

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

Solar in Action



San José, California

Includes case studies on:

- Employee Solar Group Buy (SunShares Program)
- San José Green Vision Clean Energy Showcase
- Streamlined Solar Permitting and Inspection



San José's Environmental Services Department Energy Group leads tours of the Green Vision Clean Energy Showcase. *Photo from City of San José, NREL/PIX19489*

Cover photos from iStock/17079428, San José City Hall and rotunda

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.

San José's Starting Point

The City of San José was designated by the U.S. Department of Energy (DOE) on March 28, 2008 as a Solar America City. Prior to this designation, San José had shown leadership in the promotion and use of solar technologies in the commercial, residential, and municipal sectors.

In October 2007, the city council adopted the Green Vision, positioning San José to capitalize on the ingenuity and entrepreneurship in the Silicon Valley region, and lead the way in transitioning to a clean energy economy. The Green Vision is a 15-year plan, intended to create jobs, preserve the environment, and improve the quality of life for the city's nearly 1 million residents. With the adoption of the Green Vision, the city's focus on energy was strengthened with specific and aggressive goals related to the use of renewable energy. One goal of the Green Vision is to receive 100% of the city's (all sectors) electrical power from clean renewable energy sources.

In May 2007, DOE selected San José as a Solar America Showcase. DOE provided technical assistance and cost benefit analysis in evaluating the potential for solar photovoltaic (PV) and thermal applications on multiple large municipal buildings and complexes.

At the time of the Solar America City designation in 2008, approximately 500 solar electric installations totaling 3.7 megawatts (MW) existed within city boundaries.

San José residents enjoyed a number of benefits that contributed to the high rate of adoption for solar, including the following:

- The state established an energy resource loading order with (1) energy efficiency and demand response and (2) renewable energy resource and distributed generation as priorities.
- California's Million Solar Roofs Initiative supported the state's aggressive pursuit of cost-effective energy efficiency measures in concert with PV projects.
- A renewable portfolio standard of 20% ensured that a minimum amount of renewable energy including solar is included in the state's portfolio of sustainable electric generating resources.
- Rebates ranging from \$2.20 to \$2.95 per watt for residential, commercial, and government/nonprofit projects were available for PV installations through the California Solar Initiative.
- Pacific Gas & Electric, the local utility, had a net metering tariff and clear interconnection processes.

- San José is home to multiple clean tech companies, including solar manufacturers and installers.

Building Partnerships and Setting Goals

San José's approach to overcoming key barriers hindering widespread adoption of solar technologies is based on collaboration with internal and external stakeholders working on financing, permitting, workforce readiness, and increasing consumer awareness.

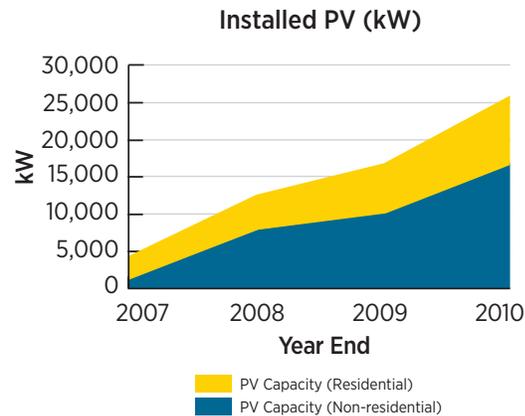
To realize the goals of the Green Vision, San José built on the collaborations in place with community stakeholders to develop and implement a plan as a Solar America City that would result in a 15% increase in solar installations in the city, and a 50% increase in awareness and knowledge of solar energy in the community over a 2-year period.

The primary market barrier for achieving the Green Vision goal of obtaining 100% of the city's electricity from renewable energy sources is the lack of financing options for energy improvement projects. Unless creative program solutions are developed, the upfront cost of energy retrofits and improvements will continue to impede widespread adoption of solar technologies. The city established a goal to develop and pilot local and regional financing, incentives, and regulatory strategies to address this barrier.

San José has joined forces with the following city departments and multiple partners to help reach established goals:

Installed Capacity

San José



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

Internal Stakeholders

- City Departments (Planning, Housing, Fire, Public Works, Economic Development, City Manager's Office)
- San José's Go Green Schools program
- San José's Silicon Valley Energy Watch program
- San José's Strong Neighborhood Initiative
- San José's Work 2Future program

External Stakeholders

- California Solar Energy Industries Association



1.1-MW PV array at the Norman Y. Mineta San José International Airport will meet 20% of the facility's energy needs. Photo from City of San José, NREL/PIX 19487



A new PV array system is installed on a home of a city employee who participated in the group buy pilot in 2010. *Photo from City of San José, NREL/PIX 19492*

- GRID Alternatives, a 501(c)3 nonprofit organization assisting communities in need by providing renewable energy and energy efficiency services, equipment, and training
- Pacific Gas & Electric
- Local educational institutions
- SolarTech, a solar industry consortium based in San José
- The Rachus Institute, a 501(c)3 nonprofit, research and educational organization with a focus on resource efficiency
- Bay Area Climate Collaborative, a public-private initiative launched by Bay Area civic and business leaders to accelerate clean energy in the region.

Accomplishments and Highlights

As of October 2010, a cumulative total of 2,035 PV systems have been installed in San José, totaling 27 MW. Although the goals of increasing both solar installations and consumer awareness in San José have been exceeded from 2008–2010, the city continues to approach barriers to solar adoption through ongoing collaboration with key stakeholders.

Specific accomplishments and highlights include the following:

Financing

- During the 2008 California Clean Tech Open, San José’s Mayor Chuck Reed issued a challenge to the industry calling on solar companies to develop ways for residents to install solar with no upfront cost within 60 days, leading the way for the zero-down solar lease model.

A cumulative total of 2,035 PV systems have been installed in San José, totaling 27 MW.

- San José established the first-of-its-kind organizational volume procurement model, the Employee Solar Group Buy (SunShares Program) pilot program. This program resulted in the lowest cost per watt to date in California and approximately 125 kilowatts (kW) of PV installations throughout the Bay Area.
 - San José opted into the CaliforniaFIRST Property Assessed Clean Energy (PACE) program and began coordinating the launch of this financing option in 2010. In response to the July 6, 2010, Federal Housing Finance Agency statement expressing concerns with PACE, most PACE programs throughout the country have been placed on hold, pending resolution. As a result, the PACE financing component of the CaliforniaFIRST Program also is on hold until further clarification. City staff will continue to follow this program’s implementation and any changes that may impact the status of PACE financing throughout 2011.
 - In partnership with the County of Santa Clara and Joint Venture Silicon Valley, San José developed and implemented a workshop on Power Purchase Agreement project management, and a regional solar Power Purchase Agreement collaborative procurement project.
 - San José received a 2010 Community Development Block Grant for PV on six municipal facilities that serve low-income residents.
 - In 2010, the San José airport installed a 1.1-MW PV array using capital funds.
- ### Increased Consumer Awareness
- In 2009–2010, public outreach efforts on the benefits, viability, and financing options of solar reached more than 3,500 community members through neighborhood presentations, events, and workshops.
 - San José has provided education, training, and curriculum to more than 60 K-12 educators, along with hands-on solar cooking workshops to schools and afterschool programs.
 - The city coordinated and provided scholarships for local teachers to attend the Rachus Institute Solar Schoolhouse Summer Institute for Educators and the U.S. Department of Energy Solar Trainer Institute in Florida.
 - San José worked with California Solar Energy Industries Association and SolarTech to coordinate the 2nd Annual SolarTech Regional Renewable Energy Summit.

- A Nonprofit and Affordable Housing Energy Summit drew more than 60 participants from around the Bay Area to discuss financial incentive programs available to the low-income community and affordable housing developers to install solar technologies.
- The Silicon Valley Energy Map was developed in collaboration with the city's Energy Watch program to provide information on energy use, solar and renewable energy, and green buildings in Santa Clara County. View the map at www.svenerymap.org.
- San José also created a solar website to provide resources on the basics of solar, incentives, workshops, and events to help the community learn about solar technologies and how to “go solar” in San José. Visit the website at <http://energy.sanJoseca.gov>.

Workforce Readiness

- San José's Clean Tech Strategy from October 2007–2010 assisted in the creation of more than 3,000 clean tech jobs.
- San José, a founding member of the industry consortium SolarTech, participates in the workforce subcommittee to ensure there will be skilled community members in PV system design and installation to meet future demand.
- Through partnerships with the city's Silicon Valley Energy Watch program, a local government partnership with Pacific Gas & Electric, San José has held multiple solar-related training courses for the general public.
- The city assisted SolarTech in coordinating the first Energy Workforce Symposium.
- In 2009, San José developed a training DVD on PV and firefighter safety. This tool was provided to more than 500 fire departments nationwide and the 24 other Solar America Cities.
- San José developed and implemented the Photovoltaic and Fire Safety training workshop for 80 California firefighters from multiple jurisdictions, and created a template for similar training workshops for other Solar America Cities.

Case Studies: Successes and Challenges

Employee Solar Group Buy (SunShares Program)

The SunShares program was piloted in 2010 for San José city employees and retirees, and provided solar procurement resources and solutions for participants.

The program was developed as a replicable model to assist employees of local and state government agencies, school districts, higher education institutions, corporations, and nonprofits organizations with a proven, step-by-step procedure for organizing grassroots employee-purchasing groups.

Participants, regardless of their city of residence, took advantage of pooling their buying power to obtain lower upfront purchase costs for solar design, hardware, and installation.

The program helped individual homeowners navigate through the time-consuming, financial, and logistical maze of installing residential solar systems. Modeled after other successful community group solar purchase efforts, the program reduced the complications and upfront costs of installing solar-electric or hot water systems by providing participants with information on financing options, technology basics, and volume-purchasing procedures.

Solar vendors spend a lot of time generating customer leads through marketing efforts. The cost of this activity is passed on to the consumer and contributes to the high upfront cost of solar installations. The SunShares Program conducted outreach efforts to potential participating city employees and retirees, encouraging the formation of a group able to buy in volume and reduce initial costs.

A range of financing options can reduce uncertainty and provide a transparent process that builds participant trust and results in the project's success. In the city's pilot program, the San José Credit Union agreed to provide low-interest home equity loans for as low as 3.99% to city members. The credit union and the selected contractors offered personal loans and solar lease options to participants who did not qualify for these types of loans due to lack of equity in their home.

The SunShares program assisted the employee group by helping them develop a request for proposals (RFP) and contractor selection guidelines. These tools, as well as an independent evaluation committee process consisting of group members reviewing potential contractor proposals, were essential in ensuring the selection of reliable contractors and creating a comfort level among participants.

Typically, the overall process to purchase a residential solar system ranges from 8–12 months. The SunShares program helped participants complete installations within 6 months.

The SunShares program resulted in the lowest cost per watt to date in California and approximately 125 kW of PV installations throughout the Bay Area.

Below is a summary of the lessons learned during the SunShares pilot program:

Procurement and Protest. Future efforts should clearly define the procurement policies and establish a process to address potential protests from contractors not selected by the employee group evaluation committee.

Financing. Work with financial institutions to establish at least two loan options to offer group participants.

Contractor's Capacity to Manage Demand. Consider the contractor's capacity to perform widespread installations throughout a region or state.

Itemized Cost Information. Consider requiring in the RFP that all quotes include, at a minimum, an itemized list of all costs, including cost per watt; each adder cost (roofing, conduit run, etc.); permitting fee; sales tax; and state and federal incentives/credits.

Technology Options and Pricing. Ensure that the winning bidder of the RFP process equitably promotes all of the technology options presented in its bid so program participants have access to a number of product offerings to meet their particular needs and budget.

Roofing. Require in the RFP that any additional cost associated with roofing is consistent across differing roofing types. Apply a cap on adder costs for roofing (e.g., all adders associated with roofing types should not exceed \$0.15/watt).

Workforce Considerations. Require as part of the RFP that if a selected contractor uses subcontractors/dealers to service the program, he or she includes a plan to ensure that the work is equitably distributed across its subcontractor/dealer network.

Contractor Communication with Group Members. Require in the RFP that the selected contractor make multiple attempts to contact group members to schedule site evaluations and finalize contracts.

Pricing Considerations. Consider fixed pricing from the start and encourage contractors to donate a system to a local nonprofit organization if the installations reach a certain goal, such as, one donated system per 100 kW of installed capacity.

The experience gained through this pilot is intended to provide other organizations with the ability to easily implement employee group buys. In March 2011, the city held a regional workshop to bring together leaders throughout the corporate, financial, healthcare, educational, and other sectors to present this model and encourage replications.

San José now works with the Bay Area Climate Collaborative (www.baclimate.org) to provide outreach on the SunShares program model to employers and financial institutions throughout the Bay Area (www.sunshares.org).

San José Green Vision Clean Energy Showcase

To address existing market barriers to widespread dissemination of solar technologies in San José, including a shortage of information and lack of consumer awareness, the city opened the country's first-of-its-kind interactive innovation showcase. The showcase houses installations of cutting-edge clean energy technologies available on the market today and in the future.

Designed as a knowledge hub for clean energy education and awareness, the San José Green Vision Clean Energy Showcase provides visitors hands-on experience with advanced solar, wind, and energy efficiency technologies while providing the information required to make informed decisions about clean energy options.

The City of San José Environmental Services Department organized the showcase; the San José Redevelopment Agency provided the site; and Pacific Gas & Electric performed site interconnection. The project was funded through donations and the DOE Solar America Cities special project grant through the American Recovery and Reinvestment Act.

Located directly across the street from City Hall, the showcase advances key goals of San José's Green Vision as it looks to

educate consumers about clean energy solutions, advance available resources for green collar workforce training, and provide vital training and education for San José's students.

In collaboration with technical assistance from DOE and CH2M HILL, the city designed an electrical infrastructure to support donated projects from more than a dozen solar and other clean tech companies and organizations. The site features 12.5 kW of grid-tied solar arrays, off-grid projects with electric vehicle plug-in capability, light emitting diode (LED) streetlights, an energy-efficient demonstration house, vertical axis wind turbines, and concentrated solar thermal technologies.

The city expects to reach more than 5,000 community members through free guided tours of the showcase, which are

The SunShares
program
resulted in the
lowest solar
energy cost per
watt to date in
California.

available to the public through December 2011. Visit energy.sanJoseca.gov for more information.

Streamlined Solar Permitting and Inspection

San José has been at the forefront of addressing issues associated with solar permitting and inspection processes and serves as a powerful example for other cities across the nation.

The city's Building Department has been a driving force promoting safe and compliant installation of renewable energy for nearly a decade. To date, the department has been successful in reducing solar permit costs, providing over-the-counter permitting for residential solar projects, reaching out to installers to provide training and information, training field staff, and maintaining consistent enforcement throughout San José.

Much of the success of the streamlined permitting process is attributed to having information available to applicants before they obtain their permits and before they call for inspection. One of the top priorities is providing a solar-ready checklist for installers. Crafted in coordination with the solar industry, the checklist includes all the information needed to ensure an efficient permitting and inspection process.

San José also held Renewable Energy Permitting Symposiums in 2008 and 2009 with SolarTech, an industry consortium working to remove solar technical and market barriers. The symposiums brought together building, code, fire, and permitting leaders, with industry representatives to gather data, spark dialogue, and identify actionable solutions to further streamline the solar permitting process.

The result of these changes in San José's system and stakeholder collaboration has had a significant impact in providing easy community access to solar.

Top Takeaways

- There is a good opportunity to reach large numbers of individuals interested in going solar by establishing group solar procurements at the organizational level. In doing so, both cost and project cycle times are reduced. An independent advisor can facilitate relationships between financing entities, group participants, and contractors.

For more city information, contact:

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- Providing the community with easily accessible information on solar via the San José solar website, in addition to offering hands-on experience with solar technologies at the Green Vision Clean Energy Showcase reduces barriers to solar market adoption.
- Having a streamlined permitting process with clearly stated requirements can go a long way toward enabling easier adoption of solar technologies. Coordinating with neighboring municipalities and stakeholders on permitting processes advances efforts to to standardize processes across a region.

Next Steps

In 2009, San José was awarded a DOE Solar America Cities special project grant to increase solar energy use throughout the community by developing innovative programs that remove barriers to solar adoption and are easily replicated across the nation. Specific near-term plans are as follows:

- San José will launch solar workforce development opportunities in 2011 for at-risk youth as well as provide teaching materials and a solar curriculum to schools.
- The city will add four additional solar demonstration projects at the Green Vision Clean Energy Showcase and ramp up marketing and outreach efforts to drive attendance.
- A solar calculator tool will be integrated into the Silicon Valley Energy Map and linked to the city's solar website.

Additional Resources

- San José Green Vision: <http://greenvision.sanJoseca.gov/>
- San José Solar Website: <http://energy.sanJoseca.gov/>
- SunShares Program: www.sunshares.org
- San José Permitting Resources:
 - www.sanJoseca.gov/building/PDFHandouts/SolarChecklistIII.pdf
 - www.sanJoseca.gov/building/PDFHandouts/1-10Solar.pdf

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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