

## Solar in Small Communities: Challenges and Opportunities

As local governments across the U.S. become increasingly aware of the considerable benefits of solar energy, many of them are taking action to help residents and business owners in their jurisdictions overcome various barriers inhibiting the adoption of solar. In an effort to understand these barriers and the actions local governments are taking to confront them, the International City/County Management Association (ICMA) conducted its *Solar Survey of Local Governments* in 2011, collecting data from over 2,500 local governments. Respondents reported experiencing several significant challenges to local solar energy development. The most commonly reported barrier to solar energy development is the high initial cost of going solar, with nearly two thirds of survey respondents (64%) citing this as a challenge. Approximately one in three local governments face additional challenges, including aesthetic concerns regarding solar installations (29%) and a lack of interest in or awareness about solar (27%).<sup>1</sup>

For larger local governments with greater financial resources, there are a number of options available for overcoming these barriers. Nearly one-fifth (17%) of city and county governments offer some sort of financial support for going solar, typically in the form of rebates, grants, or loans.<sup>2</sup> Additionally, many large cities have robust and well-funded solar outreach programs touting the benefits of, and stimulating interest in, solar energy. Though these strategies often prove effective, they frequently require large financial, informational and human resources, begging the question: What options are available for small communities (typically with smaller budgets) seeking to address barriers to local solar development?

This brief outlines several strategies smaller governments can use to promote the use of solar in local communities and provides examples and resources illustrating how these concepts have been or are currently being implemented in small local jurisdictions across the country.

### Addressing the High Cost of Solar

#### ***Community Shared Solar***

The defining characteristic of a “community shared solar” project is that, as opposed to the traditional model of an on-site solar installation with a single beneficiary, these are relatively large solar electric systems with benefits shared among multiple individuals. In certain arrangements, participants in a community shared solar project receive benefits from the system in proportion to their level of financial commitment to the project (i.e., those who cover a greater percentage of the system cost or purchase more “shares” in the project receive more credit for the electricity the system generates). In states that allow group billing or virtual net metering, credits for the electricity the local utility receives from the community shared solar project are applied to each participant’s monthly electricity bill.



Ribbon Cutting at Acorn Energy Solar One in Middlebury, VT  
Photo courtesy of Acorn Renewable Energy Co-op

Although it is not an option everywhere, small local governments and communities can help promote solar by serving as a host for, or as a co-financier of, a community shared solar project. The town of **Middlebury, Vermont** (2010 Population: 6,588) serves as one of many examples of how a small community can support a community shared solar project. The 148 kilowatt (kW) solar electric project is a joint venture between the Town of Middlebury, the Acorn Renewable Energy Co-op, and the Co-operative Insurance Companies of Middlebury. The project is being financed jointly by the Acorn Renewable Energy Co-op and Co-operative Insurance. The town will support the project by hosting the system on an acre of town-owned land through a 25-year lease under which it will receive \$1,000 annually in rent. Each of the three parties will receive a one-third share of the total electricity the system generates, estimated at 172,500 kilowatt hours (kWh) each year, or enough to meet average electricity demand for over 30 U.S. homes. The Acorn Renewable Energy Co-op's share of the electricity will be divided among over a dozen individual program subscribers.<sup>3</sup>

Key Resources:

*A Guide to Community Shared Solar: Utility, Private, and Non-profit Project Development*

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

<http://www1.eere.energy.gov/solar/pdfs/54570.pdf>

*Community Renewables: Model Program Rules*

Interstate Renewable Energy Council

[http://irecusa.org/wp-content/uploads/2010/11/IREC-Community-Renewables-Report-11-16-10\\_FINAL.pdf](http://irecusa.org/wp-content/uploads/2010/11/IREC-Community-Renewables-Report-11-16-10_FINAL.pdf)

### **Group Purchasing**

As with most other products, purchasing solar equipment and installation services in bulk can help drive down unit costs. By helping groups of homeowners negotiate volume discounts with solar contractors, small cities and counties can support solar development at little or no cost to the local government.

A number of small communities in Massachusetts have demonstrated the effectiveness of group purchasing of solar energy systems through their recent participation in the *Solarize Massachusetts* pilot program. An effort spearheaded by the Massachusetts Clean Energy Center (MassCEC), the *Solarize Massachusetts* pilot selected contractors through a competitive Request for Proposal (RFP) process that required installers to offer volume discounts on solar energy systems purchased and installed through the program. By offering bulk purchase prices that fell as the number of program participants grew, the *Solarize Massachusetts* pilot was able to deliver significant discounts to program participants. In the town of **Harvard, Massachusetts** (2010 Population: 6,520), volume discounts reached as high as 30% off the average installed residential system cost.<sup>4</sup>

Key Resource:

*The Solarize Guidebook: A Community Guide to Collective Purchasing of Residential PV Systems*

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy

<http://www1.eere.energy.gov/solar/pdfs/54738.pdf>

## Site Aggregation and Regional Collaboration

Group purchasing can also help reduce costs for local governments seeking to adopt solar themselves. By aggregating multiple municipally-owned properties in one or more jurisdictions and putting these bundled sites out to bid to solar developers, local governments can significantly reduce the initial purchase and installation price of systems while decreasing transaction costs and staff time requirements.<sup>5</sup> Furthermore, by banding together with other municipalities, small communities seeking to install solar on local government buildings can in some cases obtain various grants and incentives for which they would otherwise be ineligible.<sup>6</sup>

In 2009, nine small municipalities in **Prince George's County, Maryland** (ranging in population from a few hundred to just over nine thousand), collaboratively developed a "Solar Energy Recovery Plan" to install a 20 kW photovoltaic system on a municipal building in each participating jurisdiction. By creating this partnership, these communities were able to qualify for Recovery Act funding that would otherwise have been out of reach. Once the group received the award, the project was put out to bid under a combined process, in which some municipalities were allowed to "piggyback" on other approved procurement processes.<sup>7</sup> These solar energy systems generate over 200,000 kWh of clean electricity and deliver significant energy cost savings, which have been used to establish an energy assistance fund for senior citizens and support educational scholarships.<sup>8</sup>

### Key Resource:

*Purchasing Power: Best Practices Guide to Collaborative Solar Procurement*

World Resources Institute and Joint Venture: Silicon Valley Network

[http://pdf.wri.org/purchasing\\_power.pdf](http://pdf.wri.org/purchasing_power.pdf)

## Overcoming Aesthetic Concerns

### *Solar-Ready Building Guidelines*

A local government can help mitigate the aesthetic concerns associated with solar development by encouraging (or even requiring) that new homes built within its jurisdiction be "solar ready". While primarily designed to maximize the performance of solar energy systems and to minimize installation costs, solar ready provisions can also help preserve the aesthetic value of buildings that go solar. Requiring new homes to include plumbing or wiring for solar energy systems will not only help reduce future installation costs, but will preclude the need for visually unappealing piping or electrical equipment on the building's exterior.<sup>9</sup> Ensuring that homes are properly oriented to maximize solar exposure and that roofs are designed with solar in mind both improves system performance and allows solar to be tastefully integrated with the building's design.<sup>10</sup>

A number of small communities in **Marin County, California** have recently recognized the importance of encouraging solar-ready development. The towns of **Tiburon** (2010 Population 8,962), **Ross** (2,415), and **Belvedere** (2,068) have each begun developing local Climate Action Plans. Plan developers have recommended that each town establish policies and incentives that promote the construction of solar-ready residences and businesses.<sup>11, 12, 13</sup>



Rooftop solar installed through Solarize Pendleton  
Photo courtesy of City of Pendleton, OR

Key Resources:

*Solar Ready: An Overview of Implementation Practices*

National Renewable Energy Laboratory

<http://www.nrel.gov/docs/fy12osti/51296.pdf>

*Solar Ready Buildings Planning Guide*

National Renewable Energy Laboratory

<http://www.nrel.gov/docs/fy10osti/46078.pdf>

## Promoting Interest and Awareness

### **City Solar Outreach Programs**

Municipalities can overcome a lack of interest or awareness regarding solar among residents by conducting city- or town-wide outreach programs. These programs are effective when included in a facilitated group purchasing campaign, such as *Solarize Massachusetts* (see page 2) or the several successful *Solarize* programs in Oregon (detailed in *The Solarize Guidebook* listed on page 2). By doing so, local governments with limited resources can pass on much of the responsibility for marketing and educational outreach to community groups or to the contractor selected for the program.<sup>14</sup> In addition to informing the public on the benefits and process of going solar, communities must maintain consumer motivation to follow through with their desire to go solar. This can be done by setting a deadline for applications to the program (thus motivating residents to act quickly) and by following up as quickly as possible with homeowners who express interest in the program.<sup>15, 16</sup>

The city of **Pendleton, Oregon** (2010 Population 16,612), through its *Solarize Pendleton* campaign, promoted awareness of solar and of the program it offered and kept its residents motivated throughout the process. Unable to assume the bulk of the responsibility for marketing the campaign and conducting educational workshops, Pendleton assigned these tasks to the program's contractor. Through a small increase in the purchase and installation rates it offered, the contractor was able to fund the program website, run ads in local newspapers, and conduct public workshops promoting the program.<sup>17</sup>

## Other Opportunities for Small Communities

### **Streamlined and Expedited Permitting**

According to the ICMA Solar Survey, only 13% of local governments have established expedited permitting rules for solar photovoltaic installations. Unnecessarily complex or inconsistent permitting requirements can add as much as \$2,500 to the overall installation cost of residential solar energy systems.<sup>18</sup> By establishing reasonable flat permit fees, accepting permit applications online or via an accelerated "over-the-counter" process, standardizing permit requirements, and ensuring permitting staff are properly trained in solar, small counties and municipalities can remove barriers to the adoption of solar.<sup>19</sup>

The town of **Fountain Hills, Arizona** (2010 Population: 26,107) provides residents seeking to install solar energy systems on their homes with a "Solar System Plan Review/ Inspection Checklist", which provides details on the process and documentation requirements for obtaining a solar permit. The process is designed to deliver a decision on the application in no more than two business days, helping to keep wait times and costs low.<sup>20</sup>



Key Resource:

*Permitting Toolkit*

The Vote Solar Initiative

<http://votesolar.org/permitting-toolkit/>

*Sharing Success: Emerging Approaches to Efficient Rooftop Solar Permitting*

Interstate Renewable Energy Council

<http://www.irecusa.org/wp-content/uploads/FINAL-Sharing-Success-w-cover-revised-final052012.pdf>

### **Local Regulations**

Updating local regulations that affect solar development can be another effective means by which city and county governments can encourage community members to go solar. By protecting residents' *solar rights* (the right to install a solar energy system on one's property) and *solar access* (through easements that prevent neighboring structures or vegetation

from shading these systems), local governments can resolve some simple, though common, challenges to solar development. Additionally, small governments can update local ordinances or codes to promote solar development by adopting provisions requiring that new property lots are drawn to maximize solar exposure, or by encouraging or requiring certain new or remodeled buildings to be "solar ready".

The village of **Belleville, Wisconsin** (2010 Population: 2,385) has established procedures for issuing solar access permits that establish the right of the permit holder to access sunlight for the purposes of harnessing solar energy. To protect this access, these permits set restrictions on activities on neighboring properties that could create an "impermissible interference" with the solar energy system's ability to collect sunlight.<sup>21</sup>



Volunteer helps promote the Solarize Massachusetts campaign

Photo courtesy of John Sharko

Key Resource:

*Planning and Zoning for Solar Energy*

American Planning Association

<http://www.planning.org/pas/infopackets/open/pdf/30intro.pdf>

This brief is supported by the following team of organizations: ICLEI-USA; International City/County Management Association (ICMA); Solar Electric Power Association (SEPA); Interstate Renewable Energy Council, Inc. (IREC); North Carolina Solar Center (NCSC); Meister Consultants Group, Inc. (MCG); The Solar Foundation (TSF); American Planning Association (APA); and National Association of Regional Councils (NARC).

This material is based upon work supported by the U.S. Department of Energy under Award Number DE-EE0003525.

This brief was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe on privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

<sup>1</sup> ICMA. *Solar Survey of Local Governments 2011*. Available online at [http://icma.org/en/Article/101799/Survey\\_Results\\_Shed\\_Light\\_on\\_Solar\\_Energy\\_Challenges\\_Opportunities](http://icma.org/en/Article/101799/Survey_Results_Shed_Light_on_Solar_Energy_Challenges_Opportunities)

<sup>2</sup> *Ibid*

<sup>3</sup> Vermont Business Magazine. *Acorn Energy Co-Op \$700,000 solar project moves forward in Middlebury*. Available at <http://www.vermontbiz.com/news/october/acorn-energy-co-op-700000-solar-project-moves-forward-middlebury>

<sup>4</sup> Massachusetts Clean Energy Center. *Solarize Mass Pilot Overview*. Available at <http://www.masscec.com/masscec/file/Solarize%20Massachusetts%20Pilot%20Overview.pdf>

<sup>5</sup> Arizona State University. *Leveraging Your Purchasing Power: Regional Renewable Energy Procurement*. Available at [http://sustainablecities.asu.edu/docs/SCN/01-13-11/Optony\\_SCN.pdf](http://sustainablecities.asu.edu/docs/SCN/01-13-11/Optony_SCN.pdf)

<sup>6</sup> Prince George's County, Maryland. *Energy Efficiency and Conservation Strategy Report*. Available at <http://www.princegeorgescountymd.gov/der/PDFs/energy-report-ch5.pdf>

<sup>7</sup> Bladensburg Police Department. *Collaboration of Municipalities: Solar Energy Recovery Plan (SERP)*. Available at [http://www1.eere.energy.gov/wip/solutioncenter/pdfs/12\\_Multi%20Municipal%20Solar%20Grant\\_EECBG-SEP%20MA%20Meeting.pdf](http://www1.eere.energy.gov/wip/solutioncenter/pdfs/12_Multi%20Municipal%20Solar%20Grant_EECBG-SEP%20MA%20Meeting.pdf)

<sup>8</sup> Prince George's County, Maryland. *Energy Efficiency and Conservation Strategy Report*. Available at <http://www.princegeorgescountymd.gov/der/PDFs/energy-report-ch5.pdf>

<sup>9</sup> California Utilities Statewide Codes and Standards Team. *Measure Information Template – Solar Ready Homes and Solar Oriented Developments*. Available at [http://www.energy.ca.gov/title24/2013standards/prerulemaking/documents/2011-05-24\\_workshop/review/2013\\_CASE\\_ResSolarReady\\_SolarOrientedDevelopments\\_052011.pdf](http://www.energy.ca.gov/title24/2013standards/prerulemaking/documents/2011-05-24_workshop/review/2013_CASE_ResSolarReady_SolarOrientedDevelopments_052011.pdf)

<sup>10</sup> The Minneapolis Saint Paul Solar Cities Program. *Solar Ready Building Design Guidelines*. Available at <http://mn.gov/commerce/energy/images/Solar-Ready-Building.pdf>

<sup>11</sup> Town of Tiburon, California. *Climate Action Plan: April 2011*. Available at <http://www.ci.tiburon.ca.us/government/guidelines%20&%20ordinances/guidelines%20&%20handbooks/CAP-Tiburon-Final.pdf>

<sup>12</sup> Town of Ross, California. *Climate Action Plan: November 2010*. Available at [http://www.townofross.org/pdf/town\\_planning/Ross%20Climate%20Action%20Plan.pdf](http://www.townofross.org/pdf/town_planning/Ross%20Climate%20Action%20Plan.pdf)

<sup>13</sup> City of Belvedere, California. *Climate Action Plan: April 2011*. Available at <http://www.cityofbelvedere.org/DocumentCenter/Home/View/508>

<sup>14</sup> US Department of Energy. *The Solarize Guidebook: A Community Guide to Collective Purchasing of Residential PV Systems*. Available at <http://www1.eere.energy.gov/solar/pdfs/54738.pdf>

<sup>15</sup> *Ibid*

<sup>16</sup> City of Pendleton, Oregon. *Solarize Pendleton: Lessons Learned*. Available at <http://solarizependleton.com/main/wp-content/uploads/2012/01/LESSONS-LEARNED.pdf>

<sup>17</sup> US Department of Energy. *The Solarize Guidebook: A Community Guide to Collective Purchasing of Residential PV Systems*. Available at <http://www1.eere.energy.gov/solar/pdfs/54738.pdf>

<sup>18</sup> Greentech Solar. *Has Vermont Solved the Solar Permitting Problem?* Available at <http://www.greentechmedia.com/articles/read/has-vermont-solved-the-solar-permitting-problem/>

<sup>19</sup> The Vote Solar Initiative. *Streamlining the Solar Permitting Process: Solar Permitting Best Practices*. Available at <http://votesolar.org/linked-docs/Best%20Practices.pdf>

<sup>20</sup> Town of Fountain Hills, Arizona. *Solar Systems Expedited Permit Process*. Available at <http://www.fh.az.gov/solar-permits.aspx>

<sup>21</sup> Village of Belleville, Wisconsin. *Solar Access*. Available at [http://www.bellevillewi.org/site\\_uploads/pdfs/TITLE%2010-4.pdf](http://www.bellevillewi.org/site_uploads/pdfs/TITLE%2010-4.pdf)