

# States and Community Energy Strategies

By Jeffrey Domanski and Michael Rauch

*Community Solar and Community Choice Aggregation, or CCA, are two relatively new, increasingly pursued, and still evolving strategies helping to transform the U.S. electricity system. These approaches put local governments at the center of energy purchase and development decision-making efforts. States should pay attention to these two potentially overlapping approaches as they can address a number of energy-related challenges. Their effectiveness depends on the form they take, including whether they are enabled by state legislation. This article describes these programs and recommends support for strategic energy planning to gain a full awareness of challenges and opportunities.*

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## Introduction

The way electricity is produced, transmitted, distributed and purchased by consumers in the United States is undergoing a radical change. The U.S. electricity system is dominantly reliant on centralized power generation with long-distance transmission to local distribution systems delivering energy to end-users. The American Society of Civil Engineers, or ASCE's, 2017 Infrastructure Report Card notes that most of the transmission and distribution lines are more than 50 years old, and beyond their life expectancy and ability to meet today's electricity demand. Many parts of the system are highly vulnerable to weather event disruptions as we have seen, and not able to handle introduction of new production capacity, including from renewable sources such as wind and solar. ASCE's report indicates that \$934 billion is needed over the next 10 years to improve this system.<sup>1</sup>

A significant driver of the radical change underway is interest in addressing the poor state of the grid and to use the required investment to move away from the inefficient, inadequate, centralized system to one which utilizes widely Distributed Energy Resources, or DER, that produce power closer to the end-users. Deployment of DER requires increased decision-making and investment at the local level and can yield a number of benefits. It can increase system resilience, reliability and renewable energy capacity, and it can be an opportunity to foster local economic development and address related policy challenges, such as addressing inequality in low and medium income communities.

Two prominent DER strategies being used and pursued in various states are Community Solar and Community Choice Aggregation, or CCA. While

both have been pursued for more than 10 years, interest and efforts have significantly increased across the U.S. in the last few years, and efforts are anticipated to grow. Both strategies can take many forms and their design is influenced by state and local conditions. They can be independently pursued, but they can also be overlapping efforts.

While these policies are implemented at the sub-state level, e.g., either by a municipality or a consortium of municipalities and/or counties, they are often enabled and influenced by state-level activities, including legislation and regulation. In addition, they can contribute to state goals and mandates, including Renewable Portfolio Standards. With intent to provide policymakers at state and local levels, program leaders and other actors in local communities with information to guide decision-making, this article defines these strategies, provides descriptions of the various forms they can take based on efforts to-date and highlights associated opportunities and challenges.

## Community Solar

Most solar projects to-date are either small-scale projects with a single retail customer, or utility-scale projects which sell electricity directly to the utility (e.g., a power purchase agreement, or PPA). A Community Solar project, by contrast, is a large-scale installation of a solar photovoltaic or other electricity-generating system which produces electricity for multiple customers and/or owners. Community Solar programs are also known as Shared Solar, Community Solar Farms and Solar Gardens.

Community Solar significantly increases access to solar power. Approximately 85 percent of U.S. residents can neither own nor lease a solar system because of physical restrictions (e.g., roof orien-

tation, tree-shading), because they live in multi-family housing, or because they do not own their home. Community Solar offers communities a path to achieve economies of scale and optimal siting conditions that can bring down the cost of solar. Further, participants in Community Solar do not need to be concerned with the maintenance or the production levels of a system from which they receive power.

There are multiple Community Solar models. Projects have been developed by utility companies (investor-owned, cooperatives and municipal) and private third-party developers, including both for-profit and not-for-profit entities. While a local government need not be involved, they can contribute to a project in important ways, as a project sponsor, providing the project site, participating as power purchaser and/or streamlining the permitting process. In most cases, the project developer remains responsible for operations and maintenance of the system, but this is not always true.

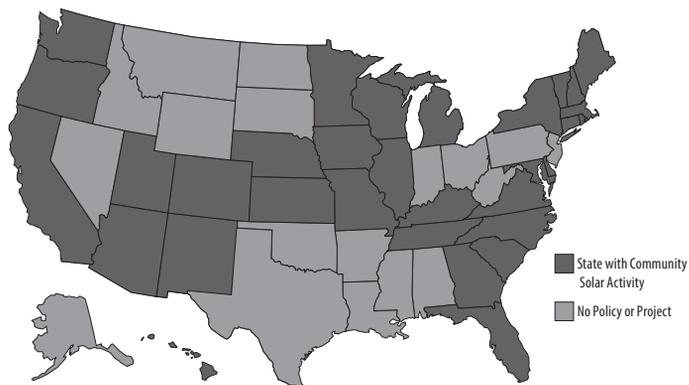
On the consumer-side, a Community Solar project owned by a developer or other single entity can split the electricity produced among multiple “off-takers” in a net-metering credit-based system.<sup>2</sup> In these models, subscribers typically pay for the amount of capacity or output, which can be credited to the customer through their utility bill. In a more direct ownership model, multiple owners pay up-front for their portion of a large, central system as they would for an independent installation on

their house or business. In all models, by definition, enrollment and management of the project subscribers is a critical function not to be overlooked.

As of September 2016, more than 110 Community Solar projects were operational in the U.S., with at least one project in more than half of U.S. states. Though total market share of developed solar is small (approximately 0.3 percent of total capacity), the deployment of Community Solar projects has been growing at more than 10 percent per year since 2012.<sup>3</sup> Figure A shows states with Community Solar activity, including enacted supportive legislation, proposed legislation, utility-involved programs and/or Community Solar projects. The expansion of Community Solar is notable in that it has occurred in many areas not associated with strong solar markets, where other mechanisms have not gained traction (e.g., Montana, North Carolina).

Enabling legislation has helped Community Solar growth, but is not essential. Enabling legislation can take different forms, including policies that support statewide net metering, defining roles within projects (e.g., mandating a state agency as program administrator), and if and how Renewable Energy Credits, or RECs<sup>4</sup> are included within projects. Fourteen states have enabling legislation, including the four states in which the greatest number of projects are located (Colorado, Massachusetts, Minnesota and Washington). However, most states do not have enabling legislation, and

**Figure A: States with Community Solar Activity**



*Note:* Community Solar “Activity” includes enacted supportive legislation, proposed legislation, utility-involved programs, and/or Community Solar projects.

nearly half of the existing Community Solar capacity was developed without enabling legislation, including in the top four states. Further, the presence of enabling legislation has had no discernible effect on the size of projects or whether the projects have been fully subscribed.<sup>5</sup>

### Community Choice Aggregation

Community Choice Aggregation, or CCA, is an electricity supply purchasing strategy that municipalities in certain deregulated states can employ. In its most basic form, CCA allows municipalities to aggregate the buying power of individual customers within a defined jurisdiction to negotiate with electricity supply companies regarding price, term and sourcing on behalf of residents and small businesses to create a new local default supply option. Importantly, the bargaining power of multiple municipalities can be united under a single contract to gain further negotiating advantage. This bargaining power can be used for additional local generation and efficiency projects that result in greater cost and emissions reductions. In most cases, CCA results in significant cost savings and long-term price certainty. Residents not covered by an existing third-party supply contract are automatically enrolled in the CCA, but every resident is given the option to opt out. This is typically done by a required series of outreach efforts to each potential participant conducted as part of the launch phase of a CCA program.

Seven states have authorized the formation of CCA programs (see Table A). As of 2014, CCA programs were serving nearly 5 percent of Americans in over 1,300 municipalities.<sup>6</sup> Approximately 50 percent of investor-owned utility customers in California are served by CCA, and CCA programs are currently serving the majority of Ohio and Illinois. Delaware, Minnesota and Utah are considering enabling CCA.<sup>7</sup>

Much of the interest in CCA has been as a mechanism to foster support and use of renewable energy. Indeed, many CCA programs have formed with this as a primary mission. There are multiple ways “green power” can be incorporated within a CCA program. Supply from renewable energy sources may be offered as an option to CCA participants, which is similar to the purchase decision consumers can make as individuals through their utility company or a third-party service company. CCA differs from these voluntary green power procurement programs in the key role the municipalities play in creating a bargaining block. CCA

is also viewed as a vehicle to develop local renewable energy, including Community Solar projects. Indeed, Community Solar efforts can be enhanced by CCA efforts. For example, market demand for a Community Solar project can be identified through the outreach that CCA requires when it is being launched. CCAs can benefit from a Community Solar project as a near-term opportunity to deliver on the goal to develop local renewable energy generation.

It is important to note that unless expressly required, a CCA need not support renewable energy options. As stated above, in its simplest form a CCA can just provide access to lower-cost power supply, including from fossil-fuel sources. This has been the case in New York’s first CCA, located in Westchester County, which provides both green and traditional power to its customers, and in Illinois where several CCAs discontinued green supply options in 2014 due to fluctuating fuel prices and expiring long-term contracts. However, renewable energy options can be added, just as these examples show they can be removed. For example, New York’s first CCA included a provision to allow communities to replace contracted power with local renewable sources as they become available.<sup>8</sup>

Table A shows the states where a CCA is currently in place. Establishing a CCA has not been easy and commonly takes time. In many cases, enabling legislation has been in place for years before an initial CCA was established. For example, the CleanPowerSF CCA experienced more than 10 years of planning and delays before it began serving customers in May 2016.<sup>9</sup> Decisions by state public utility commissions are required to enable CCAs, but their decisions can also create conditions that limit, and in some cases prevent, CCA formations. For example, a 2015 decision by the California Public Utilities Commission requires a fee to be paid by CCA customers to allow utilities to recoup sunk costs for investments made on behalf of potential CCA customers. This fee could prevent the cost-competitiveness that CCA seeks to offer. Models that work in one state will not necessarily—and often very much do not—work in other states. For example, in California and Massachusetts, CCAs can apply to administer “public purpose” funds, which the utilities have historically administered, to support demand reduction technologies and programs.

The energy-focused planning and stakeholder engagement programs integral to CCAs can also

**Table A: States with Community Choice Aggregation (CCA) programs**

<i>State</i>	<i>Year CCA Enacted</i>	<i>CAA Activity</i>
<b>Massachusetts</b>	1997	Longest running CCA program. 19 active CCAs with 35 municipalities awaiting approval as of 2014.
<b>Ohio</b>	1999	Over 250 communities participating in CCA. Focus on rate savings vs. green power, but RECs available in some programs.
<b>California</b>	2002	5 active CCAs, 5 anticipated in 2017, 5 anticipated in 2018. Distinctive focus on renewable, GHG-free sources.
<b>Rhode Island</b>	2003	1 statewide CCA, covers 37 of 39 municipalities and 4 school districts.
<b>New Jersey</b>	2003	4 active CCAs with 4 in process as of 2014.
<b>Illinois</b>	2009	By 2013, 80% of the residential market participated in CCA. Chicago CCA is the largest in the country.
<b>New York</b>	2015	1 active CCA in Westchester County serving 41 municipalities; pilot began in 2015. The State defined CCA rules in April 2016.

be used to facilitate other beneficial programs, such as energy demand reduction and microgrids. The Cape Light Compact, a CCA in Massachusetts, has provided both technical support and financial incentives for energy efficiency efforts. Microgrids are islanded grid networks containing generation sources within, including renewable energy, which can be separated from the regional grid network to protect energy users from power outages, particularly critical facilities such as police stations and hospitals. Microgrids are being supported by a number of state efforts—including in California, Connecticut, Maryland, New York and New Jersey, because of their potential to increase power supply resilience in communities. The required planning, stakeholder and participant engagement, and program management are tasks a CCA administrator is well-positioned to facilitate.

No matter the policy purpose driving a specific CCA effort, it is critically important to build the program over time in an iterative manner so that it can adapt to changing market conditions, new opportunities and the needs of the community served.

### Stepping Back to Move Forward

Community Solar and Community Choice Aggregation are new strategies which rely, in part, on local and state governments for effective implementation. Key to the success of these strategies and others (e.g., microgrids) is a broad-based com-

prehensive approach to community energy planning. As these strategies evolve and new strategies are introduced to the marketplace, it is critically important that communities integrate their efforts to evaluate the connection between these programs and maximize their effectiveness.

The U.S. Department of Energy's Guide to Community Energy Strategic Planning, or CESP, has identified community energy planning as a best practice and notes that "in a time of tightening budgets ... developing a CESP can be an important component of good governance, and it can also put governments in a prime position to capture funding opportunities as they arise, because they have proactively identified their goals and priority actions."<sup>10</sup> This is a key step for those communities with interest in CCAs and/or Community Solar, as well as other energy projects. CESP's emphasis on the role of the leadership team and engagement of community stakeholders aligns with the administrative and outreach efforts required for both strategies. Further, the CESP process provides insight into resources and data required to realize an efficient rollout of either or both strategies. CESP may sound daunting; however, by starting from this point, communities can gain the insight necessary to select the most beneficial activities to pursue and reduce the burdens associated with stepping into the energy market and making important infrastructure and program investments.

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## Notes

<sup>1</sup> ASCE 2017 Report Card report is available at: <http://www.infrastructurereportcard.org/>. Accessed April 1, 2017.

<sup>2</sup> “Net metering” is a policy mechanism that requires a utility company to grant a credit to the owner/leaser of a solar PV system when the system’s production exceeds the needs of the customer’s building. The excess electricity is sent back to the electric grid and the credit, based on the excess energy, is used to reduce the utility customer’s total electric bill.

<sup>3</sup> O’Shaughnessy, et al., *Status and trends in the U.S. Voluntary Green Power Market (2015 Data)*, National Renewable Energy Laboratory. Technical Report NREL/TP 6A20-67147, October 2016 and Solar Energy Industries Association (SEIA) “Solar Industry Data” webpage available at <http://www.seia.org/research-resources/solar-industry-data>. Accessed April 4, 2017.

<sup>4</sup> Renewable Energy Credits (RECs) are market-based instruments “... that represent the property rights to the environmental, social and other non-power attributes of renewable electricity generation. RECs are issued when one megawatt-hour (MWh) of electricity is generated and delivered to the electricity grid from a renewable energy resource.” U.S. EPA website: <https://www.epa.gov/green-power/renewable-energy-certificates-recs>. Accessed March 5, 2017.

<sup>5</sup> O’Shaughnessy, et al., *Status and trends in the U.S. Voluntary Green Power Market (2015 Data)*, National Renewable Energy Laboratory. Technical Report NREL/TP 6A20-67147, October 2016.

<sup>6</sup> Fenn, Paul and Charles Schultz. *Community Choice Aggregation 2.0: Strategies for Distributed Energy Resources in CCA Environments, Local Power*, August 2016.

<sup>7</sup> Local Energy Aggregation Network (LEAN) “State by State” webpage: <http://www.leanenergyus.org/ccaby-state/>. Accessed March 15, 2017.

<sup>8</sup> O’Shaughnessy, et al., *Status and trends in the U.S. Voluntary Green Power Market (2015 Data)*, National Renewable Energy Laboratory. Technical Report NREL/TP 6A20-67147, October 2016.

<sup>9</sup> Ibid.

<sup>10</sup> U.S. Department of Energy, *Guide to Community Energy Strategic Planning* webpage: <https://energy.gov/eere/slsc/guide-community-energy-strategic-planning>. Accessed February 22, 2017.

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