

Challenges and Successes on the Path
toward a Solar-Powered Community

Solar in Action



Santa Rosa, California

Includes case studies on:

- Implementing a Uniform Solar Permitting Process across Jurisdictions
- Tracking Local Solar Installations
- Creating a Countywide Property Assessed Clean Energy Program



The City of Santa Rosa, California, in partnership with neighboring cities, Sonoma County, and interested stakeholders, has formed an organization called Solar Sonoma County to develop and launch a countywide Solar Implementation Plan. *Photo from City of Santa Rosa, NREL/PIX 19481*

Cover photos from iStock/14655539, vineyard in Sonoma County

About the U.S. Department of Energy's Solar America Communities program:

The U.S. Department of Energy (DOE) designated 13 Solar America Cities in 2007 and an additional 12 cities in 2008 to develop comprehensive approaches to urban solar energy use that can serve as a model for cities around the nation. DOE recognized that cities, as centers of population and electricity loads, have an important role to play in accelerating solar energy adoption. As a result of widespread success in the 25 Solar America Cities, DOE expanded the program in 2010 by launching a national outreach effort, the Solar America Communities Outreach Partnership. As the Solar America Cities program evolved to include this new outreach effort, the program was renamed Solar America Communities to reflect DOE's commitment to supporting solar initiatives in all types of local jurisdictions, including cities and counties. Visit Solar America Communities online at www.solaramericacommunities.energy.gov.

Santa Rosa's Starting Point

The City of Santa Rosa (the county seat of Sonoma County) was designated by the U.S. Department of Energy (DOE) on March 28, 2008, as a Solar America City. Sonoma County has long recognized its need to address the 4.5 million tons of carbon dioxide that it emits annually, one quarter of which is attributed to electricity consumption. In 2005, nine cities and the county set a target to reduce emissions 25% below 1990 levels by 2015. Accomplishing this goal would require public education and awareness, setting policies to encourage energy efficiency and renewable energy, and addressing financial barriers to renewable energy and energy efficiency measures.

Many of the county's solar-related initiatives were informed by the efforts of Solar Sebastopol, an organization formed in 2002 to encourage and accelerate the public, commercial, and private installation of solar energy in the City of Sebastopol, California. The organization was a local, first-of-its-kind program. Its primary goals were to encourage more solar installations, achieve a total of 1 megawatt (MW) of solar power production in the city, and ensure that high-quality installations meet all code standards. Solar Sebastopol focused on public outreach and education as a way to achieve its goals as well as sponsoring trainings for inspectors and professionals in the field.

Building Partnerships and Setting Goals

At the launch of the Solar America Cities partnership in 2008, the City of Santa Rosa partnered with neighboring cities, Sonoma County, and interested stakeholders to form an organization called Solar Sonoma County (SSC) to develop and launch a countywide Solar Implementation Plan. This plan was developed to make recommendations and assist cities in significantly and sustainably reducing the financial, regulatory, and educational market barriers to the installation of solar photovoltaic (PV) and/or solar thermal energy systems in Sonoma County while also promoting energy efficiency.

SSC focused on achieving the following:

- Increase the capacity of solar installations in the county by 25 MW over the following three years.

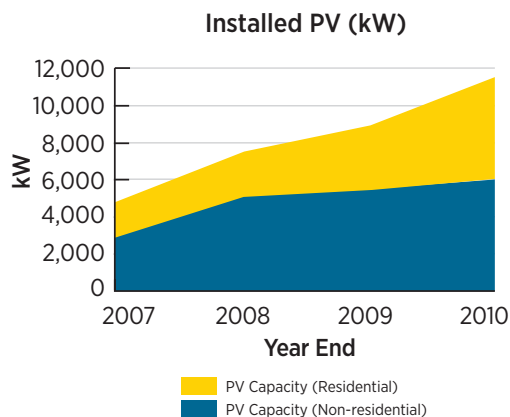
- Develop new financial incentives and increase access to existing ones for solar.
- Develop a partnership among all 10 municipalities in the county to implement standardized policies and regulations, which would ease the financial and regulatory burden for solar businesses and consumers in Sonoma County.
- Conduct solar outreach and education.
- Encourage the adoption of Solar Sonoma County's approach in a larger region and serve as a model for other cities and regional communities.

SSC partnered with local utility Pacific Gas & Electric (PG&E), which supported SSC's efforts in the following ways:

- Co-sponsored annual membership fees of all 10 local governments to participate in SSC for the first two years in partnership with the Sonoma County Water Agency, and provided title sponsorship for SSC's 2009 and 2010 Solar Fairs.
- Provided marketing and outreach support to promote events.
- Co-sponsored 2009 permitting symposium.
- Contributed experts to lead educational workshops about solar basics, incentives, and financing at solar fairs and other public outreach events; in addition, it hosted training workshops for solar installers and municipal code official symposiums.
- Sponsored the Solar Leaders Circle project to identify Sonoma County's largest commercial electricity users and work with SSC to provide resources to help them transition to energy efficiency and solar energy.

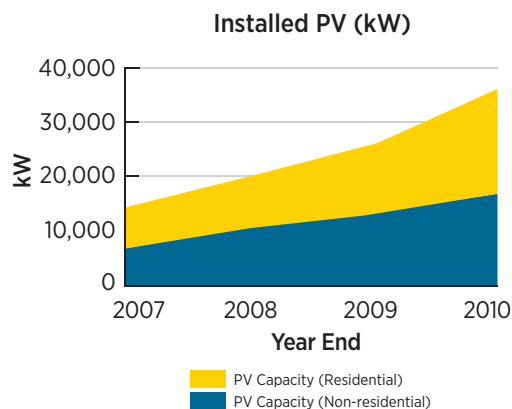
Installed Capacity

Santa Rosa



Installed Capacity

Sonoma County



Installed PV capacity increase from December 31, 2007, to December 31, 2010



Solar Sonoma County is an independent, nonprofit organization and is recognized for its countywide leadership in promoting and enhancing solar and energy efficiency through various programs and initiatives. *Photo from City of Santa Rosa, NREL/PIX 19482*



The City of Santa Rosa implemented the Clean Energy Advocate program. This program will help residential and commercial property owners navigate the process of selecting projects and applying for financing and incentives. *Photo from City of Santa Rosa, NREL/PIX 19480*

Other partnerships include:

- The City of Santa Rosa’s development of the Clean Energy Advocate program, which assists residential and commercial property owners in navigating the process of selecting projects, applying for financing and incentives, and choosing vendors through the services of an impartial, professional advocate.
- The International Brotherhood of Electrical Workers Local 551, which hosts a weekly radio show, “Ask the Expert: The Clean Energy Show” in which a different guest is featured each week to address clean energy-related topics; the International Brotherhood of Electrical Workers also provides installation, electrical code, and PV safety training to both union and non-union solar installers.
- Redwood Empire Association of Code Officials, which consists of jurisdictions in the northern California counties of Lake, Marin, Mendocino, and Sonoma, and includes building officials, design professionals, consulting firms, and construction industry representatives; REACO has worked to develop and approve a regional uniform solar permit application and guidelines for residential solar installations up to 5 kilowatts (kW).
- Solar energy and energy efficiency contractors, who participated in the 2009 and 2010 Solar Energy and Efficiency Fairs) by providing mentorship for fair attendees interested in clean energy careers, serving on green jobs discussion panels, and contributing to designing and staffing the educational Pathway to Clean Energy interactive experience at both fairs.
- The North Bay chapter of the national trade group Efficiency First, which is working toward expanding the mission of Solar Sonoma County to encompass energy efficiency and solar.

Accomplishments and Highlights

The City of Santa Rosa, in partnership with Solar Sonoma County, has accomplished the following through the Solar America Cities program:

- SSC became an independent, nonprofit organization recognized for countywide leadership in promoting and enhancing solar and energy efficiency through various programs and initiatives.
- SSC developed a countywide Solar Implementation Plan through a stakeholder engagement process and presented the plan with recommendations to all 10 local governments’ elected bodies (the county board of supervisors and all nine city councils).
- SSC held two countywide solar fairs in June 2009 and June 2010 with a combined public attendance estimated at 7,000.
- As part of the inaugural Solar Leaders Circle outreach event in 2010, the DOE technical assistance team performed 10 complimentary solar site assessments for commercial property owners and provided written reports and recommendations, resulting in five commercial solar and efficiency projects.
- The City of Santa Rosa installed a 65-kW PV system at the Brown Farm reclamation site. The city plans future solar projects.
- Santa Rosa and Solar Sonoma County developed and established solarsonomacounty.org as an online countywide clearinghouse of information and resources to reflect the organization’s expanding mission, programs, and outreach, including clean energy jobs and events sections, vendor member marketing, consumer outreach and education, and a pre-qualified vendor roster.
- Santa Rosa and Solar Sonoma County developed a pilot project in collaboration with ProjectDX and the Sonoma County Water Agency. Originally conceived as a web-based solar mapping and community engagement tool, this effort became connected to the web development needs of the Sonoma County Energy Independence PACE Program and served as the precursor to an upcoming web hub for Energy Upgrade California in Sonoma County.
- Santa Rosa and Solar Sonoma County collaborated with the County of Sonoma and other local government and solar and efficiency industry stakeholders to implement the Sonoma County Energy Independence Program (SCEIP), the first countywide PACE financing program in the nation

that has provided more than \$50 million in financing for 2,407 solar and efficiency projects in Sonoma County as of August 31, 2011.

- Santa Rosa and Solar Sonoma County developed a publicly accessible geographic information system map of solar installations within the city, with the long-term goal of integrating with SCEIP / Energy Upgrade countywide Web hub efforts.
- Santa Rosa and Solar Sonoma County established a solar PV interconnection reporting process in partnership with PG&E to track progress toward Solar Sonoma County's three-year countywide target of 25 new MW before March 2011. The March 2008 baseline was 13.1 MW. By March 2011, total solar PV installations in Sonoma County reached 42 MW, surpassing SSC's original target.
- Santa Rosa and Solar Sonoma County presented solar installation and PV safety trainings for contractors in partnership with IBEW Local 551.

Case Studies: Successes and Challenges

Implementing a Uniform Permitting Process across Multiple Jurisdictions

Early on, the SSC stakeholder group identified the need for uniform solar permitting. In April 2009, the Redwood Empire Association of Code Officials in April 2009 took on the task of developing and approving a regional uniform solar permit application and guidelines for residential solar installations up to 5 kW. Although all 10 local jurisdictions approved and accepted the uniform permit, building departments and officials are at varying stages with incorporating the form consistently. SSC co-hosted a Solar Permitting Symposium in 2009 with PG&E to discuss regional permitting standards that included building officials and solar vendors.

Tracking Local Solar Installations

Tracking progress toward SSC's 25-MW target revealed many issues associated with measuring solar generation accurately. Working with PG&E, SSC established a monthly reporting process for new and cumulative solar installations throughout the county, identified by jurisdiction and type (residential, non-residential, and municipal). The demand for measurable data is increasing as part of greenhouse gas emissions reduction efforts. Tracking issues still to be resolved are as follows:

- There is no single source for aggregated solar installation data. Current sources include PG&E, the California Solar Initiative (CSI) incentive program database, local permitting offices, and local installers.
- There is no single, accepted convention or standard for tracking and quantifying solar generation (nameplate vs. CEC-AC vs. DC).
- The California Solar Initiative incentive program database data does not account for non-rebated solar projects.
- Local building departments use different permitting software and systems as well as data collection methodologies.
- Some jurisdictions do not track solar projects as a separate permitting category.
- Solar thermal generation cannot be tracked and quantified in the same way as solar PV, based on utility interconnection.

Creating a Countywide PACE Program

SSC identified a PACE financing mechanism as the cornerstone for expanding solar in the county by addressing the up-front cost barrier to consumer adoption. SCEIP launched in March 2009, finances solar energy and efficiency projects for residential and commercial properties. The financed amount becomes an assessment attached to the property, not the owner, and is paid back through property taxes over a term of 5, 10, or 20 years. Projects must be for existing homes and buildings; new construction does not qualify. As of August 31, 2011, SCEIP has provided more than \$50 million in financing for 2,407 solar and efficiency projects in Sonoma County.

SSC assisted and supported the County of Sonoma in developing and implementing the program in numerous ways.

SSC led an effort to establish a collaborative input process regarding the formation and administration of the program. It convened several meetings with an ad hoc strategy group consisting of municipal and state government elected and staff representatives, local solar and business leaders, and representatives from the Climate Protection Campaign, a key partner and stakeholder.

SSC identified numerous significant issues and concerns that the program as originally proposed did not adequately address. With input from the strategy group, SSC worked with county staff to educate supervisors and requested specific action for program modifications. One critical issue, for example, was the lack of energy efficiency benchmarking measures for residential solar projects. SSC advised county

officials that adding solar to leaky, inefficient homes would not yield the desired offset in energy savings, leading to disgruntled consumers, low program uptake, and no data or accountability for demonstrating emissions reductions performance. Ultimately, it was determined that residential projects must demonstrate a minimum of 10% improvement in energy efficiency for SCEIP financing.

- SSC provided technical information and input in the formation of SCEIP standards for evaluating solar PV and solar thermal project applications for financing.
- SSC provided input regarding standards in the energy efficiency contracting community and input regarding the use and applicability of home energy audits.
- SSC convened a technical advisory group that continues to meet with SCEIP program administrators periodically as needed to evaluate program changes, advise program managers about vendor experiences and problems, and serve as a sounding board for program operations.

According to the SCEIP manager, the following programming decisions and alterations were based on input from SSC, city building officials, vendors, and contractors:

- Creation of an assignment of funds element
- Market value of projects as a guideline for reasonableness
- Acceptance/rejection of new technology suggestions
- Integration of energy audits into the program
- Selection of Home Energy Rating System 2 as the program's home/building performance standard
- Role of California Building Performance Contractors Association in the program
- Use of market value as well as assessed value in the program
- Shaping of the multiple disbursement process.

Supporting the continued viability and success of SCEIP is essential to fulfilling SSC's core objectives: removing the up-front cost barrier to going solar for all types of property owners, increasing the energy efficiency of the county's built environment, and stimulating and accelerating widespread adoption of solar energy.

SSC also has actively supported County of Sonoma leadership and advocacy efforts at the federal level to preserve and expand SCEIP in light of the Federal Housing Finance Agency challenge to curb and eliminate PACE programs and financing.

Top Takeaways

Regional Standardization Needed

The lessons learned through the process of creating and implementing a uniform solar permit led directly to one of the key recommendations of the Solar Implementation Plan: regional standards are needed to streamline and simplify the overall regulatory process for solar generation and energy efficiency projects. These include not only permitting but code compliance, building code scope and content, zoning ordinances, and general plan elements and language. The benefits of standardizing solar permitting, code compliance, and permitting incentives on a regional scale include: reduced staff time and overhead costs for local government building departments; reduced project time and lower project fees; reduced bid and job costs; uniform mitigation of fire risk and safety issues associated with solar; and easier, more accurate tracking of installed solar.

Training and Ongoing Collaboration

Regional implementation of streamlined solar and energy efficiency policies necessitates education and training for the full range of local government staff—from the rank and file to management to elected officials—and ongoing regional dialogue and collaboration between local government building departments and solar / efficiency vendors.

Continued Consumer Outreach and Education

Consumer education about solar / efficiency benefits, technologies, and project planning needs to continue and expand to encourage the high participation levels needed to meet local solar energy generation and greenhouse gas reduction goals. Local governments can further leverage existing communications channels with the public for this purpose as well as create new educational opportunities in regional collaboration with other local government, utility, and nonprofit partners such as SSC.

Regional Collaboration

Forming a regional organization made up of diverse public and private stakeholders and partners presents significant challenges associated with multiple agendas, organizational cultures, and communication issues. In the case of Solar Sonoma County, the choice to create the stakeholder body as a nonprofit organization diverted a lot of critical time and resources toward organizational development, which impacted the timely development and effective

implementation of programs directly related to expanding solar.

The Regional Climate Protection Authority formed by state legislation to coordinate countywide energy and climate-related efforts (in parallel to SSC), confirms that regional collaboration offers the most potential for fiscally constrained local governments to act effectively.

Next Steps

SSC will continue to look at new resources and steps to increase solar adoption, focusing on the following:

- Establishing online permitting countywide to enable building departments to respond to increased demand for solar while facilitating resource sharing and project data tracking
- Establishing a means for ongoing dialog between building officials and contractors / installers to promote collaboration, identify emerging training needs, and address permitting issues effectively
- Developing a new clean energy scholarship program, which is a series of solar installer trainings and certification courses to be awarded to selected individuals in need of job re-training and financial assistance
- Pursuing the development of a Web hub in collaboration with SCEIP/Energy Upgrade in Sonoma County with mapping functionality and community engagement to provide consumers and property owners with a seamless, single point of entry to all local energy efficiency and renewable energy resources, programs, and incentives
- Leveraging SSC programs and initiatives to generate sustained support through membership
- Identifying and implementing other sources or strategies for long-term funding of Solar Sonoma County
- Establishing an internship program through partnerships with local secondary educational institutions (Sonoma State

University, Santa Rosa Junior College, etc.) to support SSC staffing needs and build the clean energy workforce

- Building long-term corporate support from local businesses and organizations that support SSC's mission
- Expanding and transforming the Clean Energy Advocate (CEA) program into a self-funded countywide program to support homeowners and commercial property owners throughout the energy efficiency and renewable energy process.
- Creating a tiered system for vetting of SSC member installers and energy efficiency specialists.
- Considering further collaborative efforts and new or expanded projects, such as multiple mini solar fairs throughout the year associated with existing community events; ongoing permitting forums and trainings; expand Solar Leaders Circle efforts to encourage more small- and mid-size commercial property owners to do solar and energy efficiency projects; and identify/engage new community partnerships to advance solar, energy efficiency, and related training opportunities throughout the county.

In addition to SSC's efforts, the City of Santa Rosa plans to finalize and launch a website that shows online monitoring of citywide solar installations.

Additional Resources

- City of Santa Rosa Environmental website: www.srcity.org/environmentalprojects
- Solar Map, City of Santa Rosa, GIS: <http://ci.santa-rosa.ca.us/departments/utilities/projects/cea/pages/solar.aspx>
- The Solar Sonoma County website: www.solarsonomacounty.org

For more city information, contact:

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For more information on going solar in your community, visit *Solar Powering Your Community: A Guide for Local Governments* at http://solaramericacommunities.energy.gov/resources/guide_for_local_governments/

For more information on individual cities' solar activities, visit www.solaramericacommunities.energy.gov/solaramericacities/action_areas/

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Clockwise from top left: Photovoltaic system in Philadelphia Center City district (photo from Mercury Solar Solutions); rooftop solar electric system at sunset (photo from SunPower, NREL/PIX 15279); Premier Homes development with building-integrated PV roofing, near Sacramento (photo from Premier Homes, NREL/PIX 15610); PV on Calvin L. Rampton Salt Palace Convention Center in Salt Lake City (photo from Utah Clean Energy); PV on the Denver Museum of Nature and Science (photo from Denver Museum of Nature & Science); and solar parking structure system at the Cal Expo in Sacramento, California (photo from Kyocera Solar, NREL/PIX 09435)

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