



**Consumer Federation of America**

## **PUBLIC POWER AND RURAL ELECTRIC LEADERSHIP ON COMMUNITY SOLAR INITIATIVES<sup>1</sup>**

### **Introduction**

Most press and public attention related to solar power has focused on rooftop panels installed on individual houses. However, an increasing number of electric utility service areas offer a community solar option that allows the many customers for whom rooftop solar is not feasible to invest in solar panels. Public power systems and rural electric cooperative have been leaders in developing community solar. This paper discusses the basis for and examples of this development.

### **Growing Popularity of Solar Energy**

Today, solar power produces only about one percent of electricity in the U.S. By comparison, natural gas and coal together produce two-thirds of this electricity.<sup>2</sup> Nevertheless, enthusiasm for solar power is high among the general public. A March 2015 Gallup poll found that Americans, asked for their opinion about energy sources, expressed greatest support for developing solar. Nearly four-fifths (78%) favored developing this source while only nine percent supported its de-emphasis. In contrast, only 28 percent favored developing coal while 43 percent supported its de-emphasis.<sup>3</sup> This public support for solar energy probably reflects, in large measure, the widespread perception that it is clean, renewable, and local, and that with technological advances, it will become less expensive.<sup>4</sup>

Public support for solar energy helps explain why federal and many state governments subsidize its development. Individual homeowners, for example, receive a 30 percent tax credit from the federal government when they install solar panels. This tax

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<sup>1</sup> Prepared by Stephen Brobeck, Executive Director, Consumer Federation of America (2016).

<sup>2</sup> U.S. Energy Information Administration, *Monthly Energy Review*.

<sup>3</sup> Gallup poll, March 5-8, 2015.

<sup>4</sup> David Biello, "Fight Over Rooftop Solar Forecasts a Bright Future for Cleaner Energy," *Scientific American* (November 15, 2014).

credit also serves as a major incentive for solar energy companies to lease solar panels to homeowners, obviating the latter's need for a large initial investment. In addition, both the federal government and a number of state governments have made grants available to utilities and other energy companies for the development of solar projects. Underpinning much of the development of solar energy are net metering requirements in 40 states that require electric utilities to purchase unused electricity produced from rooftop solar and other renewable sources.<sup>5</sup>

With this interest and support, the development of solar energy is growing rapidly. From 2010 to 2014, according to Energy Information Administration estimates, solar net generation capacity increased from 1,212 to 17,691 gigawatts.<sup>6</sup> More than one-half of this growth was in utility-installed solar farms and community solar facilities. However, about two-fifths was related to the installation of solar panels by individuals and groups independent of electric utilities. In 2013, about 100,000 homeowners installed solar panels. By mid-2014, nearly 500,000 homes had these panels.<sup>7</sup>

### **Growing Interest in Community Solar Energy**

Less widely reported than the growth of this rooftop solar is the increasing interest in community solar. Community solar involves customer investment in or purchase of power from solar panels at a facility in the same geographical area. These consumers are usually provided with one of two options. They can purchase individual solar panels or a share of panels, which typically cost between \$500 and \$1000, though as little as \$150. Or customers can agree to an ongoing monthly payment to subscribe to a certain percentage of the power produced by these panels. In both cases, they then receive a credit on their monthly bills reflecting the amount of electricity they use and the amount produced by their purchase. While in the short-term investors often pay a higher rate for electricity, in the long-term their rates remain constant, so they are more assured of stable future rates than are other customers.<sup>8</sup>

The most important attraction of community solar is that it can be made available to everyone in a utility service area. According to a recent report by the National Renewable Energy Laboratory, 49 percent of households are unable to host a rooftop

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<sup>5</sup> See Biello, loc. cit. See also: Michael T. Klare, "The Age of Wind and Solar is Closer Than You Think," *Scientific American* (April 22, 2015), and Diane Cardwell, "Solar and Wind Energy Start to Win on Price vs. Conventional Fuels," *New York Times* (November 24, 2014).

<sup>6</sup> U.S. Energy Information Administration, *Electric Power Monthly* (December 2015), Table 1.1.

<sup>7</sup> See Biello, loc cit., and Lisa Prevost, "Appraising Solar Energy's Value," *New York Times* (February 20, 2015).

<sup>8</sup> U.S. Department of Energy, *A Guide to Community Solar: Utility, Private, and Non-profit Project Development* (2010).

solar system because they rent or own a condo or co-op, or because they own a house without adequate sunlight or a roof unsuited for the installation of solar panels.<sup>9</sup>

A second attraction is that, because of economies of scale, community solar can produce solar power more cheaply than can rooftop solar. The CEO of Sunshare, a company facilitating community solar, says that community solar cost half as much as rooftop solar because “we’re able to dramatically decrease the cost of construction, management, and financing when the panels don’t have to be placed on hundreds of thousands of small roofs.”<sup>10</sup> His assessment is supported by a May 2015 report from the MIT Energy Initiative.<sup>11</sup>

A third attraction of community solar is that participating customers are not directly responsible for the installation and maintenance of the solar panels. These customers also do not have to deal with complex financing or leasing arrangements.

A fourth attraction is that there are fewer potential conflicts between customers with solar investments and those without a solar stake. Today, the purchase of rooftop solar panels is encouraged by the ability of investors to take advantage of the 30 percent federal tax credit and by their access to a net metering option that assures a good price for any surplus electricity they sell back to their local electric utility. But these utilities often argue that those owning rooftop solar panels are not contributing their fair share to system-wide maintenance of the electricity infrastructure. Community solar is often initiated by the utility itself or by a group or company that can more easily resolve this subsidy issue with the utility, especially if it’s community-owned.<sup>12</sup>

According to the U.S. Department of Energy, there are currently more than 100 community solar projects, in 23 states, with a total capacity of more than 65 megawatts.<sup>13</sup> According to GTM Research, in 2015 community shared solar will grow 500 percent, with 1,800 megawatts (1.8 gigawatts) of capacity to be added by 2020.<sup>14</sup>

This growth, however, will be greatly influenced by government policies. At present, community solar projects do not qualify for the 30 percent federal tax credit. However, a “private letter ruling” issued by the Internal Revenue Service in August 2015 allowed a Vermonter, who bought solar panels as part of a jointly owned solar power project, to

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<sup>9</sup> National Renewable Energy Laboratory, *Estimating Rooftop Suitability for PV: A Review of Methods, Patents, and Validation Techniques* (December 2013).

<sup>10</sup> Rebecca Kern, “State Policy, Utilities Ignite Community Solar Growth,” *Bloomberg BNA* (September 21, 2015), 5.

<sup>11</sup> MIT Energy Initiative, *Report on The Future of Solar Energy* (May 2015), Section III.

<sup>12</sup> American Public Power Association, *Distributed Generation: An Overview of Recent Policy and Market Developments* (November 2013).

<sup>13</sup> U.S. Department of Energy, *Community Renewable Energy* ([http://apps3.eere.energy.gov/greenpower/community\\_development/community\\_solar\\_faq.html](http://apps3.eere.energy.gov/greenpower/community_development/community_solar_faq.html)).

<sup>14</sup> GTM Research, *U.S. Community Solar Outlook, 2015-2020* (2015).

receive the tax credit. This ruling may indicate a future willingness by the IRS to allow all individual investors in solar projects to receive the tax credit, which would reduce the cost of community solar projects. Since Congress recently approved an extension of this tax credit to 2020, the IRS will have additional opportunity to broaden eligibility for the credit.<sup>15</sup>

### **Public Power and Rural Electric Leadership**

The Department of Energy’s Guide to Community Solar states that “in general, public owned utilities have taken the lead in deploying community solar projects.”<sup>16</sup> A recent article in PVTECH concurs: “The push for community solar has largely been driven by cooperative and municipal utilities.”<sup>17</sup>

This leadership may seem surprising since public power and rural electric utilities, as nonprofits exempt from federal income taxes, do not have available federal tax incentives, such as a corporate investment tax credits and depreciation, that are available to investor-owned utilities (IOUs). Nevertheless, this lack of access to key federal tax incentives is far less important than the fact that, as community-owned institutions, they are responsible only to their customers and to those whom these customers elect to public office and/or to rural electric cooperative boards of directors.

So, while these not-for-profits must deal with the challenges of incorporating a new energy source into their existing system, they are more responsive, than their for-profit counterparts, to their customers, a growing number of whom support the development of solar power and are interested in investing in this energy source. This customer interest is not the only reason that community-owned utilities invest in solar. They may also be influenced by state renewable energy standards and by companies selling or leasing rooftop solar. Whatever the specific motivation, public power and rural electric utilities tend to be more interested in community solar than are IOUs just because they are community-owned.<sup>18</sup>

### **Rural Electric Initiatives**

Forty-three community solar projects are run by rural electric cooperatives in 16 states with 35 additional projects planned in 17 states.<sup>19</sup> Here are several examples of existing initiatives. As noted below, the projects often reflect strong environmental

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<sup>15</sup> Wilson Ring, “Group Says IRS Ruling Could Promote Community Solar Projects,” Associated Press (September 1, 2015).

<sup>16</sup> U.S. Department of Energy, *A Guide to Community Solar: Utility, Private, and Non-profit Project Development* (2011), 7.

<sup>17</sup> Felicity Carus, “Utilities Fear What They Cannot Control with Community Solar,” PVTECH (June 18, 2013).

<sup>18</sup> American Public Power Association, *Solar Engagement Options for Public Power* (2015), 6.

<sup>19</sup> Tracy Warren, NRECA Senior Communication Manager quoted in Kern, loc. cit., 9.

interest by members, many of whom have second homes in the cooperative's service territory.

Tri-Country Electric Cooperative in southeastern Minnesota serves about 13,000 meters. It has built a community solar array of 74 kilowatts whose power is sold to members in 180 units, each costing \$1,400. Those purchasing a unit receive a 1-to-1 credit for their share of electricity produced by the solar array adjusted for the kilowatt hours they consume. This credit is given monthly over a period of 20 years. Tri-Country Electric initiated the solar project because of member interest as expressed on surveys and by the cooperative's Member Advisory Committee. As of mid-2015, about 100 members of the cooperative had purchased at least one unit of solar power, representing nearly 90 percent of the array's 74 kilowatt capacity.<sup>20</sup> Especially valuable to the co-op staff and members was the project's educational value, noted Tri-Country Electric President/CEO Brian Krambeer.

San Miguel Power Association (SMPA) serves 13,500 members in the southwestern corner of Colorado. It worked with the Clean Energy Collective to build a 1.1 megawatt solar array with panels that can be purchased by members at a cost of between \$695 and \$750 a panel. These members receive monthly credits representing the member's percentage of interest in the array multiplied by the metered output, less five percent that is reserved for future operation and maintenance. The solar array was built because of member and board member interest, many of whom have second homes in this ski and resort area. Over a three-year period, its panels were sold to 214 members, with two large purchases – Telluride low-income housing units and its school district – accounting for about half the purchases.<sup>21</sup>

Okanogan County Electric Cooperative (OCEC) serves about 3,100 meter in Winthrop, Washington, located on the eastern side of the northern Cascade range. The cooperative has developed two community solar projects. The first, commissioned in late 2010, include 104 solar modules totaling 20 kilowatts. The second project, commissioned in July 2011 includes 120 modules totaling 23 kilowatts. Cooperative members, many of whom own second homes in the area, funded both arrays in advance, with a typical investment of \$6,000. The first project was funded in 14 days with a waiting list. Funders receive a production credit based on the amount of energy produced multiplied by the average cost of wholesale power for the year. They receive a credit from the cooperative, but the project's economic feasibility was greatly facilitated by State of Washington incentive payments averaging \$750, on a \$6,000 investment, in a typical year. Both payment programs are scheduled to end in 2020.<sup>22</sup>

Kit Carson Electric Cooperative serves about 29,000 meters in north-central New Mexico near the town of Taos. The cooperative has undertaken 10 solar projects totaling more than 6,000 kilowatts of solar capacity: Four are owned by the cooperative, three are

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<sup>20</sup> National Rural Electric Cooperative Association, Solar Case Study (2015), 4-7.

<sup>21</sup> *Ibid.*, 13-17.

<sup>22</sup> *Ibid.*, 18-23.

commercially owned, two are owned by the school district, and one is owned by the community. In early 2015, Kit Carson announced expansion of a community solar program to provide an additional 1.5 megawatts of solar energy in four different areas of its service territory. For the Taos Charter School community solar project, members could purchase a 235-watt panel for an investment of \$845. In return, they receive tax credits and net metering as if the panels were installed on their own roof. All 420 panels were purchased in a short time period. These solar initiatives reflect strong member interest expressed in a series of meetings in 2005 followed by the advice from a member advisory solar committee.<sup>23</sup>

### **Public Power Initiatives**

Because many are located in large urban areas representing media centers, community solar projects initiated by public power systems have received even more public attention than those begun by rural cooperatives.<sup>24</sup> Several are briefly described below.

One of the country's first utilities to develop community solar was the Sacramento Municipal Utility District (SMUD). Back in 2007, the public power system began offering customers the opportunity to purchase shares in a solar farm. Seven hundred customers bought these shares totaling one megawatt capacity, not outright, but for a fixed monthly fee so the share would be more affordable. In the next several years, SMUD plans to expand solar production to 25 megawatts. The public power system has also set the goal of being a "trusted adviser" to customers about the appropriateness of going solar and has pioneered in developing self-service online tools for these customers.<sup>25</sup>

Despite serving customers in an area that's cloudy for much of the year, Seattle City Light has also been a solar leader among utilities. To date, it has installed solar panels at four locations – at a local park with a 23 kilowatt (kW) capacity, the zoo with a 70 kW capacity, an aquarium with a 44 kW capacity, and the top of a lower-income apartment building with a 35 kW capacity. The apartment building installation, the latest, is especially innovative because it allows customers to buy as little as a 28 watt share for \$150. As of April 2015, 85 percent of the 925 solar units available had been purchased.<sup>26</sup>

The Orlando Utilities Commission (OUO) initiated a 400 kilowatt community solar program in late 2013. Residential and non-demand commercial customers can subscribe to blocks of solar energy in one kilowatt increments, then pay a set price of 13

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<sup>23</sup> Ibid., 38-45.

<sup>24</sup> See articles in American Public Power Association, *Public Power* (July/August 2015).

<sup>25</sup> Herman Trabish, "How Sacramento's Public Utility is Getting in the Residential Solar Business," *Utility Drive* (August 25, 2014).

<sup>26</sup> Sam Bliss, "This Affordable Housing Complex Has a Solar Roof On It," *Grist* (April 3, 2015). See also Seattle website (<http://www.seattle.gov/light/solarenergy/commsolar.asp>).

cents/kilowatt hour over the 25-year lifetime of the program. As of early 2015, 39 customers, half of them from multi-family housing, had subscribed. OOU generates this solar power from a parking structure serving a utility facility. In the future, it expects to add about one megawatt in solar capacity.<sup>27</sup>

## **Conclusion**

Public power systems and rural electric cooperatives have led utility efforts in developing community solar projects. These projects reflect strong interest and participation of their residential customers, who as members (rural electrics) or citizens (public power) also have the final say about investment decisions. To date, those customers who have expressed the greatest interest in community solar have been those with strong environmental interests who also can afford to purchase a share of a solar project. However, some of these community-owned utilities are structuring participation so that it is affordable to most customers/members.

The future of community solar will reflect, in large part, three factors. The first is whether utilities need to add capacity, now or in the future. The second is whether community-owned utilities can take full advantage of tax incentives, especially the 30 percent federal tax credit, and other incentives, including state grants. The third factor is technological progress that succeeds in lowering the cost of solar projects. Regardless, at least some solar initiatives will be developed mainly because of strong demand from environmentally conscious customers/members.

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<sup>27</sup> American Public Power Association, *Solar Engagement Options*, loc. cit, 34.