

Single-family Affordable Solar Homes (SASH) Program

Q4 2012 Program Status Report



January 2013



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1. Program Summary

The Single-family Affordable Solar Homes (SASH) Program is one of the California Solar Initiative's (CSI) two low-income programs. GRID Alternatives, a non-profit solar contractor, is the statewide Program Manager for the SASH Program. The SASH incentive is available to qualifying low-income homeowners in the Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas and Electric (SDG&E) service territories.

The SASH Program is uniquely designed to be a comprehensive low-income solar program. In addition to providing differential incentives, SASH is structured to promote or provide energy efficiency, workforce development and green jobs training opportunities, and broad community engagement with low-income communities. There is no other solar program in California that has such a diverse range of benefits for low-income communities. It is truly a first-of-its-kind solar program.

The SASH incentive provides low-income families with free or low-cost solar photovoltaic (PV) systems that significantly reduce household energy expenses and allow families to direct those savings toward other basic needs. GRID Alternatives' volunteer-based installation model has proven to be a highly efficient and low-cost model that makes solar even more affordable for low-income homeowners. In addition to being the primary installer for SASH, GRID provides education on and access to energy efficiency programs that further reduce a household's energy consumption and expenses.

In implementing the SASH Program, GRID Alternatives provides opportunities for local volunteers to assist with installations, to engage their communities, and to participate in CSI programs. To date, GRID has trained over 10,500 volunteers statewide to help promote and install solar in low-income communities. GRID requires its volunteers to participate in a solar orientation program that educates these potential solar adopters about solar PV and energy efficiency. This basic consumer education program will help further the broader CSI goals of promoting the use of solar PV technology statewide and helping build broad-based community support for solar electric technologies and energy efficiency.

Finally, SASH provides a foundation for promoting and building a sustainable solar industry in California by incorporating a workforce development and job training component into the program. GRID partners with local job training programs to give their trainees an opportunity to get hands-on installation experience. The SASH Program also promotes partnerships between solar contractors and local workforce development programs by including a job training requirement for all sub-contracted SASH projects. This becomes a double benefit to low-income communities since many green-collar job trainees come from the same communities that the SASH Program aims to serve.

2. Background

In 2006, the California Assembly Bill 2723 directed that no less than ten percent of the overall CSI funding be directed towards programs assisting low-income households in obtaining the benefits of solar technology.

In D.07-11-045, the Commission established the \$108.34 million SASH Program as a component of the CSI Program. The SASH Program provides incentives "for homeowners who occupy their homes and meet the definition of low-income housing established in Public Utilities Code Section 2852."¹ The Commission adopted an incentive structure that provides a fully-subsidized 1kW PV-solar system to "very-low income" households, and a partial-subsidy to qualified "low-income" households.

¹ D.07-11-045, Appendix A, p.1

The overall goal of the SASH program is “to provide existing low-income single family homes with access to photovoltaic (PV) systems to decrease electricity usage and bills without increasing monthly household expenses.”²

The SASH Program will operate either until December 31, 2015, or when all funds available from the program’s incentive budget have been encumbered, whichever event occurs first. Details of the SASH Program can be found in the CSI Program Handbook or at www.gridalternatives.org/sash.

3. Q4 2012 Overview

The SASH Program continued its track record of success by ending 2012 with strong fourth quarter results and the highest installation volume of any quarter since the Program began. Nearly 400 low-income homeowners throughout CA interconnected a SASH solar electric system in Q4 2012 and are now generating electricity that can help offset their load and save them money every month on their utility bill. SASH interconnected over 1.2MW (CEC-AC) of PV solar in Q4 2012, and cumulatively, the Program recently surpassed 7MW (CEC-AC) of interconnected electrical generating capacity.

The SASH Program not only is providing direct economic benefits to participating families, but also is adding value to the industry in the areas of green job training and broad consumer education as each SASH project contains a workforce development component and provides opportunities for job trainees and volunteers to get hands-on experience installing solar systems. Every SASH installation includes either a team of volunteers from the local community or graduates from job training programs. In addition, each sub-contracted installation requires at least one job trainee to be on site, as a paid worker learning valuable skills. These green job training opportunities form the backbone of SASH and create lasting value in local communities by helping foster a new green workforce – a workforce of skilled laborers, many hailing from the same communities that SASH aims to serve – that will have high employability in California’s expanding solar job sector.

At the end of Q4 2012, 2,487 PV-systems have been installed and interconnected, 301 projects have been reserved and are awaiting installation or interconnection, and another 351 applications statewide are under review by GRID’s construction staff and sub-contracting partners to determine if the system design meets the SASH Modified Design Factor (MDF) requirement and the site is solar suitable.

To attract new SASH clients, GRID’s seven California regional offices continued to implement strategies that have proven successful in previous quarters such as expanding marketing and outreach scope, and both fostering new relationships and strengthening existing partnerships with volunteers, job training programs, local businesses, and municipalities. Word-of-mouth and testimonials from satisfied customers continue to be the best marketing tool for acquiring new SASH clients and fortifying existing clients’ relationships.

4. Budget

The SASH Program budget is \$108.34 million. The program will be funded by Pacific Gas and Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric Company (SDG&E) according to the following percentages:

Table 1: SASH Budget Allocations by Utility Territory

² D.07-11-045, Appendix A, p.1

	PG&E	SCE	SDG&E	Total
Budget %	43.7%	46%	10.3%	100%
Total Budget (\$ in millions)	\$47.34	\$49.8	\$11.2	\$108.34

The Program Manager shall ensure that the \$108.34 million is allocated as follows across program functions:

Table 2: SASH Budget Allocations by Program Functions

	Budget, %	Budget, \$	Expensed / Encumbered thru Q4 2012
Incentives	85%	\$92,089,000	\$59,270,000
Administration	10%	\$10,830,000	\$4,821,853
Marketing and Outreach	4%	\$4,330,000	\$2,227,898
Evaluation	1%	\$1,091,000	Budget resides w/ CPUC
Total	100%	\$108,340,000	\$66,319,751

5. Program Growth and Project Costs

The SASH Implementation Plan delineates cumulative targets for installations and incentives for each year of the SASH Program, thereby allowing GRID to benchmark progress and ensure that the IOU's allotted incentive dollars are being properly allocated. In the SASH Implementation Plan, the 2012 cumulative targets for completed and reserved projects are \$42M in incentives and ~6MW (CEC-AC). **At the end of 2012, SASH has completed and reserved projects totaling \$53.2 million in incentives and 8.5MW (CEC-AC) in capacity which exceeds the entire year's goal by ~25% and ~40%, respectively.**

Table 3 below summarizes the status of all SASH applications through Q4 2012.

Table 3: SASH Applications by Status and Service Territory

Application Status	Number of Applications				Total kW, (CEC-AC)	Total Incentives, \$ millions
	PG&E	SCE	SDG&E	Totals		
STEP 1: Applications under review	158	143	50	351	1,017.90*	\$6.11*
STEP 2: Confirmed Applications/Reservations	89	168	44	301	943.8	\$5.59
STEP 3: Completed/Installed	1,291	904	292	2,487	7,564.6	\$47.57
TOTALS	1538	1215	386	3139	9,526.3	\$59.27

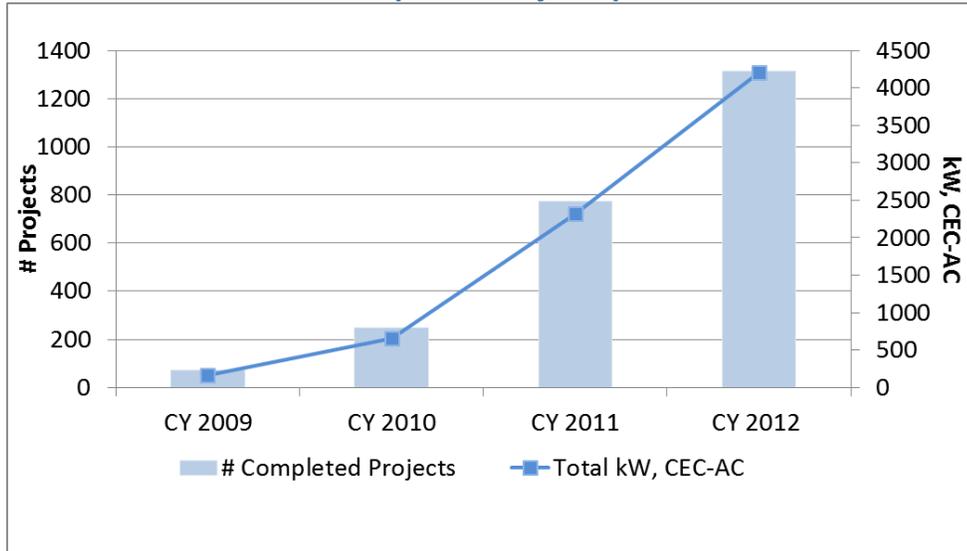
Data collected 1/9/2012

* Step 1 system sizing (kW) and incentives (\$) are estimates based on an average system size of 2.9kW, CEC-AC and incentive level of \$6.00/W. System designs are not completed until the Applicant is confirmed to meet all other program requirements. The majority (>90%) of projects in Step 1 will receive Step 2 reservations.

Since the beginning of the SASH Program, there has been steady and incremental growth in the number of interconnected projects each quarter. The SASH Program continued this solid growth trajectory in Q4 2012 as 389 projects totaling over 1.2MW (CEC-AC) in capacity were interconnected. Chart 1 below compounds quarterly results into annual totals, illustrating the significant growth of the

Program over the last 4 years.

Chart 1: Completed Projects per Year



System size: Chart 2 below shows that nearly 70% of installed SASH PV-systems are less than 3kW, and the average SASH installed project is around 2.9kW (CEC-AC). Where the system size is not constrained by roof space, SASH system sizing is based upon the client’s annual usage (kWh) minus the energy efficiency savings the client may realize by adopting basic energy efficiency measures, and is capped at 7kW (CEC-AC).

Chart 2: Completed SASH Installations by System Size

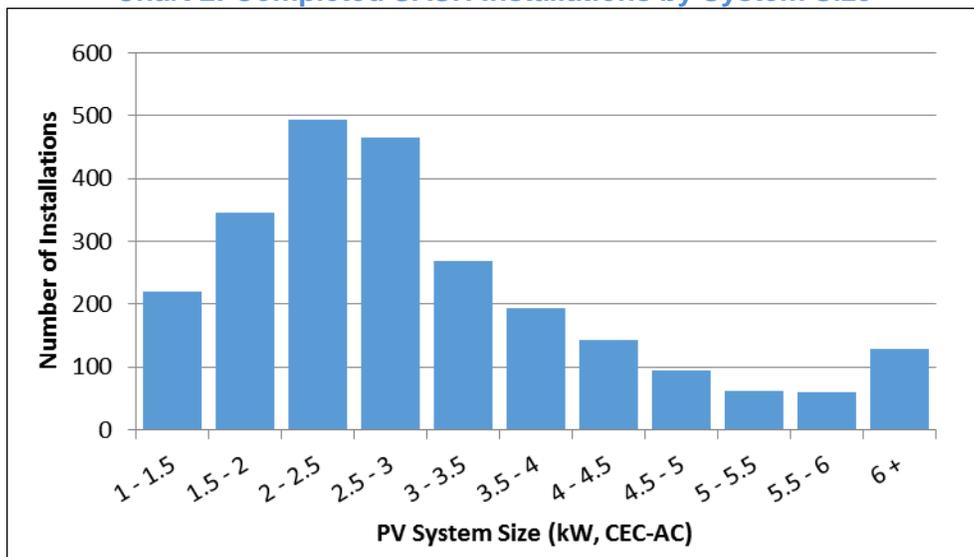


Chart 3 below compares SASH’s installed cost per Watt for similarly sized systems in the general market program. On the smallest sized systems (1-1.5kW) SASH systems cost 25% less than general market systems. In addition, SASH’s average installed costs remain substantially lower than installation costs for similarly sized projects in the general market CSI Program. **SASH systems’ installed-cost is ~ \$0.50/W-\$2.50/W less than general market systems of the same size.**

Chart 3: Installed Cost per Watt, SASH vs. General Market CSI

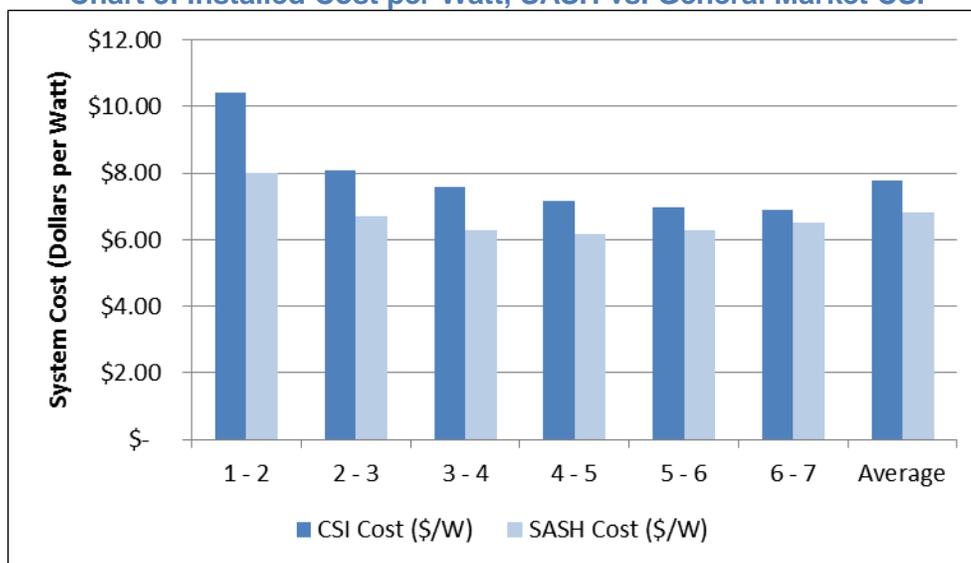


Chart 3: GRID’s data is based on the total number (2480) of installed SASH projects to date (1/9/2013). The CSI sample set (54,981 projects) is from the California Solar Statistics (updated 1/9/2013), and is filtered to include all residential projects, under 7kW, installed or reserved from 1/1/2009 – 1/9/2012.

6. Incentives and Project Financing

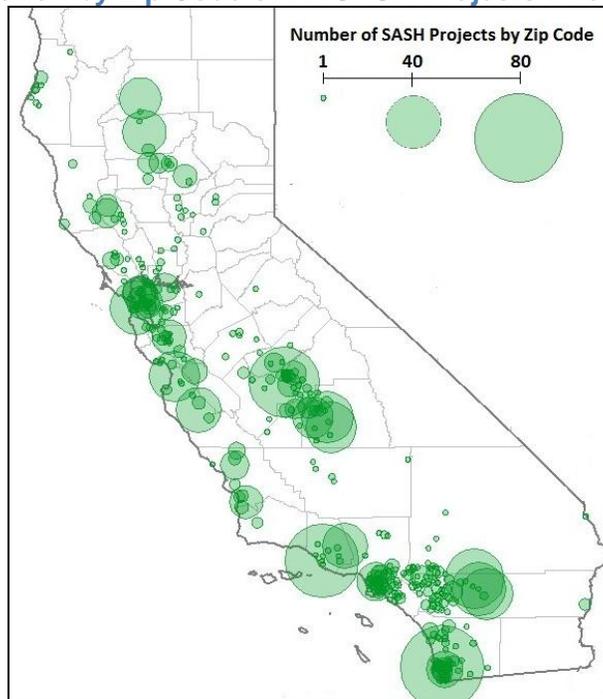
The SASH Program is designed to be a comprehensive low-income program, and serve homeowners in the most distressed and impoverished areas of California. Over 90% of SASH clients qualify for the California Alternate Rates for Energy (CARE) Program that offers reduced electric rates to income-qualified households. This demonstrates that the SASH Program is mainly serving homeowners at the lowest income levels who need the savings provided from solar electric systems the most. GRID consults with homeowners who have a financing gap between their system costs and available incentive to explore individual financing options, such as a client contribution or private loan, and has experienced limited success with this challenge. In most instances GRID has aided in overcoming the gap financing obstacle for families by contributing the organization’s own non-profit fundraising dollars toward covering the gap between the available incentive and the project’s costs, thereby allowing more families to go solar with the SASH Program than otherwise would have been able to do so.

GRID’s contributions toward covering these financing gaps include: fundraising dollars, in-kind donations, philanthropic donations, and corporate sponsorships. GRID’s 2012 partnerships with major module manufacturers Yingli Solar and Sunpower Corporation significantly helped cover many SASH clients’ gap funding requirements, and GRID expects to utilize contributions from donors and sponsorships to assist in gap financing for 2013. Given the slow economic recovery, continued tight credit markets, and the inability for most homeowners to assume more debt, gap financing remains a potential obstacle for low-income families to participate in the SASH Program.

7. Marketing and Outreach

GRID Alternatives currently has seven offices located in Oakland (PG&E), Carson (SCE), San Diego (SDG&E), Fresno (SCE/PG&E), Atascadero (SCE/PG&E), Riverside (SCE), and Chico (PG&E). Map 1 below shows the location of all pending or completed applications through Q4 2012.

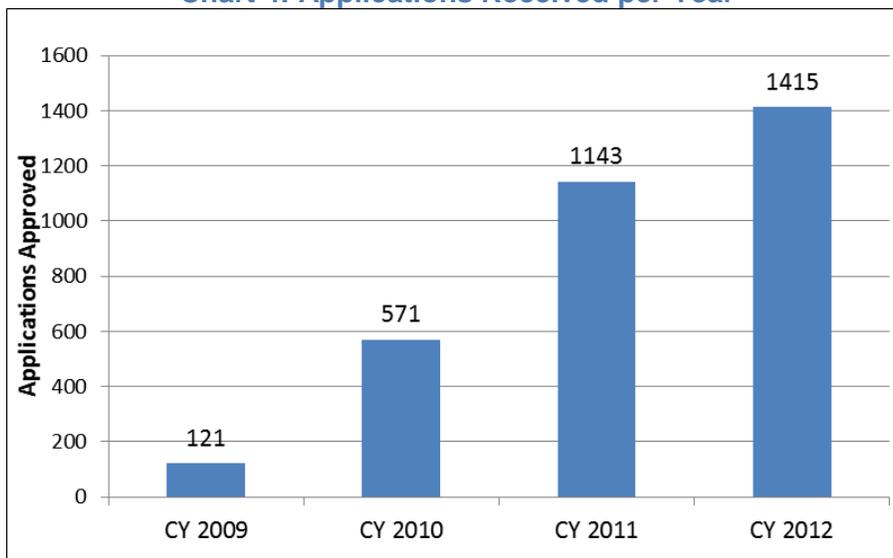
Map 1: Location by Zip Code of All SASH Projects through Q4 2012



Map 1 illustrates that SASH projects have been completed and reserved over a wide range of geographic areas throughout the IOU territories.

Chart 4 below shows that GRID received 1415 applications from eligible SASH clients in 2012, (nearly 300 of those in Q4 2012) bringing the total number of approved SASH applications to over 3,200.

Chart 4: Applications Received per Year



GRID Alternatives' statewide staff continue to utilize many of the marketing and outreach methods proven to be effective for recruiting SASH clients and building SASH brand recognition since the inception of the Program. These activities include: leveraging partnerships with organizations trusted

by low-income homeowners, offering consumer education sessions, and increasing community exposure to SASH through events, media and marketing collateral.

GRID also leverages its existing relationships with key community partners to spearhead outreach efforts in low-income communities. GRID garners support and participation from the first-adopters of the SASH Program to discuss their experiences with their neighbors and acquaintances and encourage them to contact GRID. Oftentimes, a former SASH client will invite their neighbors, and GRID's outreach staff, to a meeting at their own home to help promote the Program in their neighborhood. Involving neighbors, volunteers, and civic supporters at SASH installations helps build the SASH brand recognition on-the-ground in low-income communities, and for a wide audience of stakeholders.

8. Volunteer and Workforce Development



GRID Alternatives' unique volunteer-based installation model and organization-wide focus on green jobs training has made every SASH project a workforce development opportunity for a broad range of professional interests. To date, the SASH Program has filled over 19,200 workday positions with volunteer participants and has dedicated an additional 2,200 workday positions specifically for job trainees. These volunteer and job training opportunities help strengthen California's solar industry by providing broad consumer education and providing a means for individuals from diverse backgrounds to learn about PV solar design and installation through hands-on experience.

Volunteer and training opportunities can help create the solar market transformation sought through the California Solar Initiative. These opportunities also create a well-informed public and proof that the technology can be adopted by everyone in every community within California.

GRID ensures that the volunteers on SASH projects are adequately trained in safety and installation techniques and understand the basic fundamentals of the SASH Program, the California Solar Initiative, and the benefits of PV-solar by requiring all volunteers to attend a mandatory volunteer/solar orientation. Since the inception of the SASH Program, over 9,450 prospective volunteers have completed GRID's mandatory orientation and the majority have gone on to participate in an installation. Volunteers and job trainees form the backbone to GRID's installation model and will be an important part of the overall success of the SASH Program.

GRID Alternatives has incorporated "green job" training and workforce development initiatives into the SASH Program with the following initiatives:

- **Integration of hands-on solar installation experience into low-income job training programs.** GRID Alternatives presently partners with over 60 job training organizations to incorporate GRID's volunteer-based installation projects into their construction training curricula. GRID dedicates approximately 20% of its internal installations for these trainees to gain hands-on experience with real-world solar PV installations that have conditions and requirements comparable to what they would encounter in private industry. This becomes a double benefit to the low-income community since many solar job trainees come from the same neighborhoods

that the SASH Program aims to serve.

- **GRID Team Leader and ongoing hands-on opportunities of job trainees.** In addition to reserving entire installations for job training partnerships, GRID gives individual job trainees priority to participate on volunteer installations. Additionally, job trainees can participate in GRID’s “Team Leader Program” that provides leadership roles on GRID’s volunteer installations. These Team Leader initiatives give job trainees more opportunities to get the critical hands-on PV-installation experience required by most PV-solar contractors.
- **GRID Team Leaders may apply their experience toward NABCEP certification.** The North American Board of Certified Energy Practitioners (NABCEP) is widely recognized as the leading certification for solar energy professionals. An individual pursuing NABCEP’s PV solar installer certification must meet the Board’s minimum requirement of having completed 5 PV solar installations as part of their application. One of the auxiliary benefits for GRID Team Leaders is that their experience working directly under professional installers while leading other volunteers can be applied toward meeting NABCEP’s requirements for certification.
- **Paid work and job placement opportunities for training program graduates.** Students or graduates of job training organizations may be provided with short-term paid work and opportunities for long-term job placement in the solar PV industry through the SASH Sub-Contractor Partnership Program (SPP). Trainees from over 50 different CA job training programs have worked alongside experienced installers from 40 for-profit companies to install SASH systems. These opportunities provide the job trainees and the contractors with extended, paid “field interviews” where the trainees can be evaluated for available long-term installer positions with the company. Since the inception of the SPP, over 1,100 paid job opportunities have come to fruition for California solar job trainees through SPP installations. Although the minimum requirement is to hire one job trainee per SPP installation, over 15% of SPP installations have had two or even three job trainees on site – all as paid workers learning valuable solar skills.
- **General volunteering opportunities.** Over 9,450 individual volunteers have completed GRID’s volunteer/solar orientation since the commencement of the SASH Program. The orientation program allows GRID to promote solar energy and educates volunteers on solar technologies, the importance of energy efficiency, and the CSI incentive programs. Individuals who complete the volunteer/solar orientation leave not only with eligibility to work on SASH installations, but also with heightened knowledge about the solar industry and the SASH Program that can motivate them to be solar advocates in their own communities.



9. Energy Efficiency

Energy efficiency (EE) remains an important part of the SASH program and the overall mission of GRID Alternatives. GRID believes that energy efficiency is the essential first step to implement in clients' homes before installing solar PV. To this end, GRID performs an energy efficiency audit for every SASH applicant and shares comprehensive EE report with the homeowner. GRID works with the Energy Savings Assistance Program (ESAP) administrators to enroll homeowners into ESAP if they are eligible, and with the IOUs to streamline ESAP enrollment for SASH clients. Table 4 below summarizes the number of SASH applicants that qualified and were enrolled into the ESAP programs.

Table 4: ESAP Enrollment

Utility	Total
PG&E	877
SCE	1,195
SDG&E	332
Total	2,404