

**Disadvantaged Communities – Single-family Solar
Homes (DAC-SASH) program**

Semi-annual Progress Report

July 2023



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1. Program Summary

The Disadvantaged Communities – Single-family Solar Homes (DAC-SASH) program is overseen by the California Public Utilities Commission (CPUC, or Commission) and provides incentives for photovoltaic (PV) solar systems to qualifying low-income homeowners located in disadvantaged communities¹ within the service territories of Pacific Gas & Electric Company (PG&E), Southern California Edison Company (SCE), and San Diego Gas & Electric (SDG&E), (collectively, the California investor-owned utilities or IOUs). GRID Alternatives (GRID), a non-profit solar contractor, is the statewide Program Administrator (PA) for the DAC-SASH Program. DAC-SASH is largely designed based on the Single-family Affordable Solar Homes (SASH) program, which has operated since 2008 and is also administered by GRID.

The goal of DAC-SASH is to provide opportunities for low-income homeowners within disadvantaged communities to overcome barriers to accessing on-site, solar PV systems to decrease electricity usage and bills without increasing monthly household expenses. Low-income families face myriad barriers to accessing solar, including financial; lack of marketing and outreach; educational and linguistic; distrust of outside entities and governments; and structural barriers like housing types and roof condition. GRID's experience has demonstrated that dedicated, carefully designed and

¹ Disadvantaged communities for the DAC-SASH program are defined as census tracts scoring in the top 25% statewide on the CalEnviroScreen 4.0 map (before 2022 we used CES 3.0 map). Homeowners in one of 22 additional census tracts that are in the top five percent of pollution burden but that do not have an overall CalEnviroScreen score because of unreliable socioeconomic data are also eligible. <https://oehha.ca.gov/calenviroscreen/maps-data>

executed low-income solar programs can overcome these barriers and provide access to the program and meaningful community co-benefits.

GRID's program model represents a holistic approach for a hard-to-reach population. The model for DAC-SASH is an integrated, turn-key model in which GRID takes responsibility for the entire project process from client outreach through contracting and system installation. The approach incorporates energy education, referrals to complementary services and job training. This proven model ensures efficient program delivery while maximizing benefits to participating families and communities and maintaining iron-clad consumer protections for a vulnerable population.

Implementing the DAC-SASH program, GRID provides opportunities for local volunteers (pre-pandemic) and job trainees to assist with installations, engage their communities, and to participate in California energy programs. Every project includes a workforce development component, and opportunities for individuals to receive on-the-job training and access resources to assist in obtaining long-term employment. GRID partners with job training organizations (JTOs) around the state and will be focused on JTOs located in disadvantaged communities and job trainees residing in disadvantaged communities for the program's workforce development initiatives.

2. Background

Assembly Bill (AB) 327 (Perea), Stats. 2013, ch. 611 directed the California Public Utilities Commission (Commission) to develop a successor to then-existing Net Energy Metering (NEM) tariffs, and also required the Commission to develop specific alternatives designed to increase adoption and growth of renewable generation in disadvantaged communities (DACs). The Commission issued Decision (D.) 18-06-027 (Decision) in June 2018, which adopted three new programs intended to promote the installation of renewable generation among residential customers in DACs: the DAC-Single-family Solar Homes (DAC-SASH) program, the DAC-Green Tariff program, and the Community Solar Green Tariff program.

The Decision describes the intent with the creation of the DAC-SASH program:² “The DAC – Single-family Solar Homes (DAC-SASH) program, modeled after the Single-family Affordable Solar Homes (SASH) program, will provide assistance in the form of upfront financial incentives towards the installation of solar generating systems on the homes of low-income homeowners. The DAC-SASH program will be available to low-income customers who are resident-owners of single-family homes in DACs. The incentives provided through DAC-SASH will assist low-income customers in overcoming barriers to the installation of solar energy, such as a lack of up-front capital or credit needed to finance solar.”

The Commission’s experience with a non-utility Program Administrator (PA) successfully managing the SASH program informed its decision to have the DAC-SASH program managed by a single statewide PA, selected through a competitive bidding

² D. 18-06-027: Alternate Decision Adopting Alternatives to Promote Solar Distributed Generation in Disadvantaged Communities. 21 June 2018, p. 2-3.

process.³ The DAC-SASH PA Request for Proposals (RFP) was released on October 19, 2018 and the PA role awarded to GRID Alternatives (GRID) on January 4, 2019.

Eligibility Requirements:

To qualify for DAC-SASH, homeowners must live in one of the top 25 percent most disadvantaged communities statewide using the [CalEnviroScreen](#)⁴ and be a billing customer of one of the state's IOUs. As of late 2020, Decision 20-12-003 added tribal lands (or California Indian Country) as eligible geography for the program as well, in addition to DACs. Homeowners must also meet [income qualifications](#) denoted by the income guidelines of either the California Alternate Rates for Energy (CARE) program or the Family Electric Rate Assistance (FERA) program. Details for the DAC-SASH program's eligibility and application processes can be found in the [DAC-SASH Program Handbook](#). Both D.18-06-027 and GRID's DAC-SASH Administration Contract with SCE delineate reporting requirements for this progress report,⁵ which will be published by January 30 and July 30 and detail the progress of the prior two quarters.

³ D. 18-06-027, p. 33.

⁴ Homeowners in one of 22 additional census tracts that are in the top five percent of pollution burden but that do not have an overall CalEnviroScreen score because of unreliable socioeconomic data are also eligible. See D.18-06-027, Conclusion of Law 3.

⁵ D.18-06-027, at pg. A-4, and Task 6(D)(1-19) in SCE PO 4501098383 Statement of Work, April 2, 2019.

3. Q1-Q2 2023 Update

Overview: In the first half of 2023 the DAC-SASH Program made good progress, with 1,275 kW (CEC-AC) of solar electric capacity interconnected for the benefit of over 300 low-income homeowners, which is similar to the second half of 2022. The program's total installed capacity consists of 8.08 MW (CEC-AC) or over 2,100 PV systems. 104 of those are for tribal households, or almost 5.5% of all projects, which is greater than the percentage of tribal members in the state. Currently over 130 projects are reserved and awaiting installation and over 180 applications have been submitted and are under review. In early 2023, GRID continued to consider and act on the impacts of the Net Billing Tariff (NBT) to households' bill savings and continued to update its processes to account for those impacts. In order to mitigate the impacts of NBT on clients, GRID worked quickly to get as many customers submitted for NEM 2 rates by the deadline in April and then processed those in May and June. GRID also applied to be a Capitation partner of SCE's with two of its other regional teams in order to provide more savings and benefits to participants.

ME&O activities: To attract new participants, GRID continues to gather word-of-mouth testimonials from past participants, attend community events, send mailers and postcards, and as of 2022 began receiving online leads from email co-marketing with SCE and PG&E (in 2021 and prior it had done *snail mail or print* co-marketing with SCE on a voluntary basis). GRID is also connecting with more tribal liaisons and tribal homeowners and tribal projects are often paired with GRID's Tribal Solar Accelerator Fund ([TSAF](#)) to ensure the installation is fully funded. For example, 26 DAC-SASH projects located in SDG&E have also received funding from TSAF. GRID continued to

process RHA's leads in the SJV pilot through April, but since then has discontinued this practice as RHA's role in the pilot has ended. GRID continued to implement the [DAC-SASH ME&O Plan](#) across the state more generally and will publish an updated Plan in Q3 of 2023. In the first half of 2023 GRID made even more progress on its new electronic application (partially funded by DAC-SASH), launching and testing the product with over 70 customers and outreach staff across the state. To date the feedback has been very positive and GRID plans to provide the option to apply online to all customers by the end of 2023. Backend API legwork began in Q4 of 2022 and continued in 2023. This product will be iterated upon throughout 2023 to continue refining it and ensure that it is well-suited for DAC communities. GRID expects that at least 25% of applicants will apply online in the future, in addition to applicants for other programs aside from DAC-SASH that GRID works with concurrently.

Ongoing activities include refining quality control (QC) processes, third party inspections, and subcontractor management. GRID reintroduced its corporate volunteer groups and sponsorships in early 2022 (after they were paused in 2020), but it continued to keep *public* volunteers off installations due to capacity constraints. Group job trainings continue to take place in-person and online, including its [Installation Basics Trainings](#) (IBT). Finally, job trainees returned to real-world install sites in 2022 after a long pandemic pause.

Evaluation activities: GRID again worked closely with the program's 3rd party evaluator to provide information that was requested. In March GRID provided comments on a draft evaluation report, and in April GRID staff attended a public webinar. Once the [final report was published](#) in May, GRID reviewed the final report findings, met internally to

discuss the formal recommendations, and in June GRID created its response to those Evaluator recommendations. Overall the findings were positive for the program, such as this statement that ““On average, DAC-SASH participants are estimated to have...a 94% decrease in their electric bill cost (\$990 annually)” and that “the solar arrays in the evaluation sample are generating 103% of the program’s original estimate” in terms of kWh generation. Perhaps most importantly, the report found that “GRID is doing a good job at educating and gaining the trust of the community” with its outreach tactics.

4. Program Budget

The Commission authorized \$10M per year to be collected for DAC-SASH, beginning on January 1, 2019, and continuing through December 31, 2030. The Decision describes that the state’s IOUs will first collect DAC-SASH program funding through available greenhouse gas (GHG) allowance revenues. In the event that there are insufficient funds available from those revenues, then the DAC-SASH program will be funded through customer rates via public purpose funds.⁶ The \$120M program is 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 %:

⁶ D. 18-06-027, p. 31.

Table 1: Budget Allocations by Utility Territory

(\$ in millions)	PG&E	SCE	SDG&E	Total
Budget %	43.7%	46.0%	10.3%	100%
Budget through 2023	\$21.85	\$23.00	\$5.15	\$50.00
Remaining Program Budget (2024-2030)	\$30.59	\$32.20	\$7.21	\$70.00
Total Program Budget	\$52.44	\$55.20	\$12.36	\$120.00

Table 2: Budget through 2023: Allocations by Program Function

	Budget %	Budget through 2023	Expensed Q1-Q2, 2023	Expensed prior to 2023	Remaining in 2023 Budget ⁷
Incentives	85%	\$42,500,000	\$3,285,384	\$17,929,428	\$21,285,188
Administration	10%	\$5,000,000	\$574,783	\$3,988,850	\$436,367
Marketing & Outreach	4%	\$2,000,000	\$225,675	\$1,599,066	\$175,259
Evaluation	1%	\$500,000	Budget resides w/ CPUC		
Total Program Budget	100%	\$50,000,000	\$4,085,841	\$23,517,344	\$21,896,814

⁷ Unused funds roll over to the subsequent calendar year, and any funds not allocated to specific projects or expenses by December 31, 2030, will be returned to ratepayers. D. 18-06-027, p. 31.

5. Program Growth and Project Details

Table 3 below summarizes the status of DAC-SASH applications through Q2 2023 based on the application approval date.

Table 3: Applications by Status and Utility 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	56	74	4	134	495.8	\$1.49
STEP 2: Confirmed Applications/Reservations	163	106	19	288	1,215.6	\$3.65
STEP 3: Installed	1,268	7666	69	2,103	8,076.9	\$24.23
Total	1,487	946	92	2,525	9,788.3	\$29.36

Data pulled 7/15/23. *Step 1 system sizing (kW) and incentives (\$) are estimates based on an average system size of 3.7kW CEC-AC and incentive level of \$3/W. Designs are not completed until the Applicant is confirmed to meet all program requirements, but typically >90% of projects in Step 1 will move forward to Reserved status.

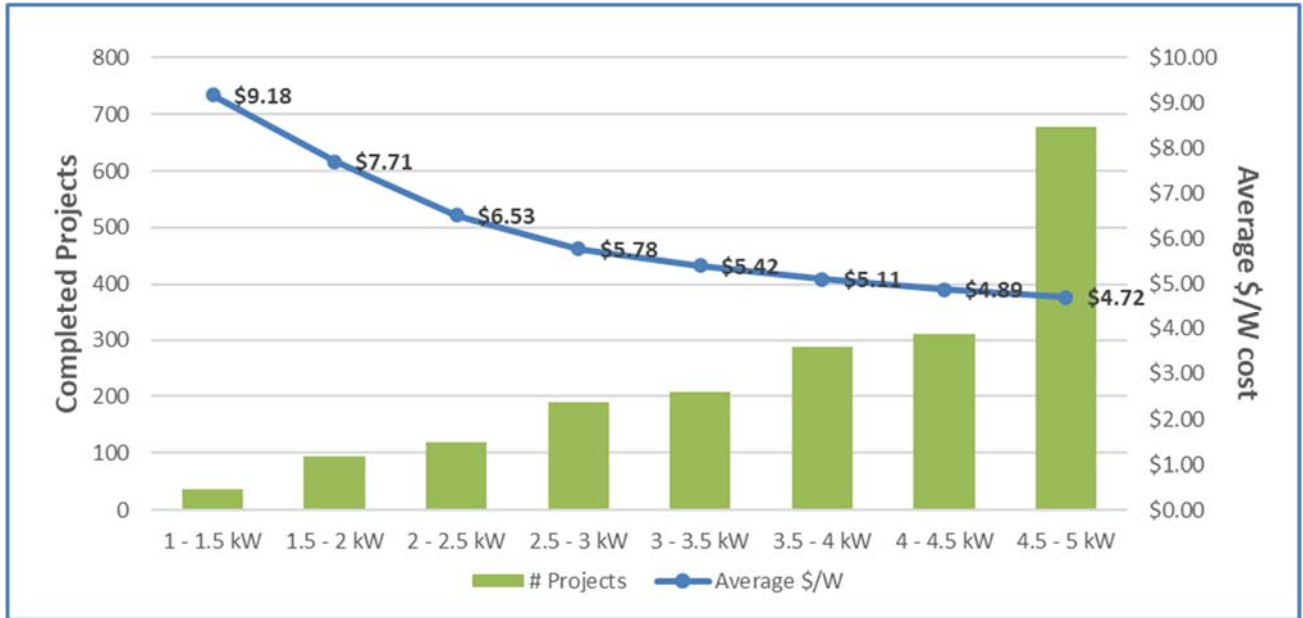
Chart 1: Completed Projects by Quarter⁸



Chart 1 above illustrates progress in 2023, with 311 projects completed or interconnected in Q1 and Q2. These projects represent almost 1.3 MW (CEC-AC) in installed capacity. Chart 2 below indicates that over 70% of all installed DAC-SASH PV-systems are 3kW (CEC-AC) in size or larger, with an average installed system size of 3.7kW (CEC-AC). Where the system size is not constrained by roof space, 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. Projects are currently capped at 5kW (CEC-AC) and minimum system size is 1kW.

⁸ For ease of viewing, 2019 is not shown here. For earlier years see charts here: <https://www.californiadgstats.ca.gov/charts/li/>

Chart 2: Completed Projects: System Size and \$/Watt cost



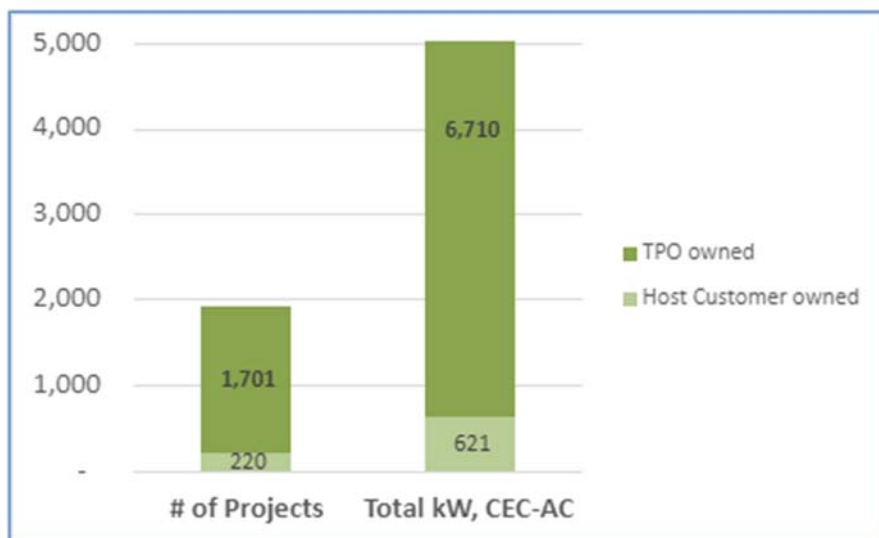
6. Incentives and Project Financing

The DAC-SASH program offers one, non-declining incentive level of \$3/W (CEC-AC). GRID's average cost to install DAC-SASH systems through 2023 is \$5.11/Watt (CEC-AC) and varies by system size (see Chart 2 above). This average system cost does not include marketing and outreach expenses required to reach target audiences and educate them about program benefits, nor does it include GRID's expense to provide job training, workforce development and education. The cost for DAC-SASH installations is higher than a general market installation because GRID brings teams of job training students to assist with the installation, creating a teaching opportunity and a classroom on the roof for solar job trainees.

Because the incentive of \$3/W, CEC-AC covers ~60% of the average system cost, GRID must overcome a financing gap for families by contributing the organization's own fundraising dollars or other additional resources toward covering the gap, which allows more families to go solar with the Program.

GRID's contributions toward these financing gaps include general philanthropy, in-kind equipment donations, proceeds from GRID's third-party ownership (TPO) model, and corporate sponsorships. Long-standing partnerships with major equipment manufacturers including Enphase Energy and SMA Solar help cover many clients' funding gaps. GRID expects to utilize philanthropic and in-kind contributions to augment gap financing efforts in 2023 and beyond, as gap financing remains an obstacle for most low-income families to participate in the Program. In the future, new funding may become available via SGIP (or other means) to better assist DAC households with professional services such as electric panel upgrades and tree trimming services.

Chart 3: Projects with Third-party Ownership (TPO) Funding



Through its “families-first” TPO model, GRID is able to leverage the federal Investment Tax Credit (ITC) to help finance DAC-SASH projects, while providing additional benefits to families

such as a performance guarantee, system monitoring, and 25-year warranty coverage.

With Resolution E-5030 (September, 2019), the Commission approved GRID’s TPO model that was previously approved for the SASH program in Resolutions E-4719 (June, 2015) and E-4829 (March, 2017). The primary partner for GRID’s TPO model is currently Sunrun. In Chart 3 above, almost 90% of the DAC-SASH projects completed to date are third-party owned.⁹

⁹ GRID projects that cannot leverage the TPO model are due to small system size, deed or land ownership documentation that does not meet TPO provider requirements (such as projects on tribal lands), and/or a partner/city/client that is unable or unwilling to approve a TPO ownership structure.

7. Marketing and Outreach



The Marketing, Education and Outreach (ME&O) plan for the DAC-SASH program can be accessed on GRID's website¹⁰ and provides details on planned ME&O activities, key performance indicators, and the program's ME&O budget. GRID assesses progress toward achievement of

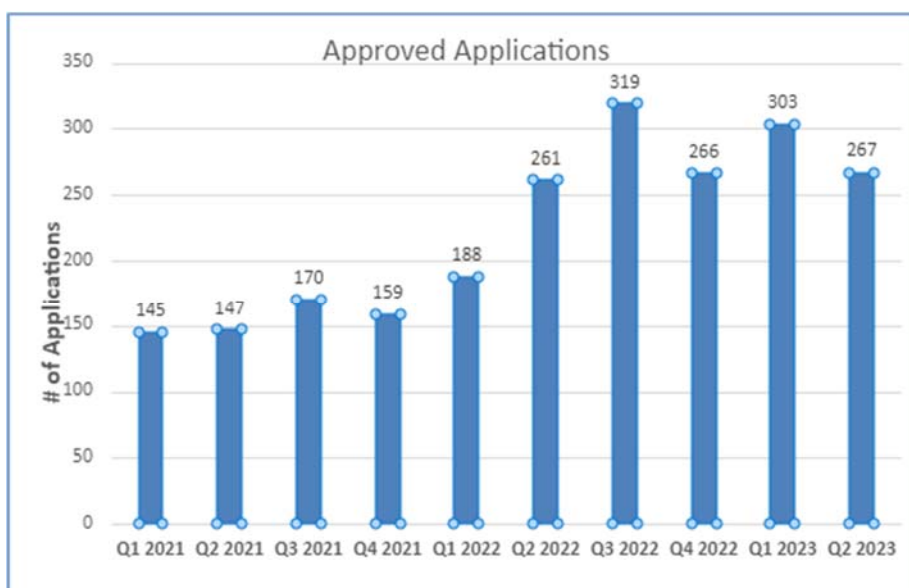
its ME&O KPIs and submits an updated ME&O plan each calendar year; it will submit an updated plan for 2023 in Q3 now that the 3rd party evaluation is complete. Below is a simplified overview of GRID's marketing strategies for the program.

GRID Alternatives has eight California regional offices, located in Oakland (PG&E), Willits (PG&E), Los Angeles (SCE), San Diego (SDG&E), Fresno (SCE/PG&E), Riverside (SCE), Chico (PG&E), and Sacramento (PG&E). This [map on CalDGstats](#) shows the location of pending or completed DAC-SASH applications; in the Program drop-down, simply select "DAC-SASH" for program-specific statistics. The map illustrates that GRID has qualified DAC-SASH applicants over a wide range of CalEnviroScreen DACs in IOU territory. The percentage of each IOU territory that is also considered a DAC is fairly low, with ~ 5% in SDG&E, ~15% in PG&E, and less than 30% in SCE territory under the

¹⁰ <https://gridalternatives.org/what-we-do/program-administration/dac-sash>

current DAC definition.¹¹ Appendix A lists the number of DAC-SASH applicants in each DAC census tract. Next, Chart 4 below shows that GRID processed or approved 570 applications from eligible clients in the first half of 2023. Of these applications only 28 were in SDG&E’s utility territory, which highlights the challenges to identifying qualifying homes in SDG&E, as detailed in Section 11, “Barriers to Participation.”

Chart 4: Approved Applications by Quarter



GRID’s marketing and outreach approach for the DAC-SASH program combines a recognized brand, data-driven targeting, community and institutional

partnerships, and experience-based and flexible marketing and outreach activities. Consistent advocacy and assistance throughout the entire outreach process - and the lifetime of the solar system - is key to ensuring that language, physical ability, age and

¹¹ SDG&E: CES DACs as % of territory = 5.3%; PG&E: CES DACs as % of territory = 15.2%; CES DACs as % of territory = 29%. This considers all census tracts that are both entirely included in an IOU territory and that intersect it or are partially included. Data obtained in 2020 from: www.census.gov/cgi-bin/geo/shapefiles/index.php; and www2.energy.ca.gov/maps/serviceareas/Electric_Utility_Service_Areas.html.

education level are not barriers to participation and that participants can make informed decisions. In communities often targeted by predatory practices and scams, showing long-term investment in household and community benefit is a crucial component of GRID's approach to implementing the program. To this end, GRID combines in-language outreach and education with community and government partnerships to ensure information reaches eligible households through a trusted source. In new cities or regions, strong relationships with trusted community partners to co-market the program is GRID's primary strategy for developing trust with its target audience. GRID's educational messages are reinforced by a robust referrals program, local media, and accessible digital platforms including a DAC-SASH program summary and link on the IOUs' clean energy webpages.

Once a client has been approved for participation, they receive ongoing support from application through to interconnection, including referrals to complementary state and local programs (eg. ESA program, EV and charging programs, CARE/FERA). Following the installation phase, GRID provides education, system online monitoring for its TPO systems, and access to phone support and troubleshooting throughout the expected life of the system. The aim is to deliver maximum impact and long-term benefit.

Client Experience: Ensuring a positive client experience and long-term investment in the community is key to continued program enrollment, particularly as a significant amount of new enrollees come from direct referrals from satisfied participants. To collect client feedback, GRID provides a participation survey after the installation of the PV system, as well as an annual survey to monitor impact and satisfaction over the long term. Per the reporting requirements for these Semi-Annual Progress Reports, GRID includes in Appendix B a summary of participant survey results.

7.1 Utility referrals for targeted ME&O¹²

Upon receiving the first customer profiles (or DAC leads) from each IOU in early 2021, GRID analyzed the data and strategized with Outreach staff, how to utilize the leads in the most impactful way mid-pandemic. GRID received the next annual batch of eligible customer profiles in Q1 of 2022 and again in Q1 of 2023 (although SDG&E's needed multiple revisions in subsequent months). GRID prioritizes customer profiles with sufficient annual usage (3,000kWh or more) to qualify for TPO financing (requires a minimum 2kW PV system) and also qualifies clients based on the readiness of their home and roof for solar installation. GRID requested that each IOU add a Net Metering (NEM) flag to the data provided. GRID keeps in mind that income is self-reported for CARE and ESA, whereas GRID actively verifies income using the most recent tax returns. In addition, these leads do not provide insight on roof quality or code issues that are major barriers in some regions. *In Q1 and Q2 2023 GRID continued outreach via print marketing to a portion of IOU customer profiles, primarily with mailed postcards or letters; phone-banking to the IOU-provided leads may restart in 2024 as well depending on staff capacity and regional strategies. Leads for these ME&O efforts were selected for regions in the state where construction barriers are less prevalent.*

of customer profiles provided by IOUs: Almost 10,000 DAC-located leads were received in early 2022 (from PG&E and SDG&E), in addition to email co-marketing with SCE. Some of the leads received may be duplicates from the 2021 batch.

12 Decision 20-12-003 requires that the IOUs share DAC-SASH eligible customer profiles or leads to GRID Alternatives once per year, starting in February 2021 and each year thereafter.

<https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M354/K045/354045228.PDF>

of customers outreached to: Close to 20,000 IOU leads received a postcard or mailer from GRID in 2022, in the North Valley, San Diego, Bay Area, Los Angeles and some Central Valley leads too.

of installations resulting from outreach: Over 30 installations took place in 2021 and 2022 and several installations are currently pending. It can take 2-6 months from initial outreach and application to the installation phase of a single-family project.

Additional information about customer accounts or leads received by each IOU:¹³

SDG&E leads : Of the 2,160 customer profiles received, 600 are more recent ESA enrollments or leads and thus are more actionable. Another 300 were received who likely already have solar (SDG&E has not provided the NEM rate so it is unclear). Of these, GRID sent several thousand postcards in July 2022. From the 2021 postcard campaign, GRID received fewer than 30 responses, with several converted leads and one project that had been installed.

SCE leads: Close to 10,300 useful leads were received in 2021, counting those customers that were enrolled in the ESA or CARE programs from 2018 forward and whose annual usage is over 3,000kWh.¹⁴ GRID did not harness this data in 2021 in part because its staff was focused on a SASH program deadline. In 2022 GRID did not receive leads and instead worked with SCE to transition its SASH co-marketing

¹³ per the requirements of D.20-12-003

¹⁴ GRID received over 200,000 customer profiles dating back to 2002, but many of these will not be useful as the data and homeowner status will likely have changed in the past 10-20 years.

partnership to DAC-SASH (see below “Voluntary co-marketing”). GRID received a new batch of IOU leads in Q1 2023.

Voluntary co-marketing: An email co-marketing campaign that launched in 2022 required much legwork to get it launched. It consists of an automated 2-step email campaign sent by SCE on a monthly basis to CARE/ESA customers. It launched in March 2022 and last year GRID received over 1,300 leads, 116 of which have converted to project and of these, roughly 50 are still active in the contract, design or install stage. This co-marketing effort is quite helpful in creating high-quality leads; but due to an income limits that is quite low, many still get disqualified.

PG&E leads: Of the 12,400 customer profiles received in 2022, ~6,700 are located in a DAC.¹⁵ GRID did direct mail marketing to our North Valley and Bay Area regions in Q3-Q4, using some of the IOU leads shared. In Q2 over 7,000 postcards were sent to PG&E leads in the Central Valley; 30 had responded and 11 had been converted into projects with approved applications as of January 2023. From a 2021 postcard campaign there have been 30 lead responses and almost ten installed projects in the Stockton area, where there are many installed DAC-SASH projects.

Voluntary co-marketing: Mass emails were sent by PG&E on 8/23/22 and in June and September of 2023, to most of the 6,700 DAC-located leads, thanks to a newer co-marketing collaboration with PG&E (like SCE’s). In 2022 this generated 104 responded leads, from which GRID converted 27 to projects. 16 of these projects are were still active as of January 2023. The 2023 email campaign is still be reviewed.

¹⁵ In 2022, GRID advised our IOU leads how to identify DAC census tracts accurately. In 2023 this was improving at PG&E and SCE, while SDG&E staff and data analysts are still learning.

8. Job Training and Workforce Development



Job training is central to GRID’s mission and the DAC-SASH program delivery model.

GRID takes a holistic approach that integrates job training opportunities into every project and creates ladders of opportunity for individuals from all backgrounds to access well-paying jobs in California’s thriving solar industry. Every

project is a classroom for local job seekers, many coming from the same disadvantaged communities that the program is designed to serve. Through a combination of the program’s job training requirements and GRID’s voluntary initiatives, the DAC-SASH program is positioned to deliver impactful workforce development outcomes.

8.1 Job Training Requirements

Projects installed using GRID’s volunteer and job trainee-based model must meet one of the five categories described below. Projects installed with the Subcontractor Partnership Program (SPP) model must include at least one paid workday for job trainees.¹⁶

¹⁶ Additional information on these programs and requirements can be found at: www.gridalternatives.org/programs/workforce-development and in the DAC-SASH Program Handbook.

1. **Team Leader¹⁷**: Being Team Leader offers experienced volunteers more in-depth training to further develop their skills and increase employment opportunities. Team Leaders log a minimum of 40 hours on GRID installations, complete six certifications on technical skills, attend a leadership workshop, and complete two installations to sign off on skills with an installation supervisor.
2. **SolarCorps Fellow**: SolarCorps opportunities include fellowships in project management, system design, marketing and outreach, communications, job trainee/volunteer management, market development, construction, and fundraising. These are 1-year paid fellowships that are based on the AmeriCorps program and are sometimes combined with additional funding from the Corporation for National and Community Service.¹⁸
3. **Job Training students (at least 3)**: Some of GRID's in-house installations are reserved for job training students from external job training programs. These are students from community colleges, vocational high schools, or community job training programs that generally have completed a PV-classroom component but utilize GRID's installation as the hands-on application of the skills they learned in a classroom.
4. **Installation Basics Training (IBT) participants (at least 3)**: GRID's IBT program awards trainees with certificates for industry-relevant skills learned and demonstrated in GRID's unique, hands-on training environment under the supervision of our professional solar installation staff. GRID currently offers 11 Skills Certificates that cover a variety of array and electrical skills, such as conduit bending and racking installations. To earn all 11 Skills Certificates, IBTs typically dedicate 130-300 hours in the field (or 8-20 installations).

¹⁷ The Team Leader program was approved in D 15-01-027, as one pathway for eligible job training in GRID's volunteer and job trainee model. The development of the IBT program and the expansion of the internship program, make it such that GRID rarely utilizes Team Leaders in its model any longer moving forward as of 2021 or so.

¹⁸ It is possible that in the future the [Climate Corps](#) that was announced in Q3 2023 will be incorporated into this fellowship model.

5. **Design & Construction Intern:** These internships allow job seekers the opportunity to explore a solar career in a real work environment while being coached through skill development. Design and construction interns spend at least 6 weeks and up to 4 months gaining installation training and experience on GRID installations. Depending on their focus, interns may support projects with site visits, system design, or installation. Internships include job search support, hard and soft skills development under the instruction of experienced GRID staff, and individualized goals depending on personal objectives.

To align with industry standards, the categories below are relevant job task categories for job trainees participating in the program:

- Directly work on solar installation
 - Installing Electrical Components
 - Installing Mechanical Components
 - Completing System Installation
 - Conducting Maintenance and Troubleshooting Activities
- Project Design/Project Engineering
 - Designing Systems
- Project management/coordination

Tables 4 and 5 below highlight job trainee type, hours worked, and the number of trainees participating on DAC-SASH program installations.

Table 4: Unique Participants in Job Training Programs

	Solar Corps	IBT Trainees	Job Trainees	Interns	Team Leaders	Total Internal	Sub-contractor Program (SPP)
# of Unique Participants	88	135	443	18	3	686	12

Table 5: Job Training Hours by Volunteer and Work Type

Type of work	Solar Corps	IBT Trainees	Job Trainees	Interns	Team Leaders	Total internal	SPP	Total
Directly Worked on Installation (hours)	17,052	4,689	12,340	710	44	34,835	653	35,488
Design/Engineering (hours)	49	0	9	8	0	66	0	66
Coordination or Management (hours)	1,586	0	34	16	0	1,636	12	1,648
Total Hours	18,687	4,689	7,804	734	44	36,537	665	37,202

8.2 Workforce Development Initiatives

In addition to project-level job training requirements outlined above, GRID incorporates additional “green job” training and workforce development components into the Program with the following initiatives:

Integration of hands-on solar installation experience into low-income job training programs. GRID Alternatives actively partners with 18 California job training

organizations (JTOs)¹⁹ to incorporate its volunteer-based installation projects into their construction training curricula. GRID dedicates approximately 20% of its internal installations to these trainees to gain hands-on experience with real-world solar installations that have conditions and requirements comparable to what they will encounter in private industry

Paid Work and Job Placement Opportunities for training program graduates:

Graduates from job training programs have the opportunity for paid work alongside professional installers with GRID subcontractors. One of the biggest challenges for “green job” training is providing sufficient job placement opportunities, ideally resulting in local hiring. Job trainees are often competing with college graduates looking to enter the solar industry. The job training component of GRID’s SPP Program was developed to help “level the playing field.” Subcontractors can use DAC-SASH installations as an extended interview, committing to hire job trainees if they perform well and if the company has open entry-level solar positions.

Resume Bank/Job Board: GRID maintains an online Resume Bank/Job Board to promote economic development in disadvantaged communities through job training and local hiring initiatives. This platform connects job seekers and employers and was expanded to more easily match qualified trainees or job candidates with opportunities. The Resume Bank and Job Board provide the additional benefit of gathering critical hiring data. For example, GRID has found that frequent updates with individuals, JTOs, and contractors who use the resume bank, lead to insights about the success rate of individuals seeking full-time employment.

¹⁹ Active JTO partners are those that GRID has worked directly with on a DAC-SASH installation since the program’s inception.

Local Hiring Strategies Aimed at Disadvantaged Workers: GRID aims to ensure that individuals with barriers to employment can participate in the DAC-SASH program and benefit from its workforce development initiative. GRID works with JTO partners to emphasize the importance of including “soft skills” training - such as computer literacy, resume and interviewing skills - into its curriculum in order to enhance an individual’s employability. GRID ensures that JTOs that work with these populations have their trainees participate in the Resume Bank/Job Board and can be easily referred to companies that are hiring through the Resume Bank/Job Board. GRID has partnered with JTOs that work with re-entry populations and at-risk young adults and has successfully connected trainees to paid job training opportunities.

The Installation Basics Training (IBT) program awards trainees with certificates for industry-relevant skills. These skills are learned under the supervision of GRID’s



professional installation staff. GRID’s IBT program provides job trainees with valuable hands-on training, support for development of a skillset requested by employers, and access to potential employment opportunities. IBT trainees earn certificates by demonstrating competency in specific skills while working on installations. GRID offers 11 Skills Certificates that cover a variety of array and electrical skills.

To earn all 11 Skills Certificates, trainees typically need to dedicate 130-300 hours in the field (8-20 complete installations). Employment opportunities for IBT trainees include on-site networking opportunities with corporate sponsors, referrals to companies hiring for installation positions in the solar industry, and access to GRID’s Resume Bank.

GRID Job Trainees 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 led 5 PV solar installations in order to sit for the certifying exam. GRID job trainees may take the NABCEP certification test once they have led five solar installations, either directly with GRID and/or with our subcontractors as part of the SPP program.

General volunteer opportunities. Pre-pandemic GRID held mandatory orientations that prospective volunteers must attend, which focus on safety at the job site and promotes solar energy and educates volunteers on solar technologies, the importance of energy efficiency, and California's low-income solar, storage, and energy efficiency programs. Individuals who complete the volunteer orientation are eligible to work on DAC-SASH installations and gain knowledge about the solar industry that can motivate them to be solar advocates in their own communities.

JTOs and Job Trainees located in DACs: GRID is focused on involving JTO partners and job trainees who are located in or reside in DACs. Of the more than 15 JTO partners that GRID is actively working with at this time, there are 8 located in DACs. Several of these active JTO partners are listed below as examples:

- *South Los Angeles YouthBuild (Los Angeles): since 2020*
- *Fresno Workforce Connection (Fresno): since 2019*
- *Young Community Developers (San Francisco): since 2017*
- *Inland Empire Job Corps Center, (San Bernardino): since 2016*

GRID estimates that 304 participants (all types, including volunteers) that have worked on a DAC-SASH project reside in a CalEnviroScreen 4.0 DAC.

Tracking and Job Placement: Finally, GRID has developed a robust system for tracking DAC-SASH job training participants, the hours they work, and project location of this work. GRID has also begun collecting additional information on wages paid, which helps determine local hiring success. To date, GRID estimates that over time almost *315 DAC-SASH job training or volunteer participants have secured longer-term paid employment after working on a DAC-SASH project*, based on self-reporting to GRID (this is not independently verified by GRID). Trainees will be surveyed on an annual basis to measure retention, in both the solar industry and overall workforce, as well as career growth. GRID will also survey SPP Program installers on their long-term hiring of trainees, trainee recruitment experience, and trainee quality on a semi-annual basis, as well as receive information from its JTO partner network. Feedback from trainees, employers, and JTOs will inform revisions to improve the effectiveness of the training and ensure the DAC-SASH program delivers impactful workforce development outcomes in communities throughout the IOUs and in CES DACs.

9. Coordination with Complementary Programs

GRID seeks to integrate the DAC-SASH program into the full landscape of CA programs that can benefit disadvantaged communities. These include, but are not limited to, energy efficiency programs, electric bill payment assistance programs, Electric Vehicle (EV) and EVSE programs, and the Self-Generation Incentive Program (SGIP) that can increase the resiliency of low-income households.

9.1 Energy Efficiency & Energy Savings Assistance Program

Energy efficiency (EE) is an important part of the DAC-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 PV-solar. To this end, GRID conducts an energy efficiency education and training session for every DAC-SASH applicant. GRID has observed that these one-on-one education sessions can be effective in some cases, driving behavioral change that reduce energy consumption at the household level. *However, GRID's time is limited in this area and more needs to be done by or with the IOUs across the state to recruit more households to ESAP.* GRID works with the Energy Savings Assistance Program (ESAP) administrators to refer eligible homeowners to the program and to improve data transfer and standardized information that GRID receives about ESAP enrollment. DAC-SASH PV systems are typically sized based on past usage, and also take into consideration presumed energy savings from ESAP measures taken for older homes.

Table 6: Referrals to ESAP and Enrollment Percentage

	Total Referred	Enrolled ²⁰	% Enrolled in ESAP
PG&E	1,333	526	39%
SCE	962	307	32%
SDG&E	47	8	17%
Total	2,342	841	36%

Table 6 summarizes the number of DAC-SASH participants that have been referred to the IOUs for enrollment into ESAP through Q2 2022 or

²⁰ This table has not been updated since July 2022, due to time constraints and non-receipt from some IOUs; please ask IOUs for their enrollment information if needed urgently. Table 6 can be updated in January 2024.

have been successfully enrolled.²¹ In addition to ESAP referrals, GRID plans to explore partnerships with the IOUs and other programs that provide additional efficiency services to qualified homeowners, such as the Weatherization Assistance Program²².

9.2 CARE / FERA programs

GRID also coordinates with California IOUs, the administrators of the California Alternate Rate for Energy (CARE) and Family Electric Rate Assistance (FERA) programs, to provide them with leads for the programs and increase benefits for DAC-SASH participants. In 2022 GRID worked with PG&E to enable automatic sign-up for DAC-SASH participants into CARE or FERA. It has this place is process with PG&E and hopes to do so in 2023 with the other IOUs. In addition, via SCE’s Capitation Program, GRID has proactively signed up over 30 households for CARE or FERA. GRID is working to become a Capitation agency in other areas of SCE as well.

Table 7: CARE/FERA Enrollment of DAC-SASH Applicants

	Total Applications	CARE Enrolled	FERA Enrolled	Total Enrolled	% Enrolled
PG&E	1,963	1,575	34	1,609	82%
SDG&E	124	94	2	96	77%
SCE	1,438	1,112	18	1,130	79%
Total	3,525	2,781	54	2,835	80%

²¹ GRID refers potentially eligible applicants to the ESA program. Some may not be ESAP-eligible if they have completed ESA services in past years or have an energy efficient home (e.g. built in the last ~5 years).

²² www.benefits.gov/benefit/1844

Though all qualifying-DAC-SASH households are eligible for CARE and/or FERA, many households are unaware of the benefits and accessibility of these programs. GRID's outreach staff provides information about CARE and FERA to all DAC-SASH participants and refers all DAC-SASH participants to the IOUs for potential enrollment. At this time, over 80% of DAC-SASH and potential clients are enrolled in one of these assistance programs at the time of application.

9.3 The Self-Generation Incentive Program (SGIP)

SGIP provides incentives for energy storage, among other technologies. In late 2019, Decision 19-09-027 updated the program to allow households that qualify for DAC-SASH to also qualify for the SGIP's Equity and Resiliency budget. In 2020 GRID worked with the SGIP Program Administrators (PAs) and the Energy Division to try to create a streamlined SGIP enrollment processes for DAC-SASH participants. GRID initiated a pilot in late 2020 to begin development of a DAC-SASH + storage pairing for its highest-need, resiliency clients. In 2021 it began working with a partner called Swell and its equipment procurement team, hoping to integrate battery storage into its PV model. GRID continued to work with Swell in 2022 to discuss setting up a more robust partnership to ensure that battery storage systems can be delivered at no cost, with long-term warranty coverage and battery replacement included. Currently there are just a few storage systems that are in-progress or complete for DAC-SASH participants. In 2023 GRID is working with the CPUC and other stakeholders to provide input on upcoming expansion and changes to SGIP which may now provide an incentive for battery storage and for PV systems for the first time. As of the date of this

report, these changes were unresolved and direct and indirect impacts to DAC-SASH are unknown.

9.4 Electric Vehicle and Clean Mobility programs

GRID administers a low-income Electric Vehicle (EV) program for the CA Air Resources Board (CARB), a program for an Air Quality Management District and the Empower EV Program for PG&E. GRID works to ensure that DAC-SASH participants are referred to EV programs that can help families access another cost-saving technology. This program is complementary to a DAC-SASH solar installation and in 2023 GRID continues to finetune its internal processes to facilitate referrals between programs and coordination for DAC-SASH participants who may be purchasing an EV or an electric charger. Currently there are over 50 DAC-SASH participants interested in or who have received a clean car (hybrid or EV) and over 20 participants who have received a car charger with GRID. GRID expects this market to expand as California creates pathways to make EVs and their infrastructure more affordable and accessible.

10. Subcontractors

GRID utilizes staff throughout its Headquarters office and staff in its CA Affiliate offices to conduct administration, marketing, outreach, and installation services for the program. Many services are centralized, such as equipment procurement, project-level invoicing, and orchestration of field inspections. Other services are conducted at the regional level, such as development of local partnerships and targeted marketing and outreach strategies. GRID details the program's primary subcontractors below:

a) Field Inspections

The program requires that at least one in every 12 installations are inspected for proper installation and operability by an independent third-party system inspector. GRID currently subcontracts with Indaspec, the Institute for Building Technology and Safety (IBTS), and the Center for Sustainable Energy (CSE) to conduct on-site field inspections throughout the IOU territories for the program.

b) Subcontractor Partnership Program

GRID's [Subcontractor Partnership Program \(SPP\)](#) is a proven model for engaging local installers as subcontractors while providing paid work opportunities for job trainees. Under the SPP, GRID subcontracts with vetted, for-profit companies to install PV systems, based on a reduced-cost structure and modified scope of work to match the structure of GRID's model. To date, over 100 projects have been installed using the SPP model or 430.6kW CEC-AC; four projects are in-progress as of July 30th 2023. SPP projects were installed by six distinct subcontractor companies since 2019, with most installed by High Point Solar in Bishop (where GRID has installed many DAC-SASH systems on tribal lands) and by Solar Panel Doctors (install-only projects) in the Inland Empire region. The average system cost to date is \$4.63/CEC-AC watt and the average system size is 3.9kW CEC-AC.

There can be logistical and/or quality challenges that arise when working with and managing subcontractors. But when we work with good quality, mission-aligned subcontractors, it is worthwhile due to the extra capacity and faster timelines afforded to us when working with subcontractors as part of SPP. GRID construction staff are often spread thin and the added capacity can be especially beneficial during the busy summer season. GRID's outreach staff in the Inland Empire, Los Angeles and North Valley still oversee all client-facing interactions, while the subcontractor provides the design and/or installation services.

All SPP projects are inspected by a third-party, independent inspector for Quality Assurance (QA). The QA inspection verifies that the system was installed using industry-standard best practices and meets GRID's quality requirements; starting in 2023 more and more of these will be "desktop reviews" where no truck roll is needed, which saves time and reduced program expenses. Each subcontractor is required to hire at least one paid job trainee onto every DAC-SASH project in order to fulfill workforce development requirements.

c) Public Reporting

GRID subcontracts with Energy Solutions to develop and maintain DAC-SASH data on the California Distributed Generation public reporting site, [CalDGStats](#). DAC-SASH data is automatically updated each week.

11. Program Assessment and Barriers

11.1 Assessment of Program Performance

Overall, the program's core messages have been well-received by target audiences, but GRID continues to be concerned about barriers to participation being a roadblock to program success. GRID looks forward to working with stakeholders and the Energy Division to address some of these barriers in a substantive way moving forward.

11.2 Barriers to Participation

Low-income households face myriad barriers to both accessing solar on their own and participating in statewide and local solar programs, including financial barriers, structural barriers, and marketing/outreach barriers. GRID's community- and customer-centric approach addresses many of these barriers using strategies that have proven to be successful in working with low-income households. For example, GRID's support can enable low-income families to overcome the financial barrier to solar access by covering the cost of the system. However, there are limitations to GRID's financial resources for inverter replacements for example at year 10 for non-TPO projects. In addition, there are barriers to DAC-SASH participation due to program eligibility requirements. Below is a high-level overview of GRID's assessment of program barriers.

Income eligibility is low for a homeowner-only program

The DAC-SASH program requires that households meet the definition of low-income that is based on the CARE/FERA statewide eligibility. The income qualification of a single statewide income level limits participation in an area such as San Diego, which has a higher cost-of-living than many areas around the state. Close to 50% of SDG&E

households who participated in the SASH program²³ -- which uses Area Median Income (AMI) to account for the varied cost-of-living across the state -- would not meet the income requirement for DAC-SASH. The Bay Area and Los Angeles regional markets experience a similar or higher rate of disqualification using a CARE/FERA income benchmark. In addition, most affordable housing partners work within 80% AMI income limits and therefore many of their [New Construction](#) homeowners will not qualify for the program. This is concerning in particular because New Construction homes are mandated to include solar and have new roofs, making them great candidates for supporting 25-year warrantied solar systems.

Need for gap financing

Gap financing is the difference between the project cost and the \$/watt DAC-SASH incentive. The financial benefit from the DAC-SASH Third-Party Ownership (TPO) arrangement that GRID expects to leverage for the majority of DAC-SASH projects helps cover some financing gaps, but 10 to 15% of DAC-SASH projects cannot leverage the TPO model and some projects have a higher cost due to additional expenses such as an electrical service upgrade, or a small or ground-mounted system. In these cases, securing additional gap financing is critical, as low-income participants are not expected to contribute financially. GRID is able to leverage gap financing through local grants, foundation support, in-kind donations, and philanthropic resources, but does not have access to sufficient gap financing for all projects. As such, limitations on GRID's available gap funding are a barrier to program participation and waiting lists are long for homeowners who would like to participate but need a new roof or other upgrades first.

²³ SASH uses 80% or less of Area Median Income (AMI) to meet the low-income threshold, which is set in PU Code 2852(a)(1) and detailed in Chapter 2 (commencing with Section 50050) of Part 1 of Division 31 of the Health and Safety Code.

Additional structural costs

Much of the older housing stock that qualifies for the DAC-SASH program requires additional structural upgrades, such as roof repair or replacement, or other property rehabilitation measures related to unpermitted structures, or outdated electrical systems throughout the home (beyond a main service panel upgrade). While GRID has developed some innovative partnerships to provide roof repair and replacements for low-income families, these resources are limited and place specific. For example, GRID has partnerships with the cities of San Francisco and Richmond to provide funding for roof repair or replacement, and has a philanthropic fund devoted to re-roofing for qualifying veterans in Los Angeles. However, the need for roof repair/replacement and other structural upgrades far outpaces the resources available. Homeowners with these additional structural costs face barriers to participation in DAC-SASH.

11.3 Program Design Improvement

GRID worked collaboratively with stakeholders and the Energy Division to explore program changes to address these limitations in 2020 via a modification of D.18-06-027. In 2020 GRID submitted its Petition for Modification (PFM) to address some of the barriers detailed in this section. Decision 20-12-003 added tribal lands to the program's geographic eligibility in response to GRID's 2020 PFM. With the first program evaluation taking place in 2022 and early 2023, GRID looks forward to working with stakeholders to determine program changes or additions in 2023 and 2024.

12 Conclusion

GRID was pleased to receive the results of the program's first evaluation and on the whole was not surprised by its findings. GRID is pleased with the program's progress in completing over 2,100 projects and over 8MW (CEC-AC) of installed capacity from program start, with close to 280 shovel-ready projects in the pipeline for households across the state, including on tribal lands. This progress is despite 2+ years of pandemic slowdowns, a challenging program design, and staff capacity issues in 2021 and 2022. Economic and health impacts caused by the pandemic highlight perhaps the even greater need for DAC-SASH to help relieve energy burden and provide job training opportunities to disadvantaged communities. GRID looks forward to bringing the benefits of DAC-SASH to residents of disadvantaged communities in 2023 and for years to come.

13 Appendices

Appendix A

Applications in each CES Disadvantaged Community (DAC) Census Tract

Over 2,500 applications total through Q2 2023 – list provided directly to the CPUC.



Appendix B

Summary of Program Participant Survey Results

For the program's annual survey, to date over 479 program participants have responded, for a 23.6% response rate on average. The majority of responding participants say that they would be likely to recommend GRID to their contacts and neighbors or are considered "promoters."

GRID sends its post-installation survey after project construction is complete. The survey includes four questions and has space for comments. To date there are over 430 survey responses from DAC-SASH participants, which is a 21.6% response rate (improved several percentage points since January). The majority of responding participants state that they are very likely to recommend GRID to their contacts or neighbors. The four survey questions emailed to clients are:

- **Do you understand how the system works?**
 - On a 1 to 5 scale, we have received on average 2.25 (this has gone down)
- **How to tell if the system is working?**
 - On average we have received 3.4 (same)
- **What to do if the system is not working?**
 - On average we have received 3.4 (improved slightly)
- **Do you understand your NEM bills?**
 - On average we have received 3.0 (same)

GRID receives constructive criticism from time to time, including comments such as those below. GRID continually works to address feedback received whenever possible and to learn from its mistakes:

"Better explanation of True-up and a checklist for helping to maintain the system. And also, some clarification whether or not a battery storage system would be ok to install separately. Hopefully one day this all comes in a package (solar & battery) system," from client *in Pittsburg, CA*.

"The process from the first application to installation can be very time consuming ...really wish the methodology could be shortened and more efficient," from client *in Richmond, CA*.

"My panels were placed to the lower portion of the roof facing west, and since the neighbor house is very close I feel that it would have been more beneficial if the panels had been placed higher on the roof to obtain the optimal sun, especially in the winter months" *from client in Stockton, CA*.

Otherwise, GRID received positive feedback such as the comments below:

"Completely satisfied and proud it was done" *from a client in Visalia, CA*. "Just saw last power bill and yes I see the difference and I thank you for it," *from a client in Ontario, CA*. "So far so good? it has truly been a blessing for my family!" *from client in Vallejo CA*.

"I am so happy with Grid! Fantastic savings at no cost to owner. I live on a golf course and a couple of balls broke panels. I want to check if the panels are still working?" *from client in Whittier CA*.

"They are providing good and efficient programs to many communities saving them money and helping those communities with clean energy and helping on the elimination of the contamination" *from client in Santa Fe Spring, CA*.

In 2020 GRID created a separate complaint tracking system. To date GRID has received four formal complaints (meaning they were escalated several times), primarily related to slow communication or miscommunication. GRID is actively working to improve client communications, in particular with complex projects that include multiple services or programs, to ensure that the client understands next steps and holds realistic expectations about what services or products they will be receiving. Please reach out to GRID if you would like more details about these client complaints.