renewable generation (Garren et al. 2016). As a result, policymakers have been considering whether they want to prioritize LMI participation in community solar programs and if they do, how those priorities should be achieved.

Many interviewees were generally supportive of incorporating LMI stipulations in community solar programs including CCSA (2016), but some noted that implementation is challenging. To begin with, many LMI customers may not have the resources to pay upfront costs of community solar subscriptions. This is problematic, given 73% of customer offers for community solar

[9] Hawaii, New York, and Virginia are not included in this section or in Figure 4. Interviewees suggested Hawaii may include a LMI component in their policy once it not been finalized. Until May 1, 2016, Phase 1 of New York's program required projects either (1) locate in utility-designated community distributed generation opportunity zones or (2) provide at least 20% of the project's generation to LMI customers. Phase 2 began May 1, 2016, and these requirements were then lifted (NYPSC 2015). Finally, Virginia's legislation requires utilities to examine options to facilitate LMI customer participation and consult with relevant governmental and nongovernmental interests on how to maximize participation. However, it does not "condition" approval of the program on LMI participation.

projects in 2015 required an upfront payment (Chwastyk and Sterling n.d.). For LMI customers to be interested in community solar, a developer may need to demonstrate tangible benefits to participation from the outset (Cook and Bird 2017). As a result, policymakers may need to consider pathways to incentivize or encourage LMI participation. For example, Rhode Island has offered additional incentives that developers can pass through to LMI customers (Rhode Island Commerce Corporation 2017).

Further, many solar developers may not have either working experience or established relationships with low-income communities that would assist with marketing and successfully subscribing LMI customers that might be wary of new businesses or unfamiliar products. Even if a developer offers an attractive product to LMI residents, the developer may still struggle to acquire those customers, given distrust of new business models that offer lower-cost electricity (Lotus Engineering and Sustainability LLC 2015). One approach to addressing this issue is to incorporate LMI facilitators, or third-party community groups that can serve as trusted bridges between developers and LMI customers as is done in Oregon's program. Another approach to reducing customer acquisition challenges is to allow housing authorities that serve low-income residents to participate as is allowed in Connecticut, Maryland, and Rhode Island. However, interviewees stressed it is important that policymakers set up clear guidance for ensuring housing authorities pass on the benefits of community solar projects (either indirectly or directly) to their LMI residents.[10]

Finally, some interviewees and CCSA (2016) recommended states develop a broader strategy for addressing LMI solar access and energy burden issues outside just LMI targets in community solar programs. States could integrate community solar into a comprehensive low-income energy program that maximizes benefits to LMI customers by coupling solar with weatherization or other program opportunities.[11] In summary, state policymakers might wish to foster LMI customer participation in community solar programs, but this may require additional policy support to ensure effective implementation.

2.6 Subscriber Compensation

Though there are several business models for community solar (e.g. utility-sponsored, third-party sponsored, and non-profit oriented), in each case, subscribers to the project purchase or lease shares of a community solar system from either the utility or the third-party (Coughlin et al. 2010). The subscriber is then "compensated" for their share of the system, typically through a credit on their electric utility bill. These bill credits are determined by the cost of the PV project, and any state and federal incentives for PV are subtracted. Thus, bill credits will vary across projects, because of variation in installation costs and efforts to monetize incentives (Coughlin et al. 2010). In addition, these bill credits are also influenced by state policy. Ultimately, a variety of policy decisions will influence bill credits, but two important factors

[10] In the case of Rhode Island, a guidance document demonstrates compliance with this requirement (Rhode Island Housing 2016).
[11] Colorado's LMI community solar demonstration projects offer one example of this type of approach (Phelan 2015).

are the method for valuing generation and the treatment of renewable energy certificates (RECs).[12]

Most states have opted for an embedded-cost based approach to value generation in which the value of a project is integrated into a utility's electric rate design (see Table 6). The full retail rate that customers pay typically includes three components: generation, transmission, and distribution (IREC 2013). In some community solar policies (e.g., Maryland's), the subscriber receives the full retail rate for offset generation in the community solar project for all three cost components. In other cases (e.g., Colorado), transmission and distribution charges are not offset in the compensation structure.

In comparison, four states (Illinois, Minnesota, New York, and Oregon) have adopted or are in the process of adopting a value of solar energy methodology for compensation. This approach is different from the embedded cost approach, because project compensation is determined by quantifying the value a specific project offers to the utility and its ratepayers. These methodologies incorporate the value of the system's generation to the utility, while also assessing the project's electricity grid impacts, including avoided infrastructure upgrades and environmental benefits (Taylor et al. 2015). Then, each subscriber is offered a bill credit irrespective of their existing utility rate structure.

One state, California, has adopted a third, green tariff-based approach. In this structure, customers sign a long-term agreement for participation in a community solar project for up to 100% of their electricity needs.[13] The program is intended to ensure no costs or benefits are passed to other nonparticipating ratepayers. In practice, the customer pays a fixed rate for electricity over the life of the contract, which can provide a hedge value over future utility rates. This structure can also factor in environmental benefits, as is done in the value of solar energy approach, but this is not done in California's program.

How RECs are treated across community solar policies can also play a significant role in subscriber compensation. Most notably, RECs are used to demonstrate compliance with state renewable portfolio standards (RPSs). The market value of RECs varies, but in some contexts, selling RECs to utilities or otherwise monetizing them can allow project developers to offer more competitive community solar rates to potential subscribers (Chwastyk and Sterling n.d.). In some state policies (e.g., California), RECs are retained by customers and not monetized by developers . In other cases, RECs are owned by the developer, or ownership is not specified (Table 6).

[12] A REC is a "market-based instrument that represents the property rights to the environmental, social and other non-power attributes of renewable electricity generation" (EPA 2016).
[13] Once fully implemented, it is possible that North Carolina's program will take a similar shape to that of California.

Table 6. Compensation Structures by State[a]

State	Bill Credit/Compensation Structure	REC Treatment
California	Credit determined by green tariff contract. Subscriber usage is billed at facilities price, and a subscriber's generation is compensated at the avoided cost rate along with other credits/costs.	Customer retains ownership of REC value of $10/MWh.
Colorado	Bill credit is based on total aggregated retail rate excluding transmission and distribution charges.	RECs are used for utility RPS compliance.
Connecticut	Under development	
Delaware	Bill credit is based on full retail rate if subscribers are located on the same feeder; otherwise, a supply service charge is subtracted from the credit.	Customer owns RECs, unless customer relinquishes control via contract.
Hawaii	Under development	
Illinois	Under development, but will be based on value-of-solar-energy methodology	
Maine	Bill credit is based on full retail rate and does not include non-usage charges.	REC treatment is not specified.
Maryland	Bill credit is based on full retail rate.	Developer owns RECs.
Massachusetts	Bill credit is based on market net metering credit, where generation receives about 60% of previous net metering credit.	Developer owns RECs.
Minnesota	Bill credit is based on applicable retail rate, though value-of-solar-energy methodology will be adopted for new facilities starting in 2018.	RECs can be owned by the customer, or more commonly, they can be sold to the utility for RPS compliance.
New Hampshire	For projects greater than 100 kW, bill credit is based on utilities default service rate.	RECs can be sold to utility for RPS compliance.
New York	Bill credit is based on full retail rate, though a value-of-solar-energy methodology is under development.	REC treatment is not specified.
North Carolina	Bill credit is based on avoided cost rate of utility.	Customer must have option to own RECs.
Oregon	Under development, but will be based on value-of-solar-energy methodology	RECs are owned by facility owner and subscribers.
Rhode Island	Bill credit is based on the net difference between standard utility service and renewable generation excluding transmission and distribution charges among others.	REC treatment is not specified.
Vermont	Bill credit is based on customer's full retail rate.	RECs can be owned by the customer, or more commonly, they can be sold to the utility for RPS compliance.
Virginia	Under development	
Washington	Under development	

[a] The table was adapted from IREC (2016b), and the information in it was cross-referenced with Stanton and Kline (2016).

Key Considerations for Subscriber Compensation Structures

Interviewees said policymaker decisions on valuing generation and REC treatment can significantly impact project economics. This is important, because two Smart Electric Power Alliance (SEPA) surveys show lower-cost energy is the main reason customers sign up for community solar (Chwastyk and Sterling n.d.; Shelton Group and SEPA n.d.). Therefore, policymakers may wish to consider how their compensation decisions are likely to influence subscription costs, as this may influence overall market demand. At the same time, policymakers may also be concerned about the impacts on nonparticipating ratepayers. Simply put, policymakers may want to ensure that customer decisions to participate in community solar projects do not negatively impact other customers.

Policymakers can address these issues through the compensation methodology they incorporate into their programs. Recall, four states have recently adopted a value of solar energy approach to quantifying the costs and benefits of generation to the utility and all ratepayers. The key difference between this and the embedded cost approach is the assessment of the projects value to the utility and all ratepayers (not just subscribers). Interviewees suggested that this can be a valuable approach to establishing a fair compensation rate that accounts for nonparticipant interests. However, the approach is just emerging, and interviewees said that an effective valuation methodology needs to clarify which costs and benefits to include and how to quantify them. Moreover, the inputs and results of the calculation should be transparent.

Interviewees also stressed the importance of clarifying REC treatment for projects, because doing so can significantly impact subscriber compensation and product marketing. Allowing developers to monetize RECs can reduce the cost of subscriptions and increase consumer interest. This approach may be preferable for policymakers interested in supporting a more robust community solar market. At the same time, allowing customers to retain the RECs offers consumers the opportunity to decide whether they would like to retire those RECs on their own behalf or sell them. The interviews did not generate a consensus on how RECs should be treated in state policies, just that policymakers should explain how they are treated. As a result, policymakers may want to consider how REC treatment along with their overall compensation methodology impact both consumers' and nonparticipants' interest in community solar projects.

3 Summary of Policy Variation and Key Questions for Policy Design

Overall, there is significant variation in policy design across the states (Table 7, next page). This variation largely reflects policymaker perspectives on the intended scope of community solar deployment and their definition of what constitutes "community solar." Interviewees noted that policymaker decisions across these policy elements, among other factors, are likely to influence community solar deployment in their states. For example, policymakers interested in supporting a robust community solar market might design an uncapped program with favorable compensation structures for subscribers.

Nevertheless, various factors influence the overall performance of any community solar program, including policymakers' decisions regarding project size caps, and subscriber eligibility requirements. To help policymakers think through some of the issues, Table 8 (next page) summarizes the key questions policymakers might consider for each of the design components. To be clear, these questions are not exhaustive; rather, they represent some of the key themes that interviewees suggested policymakers consider in their community solar programs. Thus, this information can serve as a starting point for a broader policy design process.

Table 7. State Community Solar Policy Variation by Component

State	Program Cap	Project Size Cap	Subscriber Location[a]	Subscriber Eligibility	LMI Stipulations	Subscriber Compensation
California	600 MW	20 MW	Yes	Yes	Yes	Avoided cost of generation
Colorado	Varies by utility	2 MW	Yes	Yes	Yes	Retail rate
Connecticut	6 MW	≤4 MW	No	Yes	Yes	In development
Delaware	Net metering cap applies	2 MW	No	Yes	No	Retail rate
Hawaii	In development	In development	No	In development	No	In development
Illinois	In development	In development	No	In development	Yes	Value-of-solar-energy
Maine	Uncapped	≤660 kW	No	Yes	No	Retail rate
Maryland	200 MW	2 MW	No	Yes	Yes	Retail rate
Massachusetts	1,280 MW[b]	5 MW	Yes	Yes	Yes	Limited retail rate
Minnesota	Uncapped	1 MW	Yes	Yes	No	Value-of-solar-energy
New Hampshire	Net metering cap applies	1 MW	No	No	No	Avoided cost of generation rate (projects >100 kW)
New York	Uncapped	2 MW	No	Yes	No	Value-of-solar-energy
North Carolina	40 MW	5 MW	Yes	Yes	No	Avoided cost of generation
Oregon	Uncapped	3 MW[c]	No	Yes	Yes	Value-of-solar-energy
Rhode Island	30 MW	10 MW	No	Yes	Yes	Retail rate
Vermont	Net metering cap applies	500 kW	No	No	No	Retail rate
Virginia	40 MW	2 MWd	No	No	No	In development
Washington	Incentive cap applies	1 MW	No	No	No	In development

[a] Geographic limits in the table refer to any additional restrictions outside the requirement that a customer be located within the same electric service territory as the project.

[b] This cap applies to the Solar Massachusetts Renewable Target (SMART) Program overall, excluding the minimum carve-out for small <25 kW PV systems of 320 MW. Community solar projects must compete with a variety of other distributed projects under this cap.

[c] Oregon allows colocation of projects up to 3 MW in certain urban areas that are yet to be determined.

[d] For certain utilities, projects can be larger than 2 MW, provided excess capacity is not dedicated to the pilot program.

Table 8. Community Solar Policy Considerations for Policymakers by Component

Policy Design Component	Key Questions and Considerations
Program cap	• Should the program be designed to allow the market to determine future deployment? Or, should deployment be capped? • If the program is capped, should legislators or regulators have the authority to set the cap? • If the program is capped, should a process be in place to adjust the cap and inform developers of how much capacity under the cap is available at a given time?
Project size cap	• What size project warrants the definition of "community solar"? • How does the definition effect the potential for economies of scale and benefits to participants?
Subscriber location requirement	• Should geographic diversity of projects be a policy goal? • If so, what geographic or locational considerations should be incorporated?
Subscriber eligibility requirement	• How many and what type of subscribers are needed for a project to be considered "community solar"? • Should an individual customer's subscribed generation be limited, or should there be a minimum subscription size? • If individual customer's subscriptions are limited, how might these limits influence the viability of including anchor tenants?
LMI stipulations	• Should community solar programs require project developers to increase LMI customer participation? • If so, how should these requirements be implemented?
Subscriber compensation	• How should generation be compensated? • If a resource valuation method is used, what costs and benefits should be included in the compensation methodology and how should analysis be carried out? • How should RECs be treated?

4 Conclusion

In line with the goals of the State Best Practices working group of the National Community Solar Partnership (NCSP), this study (1) documents policy variation across the states and (2) provides qualitative perspectives of the impacts of policy decisions on community solar markets. Ultimately, there is significant policy variation across the states and interviewees suggested these policy decisions influence overall markets. Therefore, this work provides policymakers with some key questions they can ask about different policy elements to make more informed decisions regarding community solar. To build on this foundation, future work could attempt to more directly correlate policy design with the resulting levels of community solar deployment. Such analysis could help policymakers more effectively design policies that achieve their goals, while also generating policy best practices that support community solar deployment across the country.

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Appendix: Community Solar Enabling Legislation and/or Regulation by State

Table A-1. Relevant Community Solar Policies and Reference Material by State

State	Year	Policy or Program Name	Enabling Authority	Related Policy or Regulation
California	2013	Green Tariff Shared Renewables Program—Enhanced Community Renewables Option	Senate Bill 43 Electricity: Green Tariff Shared Renewables Program	Docket Application of San Diego Gas & Electric Company (U902E) for Authority to Implement Optional Pilot Program to Increase Customer Access to Solar Generated Electricity. 15-01-051
Reference Links SB 43: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB43 Docket: 15-01-051: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M146/K250/146250314.PDF.				
Colorado	2010	Community Solar Gardens (Xcel Energy)	House Bill 10-1342 Community Solar Gardens Act	House Bill 15-1284 Concerning Measures to Enhance Program Efficiency… Public Service Company of Colorado Renewable Energy Compliance Plan Proceeding Number 16A-0139E C.R.S. 40-2-127
Reference Links HB 10-1342: http://www.leg.state.co.us/clics/clics2010a/csl.nsf/fsbillcont/490C49EE6BEA3295872576A80026BC4B?Open&file=1342_01.pdf. HB 15-1284: http://www.leg.state.co.us/clics/clics2015a/csl.nsf/fsbillcont3/76F3BB1F2F8DA5A987257DFF00691ACE?Open&file=1284_enr.pdf. Docket 16A-0139E: https://www.dora.state.co.us/pls/efi/EFI.Mark_Show_Filing?p_key=A_14645&p_fil=G_678020. C.R.S. 40-2-127: http://codes.findlaw.com/co/title-40-utilities/co-rev-st-sect-40-2-127.html.				
Connecticut	2015	Shared Clean Energy Facility Pilot Program	Senate Bill 928 Establishing a Shared Clean Energy Facility Pilot Program	Department of Energy and Environmental Protection Draft Request for Proposals.
Reference Links SB 928: https://www.cga.ct.gov/2015/ACT/pa/pdf/2015PA-00113-R00SB-00928-PA.pdf. RFP: http://www.dpuc.state.ct.us/DEEPEnergy.nsf/c6c6d525f7cdd1168525797d0047c5bf/7ce949985681845e85257fb9006981be/$FILE/2016.06.09_FINAL%20Updated%20Draft%2015-113%20RFP.pdf.				

State	Year	Policy or Program Name	Enabling Authority	Related Policy or Regulation
Delaware	2010	Virtual (Community) Net Metering	Delaware Public Service Commission Order No. 7946	Delaware Public Service Commission 3001 Rules for Certification and Regulation of Electric Suppliers
Reference Links Order No. 7946: http://depsc.delaware.gov/wp-content/uploads/sites/54/2017/03/7946.pdf. DE PSC 3001 Rule: http://regulations.delaware.gov/AdminCode/title26/3000/3001.shtml#TopOfPage.				
Hawaii	2015	Community-based Renewable Energy	Hawaii Senate Bill 1050 Community-based renewable energy tariffs.	Hawaii Public Utilities Commission Docket No: 2015-0389 Application for approval to establish a rule to implement a community-based renewable energy program, and other related matters.
Reference Links SB 1050: http://www.capitol.hawaii.gov/session2015/bills/SB1050_CD1_.pdf. Docket No 2015-0389: http://dms.puc.hawaii.gov/dms/DocketSearch.				
Illinois	2016	Solar For All Program	Illinois Senate Bill 2814 Concerning regulation.	
Reference Links SB 2814: http://www.ilga.gov/legislation/publicacts/99/PDF/099-0906.pdf. Illinois Power Agency. 2017. *Long-term Renewable Resources Procurement Plan Draft Plan for Public Comment September 29, 2017.* https://www.illinois.gov/sites/ipa/Documents/2018ProcurementPlan/IPA-Long-Term-Renewable-Resources-Procurement-Plan-for-public-comment.pdf.				
Maine	2009	Virtual (Community) Net Metering	Maine House Bill 272 Net Energy Billing Rule to Allow Shared Ownership	Maine Public Utilities Commission Chapter 313: Customer Net Energy Billing
Reference Links HB 272: http://www.mainelegislature.org/legis/bills/bills_124th/billpdfs/HP027201.pdf. ME PUC Chapter 313: http://www.maine.gov/sos/cec/rules/65/407/407c313.doc.				
Maryland	2015	Community Solar Energy Generating Systems (CSEGS) Pilot Program	Maryland House Bill 1087 Electricity—Community Solar Energy Generating System Program	Title 20 Public Service Commission Subtitle 62 Community Solar Energy Generation Systems
Reference Links HB 1087: http://mgaleg.maryland.gov/2015RS/bills/hb/hb1087E.pdf. Title 20: https://www.neighborhoodsun.solar/uploads/6/9/5/1/69514429/maryland_community_solar_regs.pdf.				

State	Year	Policy or Program Name	Enabling Authority	Related Policy or Regulation
Massachusetts	2008; 2017	Solar Massachusetts renewable target (SMART) program	225 CMR 20.00 Solar Massachusetts Renewable Target (SMART) Program.	Massachusetts Senate Bill 2768 Relating to Green Communities (Neighborhood Net Metering)
Reference Links SMART: https://www.mass.gov/files/documents/2017/10/16/225cmr20.pdf. SB 2768: https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter169.				
Minnesota	2013	Community Solar Gardens (Xcel Energy)	Minnesota House Bill HF 729 Relating to State Government	2017 Minnesota Statutes 216B.1641 Community Solar Gardens Minnesota Public Utilities Commission Docket No 13-867
Reference Links HF 729: https://www.revisor.mn.gov/bills/text.php?number=HF0729&session=ls88&session_year=2014&session_number=0&version=latest. 216B.1641: https://www.revisor.mn.gov/statutes/?id=216b.1641. Docket No 13-867: https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showeDocketsSearch.				
New Hampshire	2013	Virtual (Group) Net Metering	New Hampshire Senate Bill 98 Authorizing group net metering for limited electrical energy producers	
Reference Links SB 98: http://www.gencourt.state.nh.us/legislation/2013/SB0098.pdf.				
New York	2015	Community Distributed Generation	New York Public Service Commission Case 15-E-0082 Order Establishing a Community Distributed Generation Program…	New York Public Service Commission Case 14-M-0101 Order Establishing the Benefit Cost Analysis Framework
Reference Links Case 15-E-0082: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B76520435-25ED-4B84-8477-6433CE88DA86%7D. Case 14-M-0101: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7bF8C835E1-EDB5-47FF-BD78-73EB5B3B177A%7d.				
North Carolina	2017	Community Solar	North Carolina House Bill 589. An act to reform North Carolinas…	
Reference Links HB 589: https://www.ncleg.net/Sessions/2017/Bills/House/PDF/H589v6.pdf.				

State	Year	Policy or Program Name	Enabling Authority	Related Policy or Regulation
Oregon	2016	Community Solar	Oregon Senate Bill 1547 Relating to public utilities…	Oregon Public Utility Commission Order No. 17 232. In the Matter of Rules Regarding Community Solar Projects. Oregon UM 1746—Community Solar Program Design Recommendation (HB 2941, Section 3)
Reference Links SB 1547: https://olis.leg.state.or.us/liz/2016R1/Downloads/MeasureDocument/SB1547/Enrolled. Order No 17 232: http://apps.puc.state.or.us/orders/2017ords/17-232.pdf. UM 1746: http://www.puc.state.or.us/meetings/pmemos/2015/101615/reg1_attachment2.pdf.				
Rhode Island	2016	Virtual (Community) Net Metering	Rhode Island Senate Bill 2450 Substitute B. Relating to Public Utilities and Carriers—Renewable Energy Rhode Island House Bill 8354 Relating to Public Utilities and Carriers—Renewable Energy Programs	Rhode Island Docket 4589-A; 4589-B
Reference Links SB 2450: http://webserver.rilin.state.ri.us/BillText16/SenateText16/S2450B.pdf. HB 8354: http://webserver.rilin.state.ri.us/BillText16/HouseText16/H8354A.pdf. Docket 4589-A/4589-B: http://www.ripuc.org/eventsactions/docket/4589page.html.				
Vermont	2012	Virtual (Group) Net Metering	Vermont House Bill 475 Relating to net metering and definitions of capacity	
Reference Links HB 475: http://www.leg.state.vt.us/docs/2012/Acts/ACT125.pdf.				
Virginia	2017	Community Solar Pilot	Virginia Senate Bill 1393 Relating to electric utility regulation; pilot programs for community solar development	
Reference Links SB 1393: https://lis.virginia.gov/cgi-bin/legp604.exe?171+ful+CHAP0580+pdf.				

State	Year	Policy or Program Name	Enabling Authority	Related Policy or Regulation
Washington	2009; 2017	Community Solar (Production Incentive)	Washington Senate Bill 5939 Relating to promoting a sustainable, local renewable energy industry…	Washington Senate Bill 6170 Relating to environmental tax incentives… Washington RCW Section 82.16.110 Renewable energy system cost recovery

Reference Links
SB 5939: http://lawfilesext.leg.wa.gov/biennium/2017-18/Pdf/Bills/Senate%20Passed%20Legislature/5939-S.PL.pdf.
SB 6170: http://lawfilesext.leg.wa.gov/biennium/2009-10/Pdf/Bills/Session%20Laws/Senate/6170-S.SL.pdf?cite=2009%20c%20469%20%C2%A7%20504;.
RCW Section 82.16.110: http://apps.leg.wa.gov/rcw/default.aspx?cite=82.16.110.