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California Energy Commission
STAFF REPORT

New Solar Homes Partnership Program Quarterly Progress Report

(January 1-March 31, 2017)

California Energy Commission

Edmund G. Brown Jr., Governor



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ABSTRACT

The New Solar Homes Partnership (NSHP) Program is integral to California's continuing efforts to promote and develop clean, renewable electricity generation. This report provides a quarterly update on key NSHP Program statistics, including program status and activity for market-rate and affordable housing projects, geographical and income distribution of NSHP incentives, and available funds for incentives. This report is produced in response to the June 9, 2016, California Public Utilities Commission (CPUC) Decision 16-06-006, "Decision Funding Authorizations and Related Measures for Continuation of the New Solar Homes Partnership Program."

Keywords: New Solar Homes Partnership, NSHP, Energy Commission, California Public Utilities Commission, CPUC, Decision 16-06-006, market-rate, affordable housing

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CHAPTER 1: Introduction and Background

Senate Bill 1 (Murray, Chapter 132, Statutes of 2006) established the California Solar Initiative (CSI) with three goals: (1) installing solar energy systems with a generating capacity equivalent to 3,000 megawatts (MW), (2) establishing a self-sufficient solar industry within 10 years, and (3) placing solar energy systems on 50 percent of new California homes by 2020. The CSI is being implemented by the California Energy Commission, the California Public Utilities Commission (CPUC), and the state's local publicly owned electric utilities in different programs that share the same broad goals.¹

The NSHP Program is the Energy Commission's component of the CSI and is limited to new home construction located in investor-owned utility (IOU) service territories. Launched in January 2007, the program provides financial incentives for homeowners, builders, and developers to include solar energy systems on new, energy-efficient homes that will contribute to the CSI goals. The NSHP goal under the CSI is 360 MW of installed solar capacity.

SB 1 established the NSHP as a \$400 million program under the CSI, and the initial monies allocated to the Emerging Renewables Program and NSHP totaled about \$282 million through 2011. The CPUC approved Decision 16-06-006, on June 9, 2016, requiring the IOUs to collect funds from ratepayers totaling \$111.78 million to continue the NSHP Program. This decision also directs the Energy Commission to submit quarterly and annual reports to the CPUC, and this quarterly report fulfills this requirement for the period covering January 1, 2017 to March 31, 2017.

¹ As of July 12, 2016, the residential CSI Program for solar photovoltaic systems has closed for residential customers of all investor-owned utilities and is no longer accepting applications. The CSI program has also closed for nonresidential customers of Pacific Gas and Electric Company and San Diego Gas & Electric Company.

CHAPTER 2: Program Status and Activity for All Project Types

Reservation Applications

Participation in the NSHP Program is a two-step process in which applicants 1) reserve funding for a project in advance and 2) receive an incentive payment upon completion of the project. Funding is secured through reservation applications that applicants submit to the Energy Commission. Once the reservation application is approved, applicants have the reservation period to complete their project, which includes finishing construction of the home, installing the solar energy system and interconnecting with the utility grid, completing third-party field verifications, and submitting a payment claim package to the Energy Commission.

Reservation applications are approved based on the date they were submitted, and funding is reserved for either an 18- or 36-month reservation period, depending on the project type. Large development projects are developments of six or more residential units with solar on 50 percent or more of the dwelling units and receive a 36-month reservation period. Affordable housing projects, which include residential unit projects and common area projects in which at least 20 percent of the units are subject to income restrictions by a qualifying regulatory agreement, also receive a 36-month reservation period. Other projects include small developments of fewer than six residential units, projects where solar will be installed on less than 50 percent of the residential units (“solar not as a standard”), and market-rate common areas. Other projects and custom home projects receive an 18-month reservation period. Depending on the project type, reservation applications may cover a single system (for example, a custom home) or multiple systems (such as large developments).

During the first quarter of 2017, reservation applications for 3,780 systems were approved, corresponding to more than 15 MW of capacity and more than \$8 million in funding. Table 1 below shows the breakdown of reservation applications that were approved in the first quarter of 2017 (January 1 – March 31). Large developments accounted for roughly 97 percent of reserved systems, 93 percent of reserved capacity, and 90 percent of reserved funding. Affordable housing systems accounted for less than 1 percent of reserved systems, 2.79 percent of reserved capacity, and 5.46 percent of reserved funding over the first quarter. These systems are often virtual net energy-metered² and serve multiple units and/or common areas, so the total number of systems

² *Virtual net energy metering* is a tariff arrangement that allows a property owner to allocate credits from a single solar energy system to multiple units, in which each has an electric meter.

is lower than the number of residential units served directly or indirectly (in the case of common area projects) by the solar energy system.

Table 1: Reservation Applications Approved From January Through March

Project Type	# of Systems	Encumbrances	Capacity (kW AC)
Large Developments	3,780	\$ 8,335,642	15,723
Affordable Housing	12	\$ 505,100	473
Custom Homes	64	\$ 278,863	506
Other	42	\$ 133,965	261
Totals	3,898	\$ 9,253,570	16,963

Source: California Energy Commission

Payment Claims

To receive the incentive payment, the solar energy system must be completely installed, grid-connected, and operating satisfactorily, and the building must comply with the energy efficiency specifications proposed in the applicant’s reservation.

The current *New Solar Homes Partnership Guidebook (NSHP Guidebook), Tenth Edition*, was adopted at the Energy Commission’s March 8, 2017, Business Meeting. The *NSHP Guidebook, Tenth Edition* describes the NSHP Program incentive levels available depending on the version of the *Title 24 Building Energy Efficiency Standards (Energy Standards)* under which a project is covered.

For projects permitted under the *2016 Energy Standards*, only a code-compliant incentive level is offered.

For projects permitted under the *2013 Energy Standards*, there are three incentive levels offered: “code-compliant,³” where the structure is between 0 and 14.9 percent above the current energy standards; “Tier I,” where the structure exceeds the energy standards by between 15 and 29.9 percent; and “Tier II,” where the structure exceeds the energy standards by 30 percent or more (along with 30 percent beyond the standard for cooling).

Projects permitted under the *2008 Energy Standards* are not eligible for a code-compliant efficiency tier; only Tier I and Tier II levels are available.

Table 2 displays the number of payment claims approved in the first quarter of 2017. Similar to approved reservations, the bulk of approved payment applications were for systems in large developments (86 percent), which corresponded to 80 percent of

installed capacity and 76 percent of paid incentives. Affordable housing payments accounted for less than 1 percent of approved payment claims, slightly below 4 percent of installed capacity, and 6 percent of paid incentives. In total, payment claims were approved for 2,103 systems, corresponding to more than 6.6 MW of installed capacity and nearly \$5.5 million in incentives.

Table 2: Payment Claims Approved From January Through March

Project Type	# of Systems	Incentive Amount	Capacity (kW AC)
Large Developments	1,822	\$ 4,138,639	5,284
Affordable Housing	17	\$ 331,045	254
Custom Homes	45	\$ 246,047	315
Other	219	\$ 739,809	767
Totals	2,103	\$ 5,455,540	6,620

Source: California Energy Commission

Table 3: Energy Efficiency Levels of Payment Claims Approved From January Through March

Energy Efficiency Level	# of Systems	Incentive Amount	Capacity (kW)
Code Compliant	1,396	\$ 2,848,882	4,107
Tier I	629	\$ 2,205,760	2,193
Tier II	78	\$ 400,898	320
Totals	2,103	\$ 5,455,540	6,620

Source: California Energy Commission

Applications and Payment Claims Processed

Table 4 shows the total number of reservation applications and payment claims submitted and reviewed during the first quarter of 2017. In a given quarter, the number of reservations and payments reviewed may be higher than the number of reservations and payments submitted due to the time required to complete staff review.

The 98 reservation applications submitted accounted for 1,651 systems totaling 9.5 MW. The 1,651 systems in reservation applications submitted during the first quarter represent an 11.57 percent decrease from the 1,867 systems that were submitted during the previous quarter. On the contrary, the total capacity of 9.5 MW submitted during the first quarter represents a 6.74 percent increase from the 8.9 MW that were submitted during the previous quarter.

Table 4: Number of Reservations and Payment Claims Submitted and Reviewed From January Through March

	Submitted	Reviewed*
Reservations	98	141
Payments	1,628	2,562

Source: California Energy Commission

*In a given quarter, the number of reservations and payments reviewed may be higher than the number of reservations and payments submitted due to the lag time in staff review.

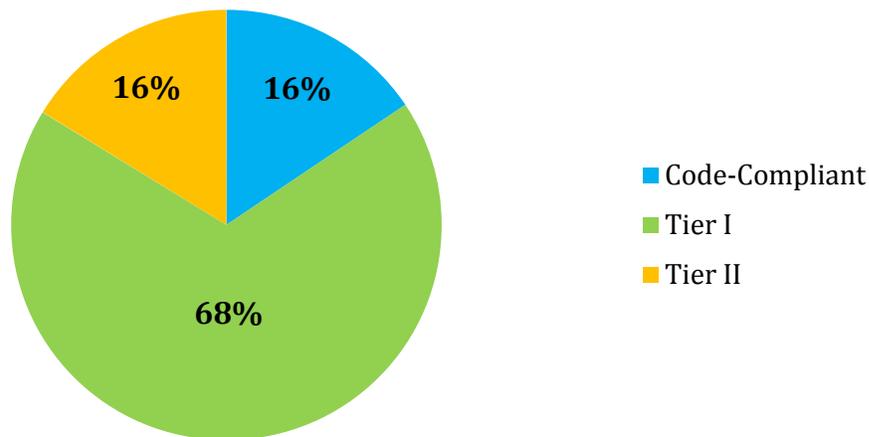
CHAPTER 3: Other Program Reporting

This chapter contains data that covers the entire life of the NSHP Program through March 31, 2017.

Total Installed Systems by Efficiency Levels (Code-Compliant, Tier I, Tier II)

When the NSHP Program began, incentives were available only for systems installed on new homes that exceeded the then current Energy Standards by at least 15 percent (Tier I) or 30 percent (Tier II), with an additional 30 percent improvement in space cooling for Tier II. Due to the progressively stringent requirements of subsequent updates to the Energy Standards, the NSHP Program began offering a code-compliant incentive for homes subject to the 2013 update of the Title 24 Standards (“*2013 Energy Standards*”), as long as the home met code requirements before claiming any efficiency compliance credit for the solar energy system. With adoption of the *2016 Energy Standards*, the only available incentive tier offered through NSHP is code-compliant.

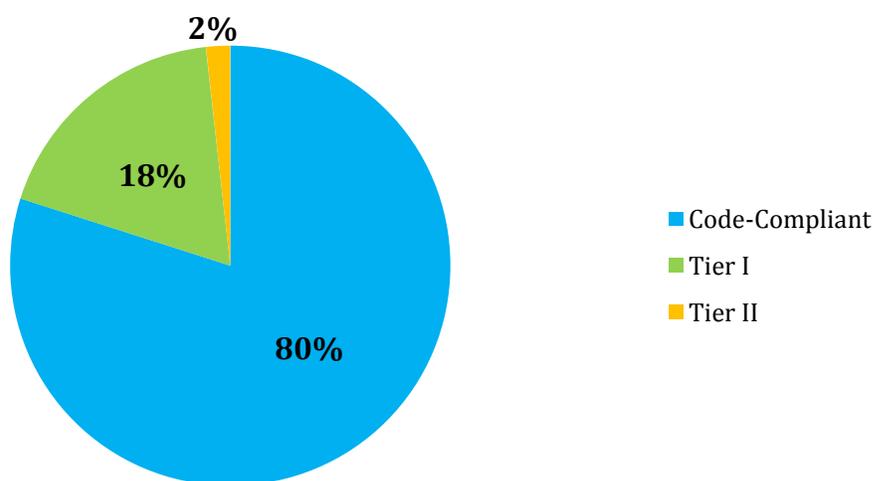
Figure 1: Installed Systems by Energy Efficiency Level, All Energy Standards



Source: California Energy Commission

Figure 1 shows the efficiency level of installed systems over the life of the program. About 68 percent of installed systems were Tier I projects, with 16 percent Tier II and 16 percent code-compliant.

Figure 2: Installed Systems by Energy Efficiency Level, 2013 Energy Standards Only



Source: California Energy Commission

Figure 2 shows the efficiency level of installed systems for projects subject to the *2013 Energy Standards*. This is the first update to the energy standards for which a code-compliant incentive is available. In contrast to Figure 1, the majority of systems for which all three incentive levels are available opt for the code-compliant option (80 percent), with 18 percent Tier I and only 2 percent Tier II.

The code-compliant homes are not necessarily less efficient than earlier projects, as the *2013 Energy Standards* are roughly 25 percent more energy-efficient relative to the *2008 Energy Standards* and 40 percent more energy-efficient relative to the *2005 Energy Standards*.

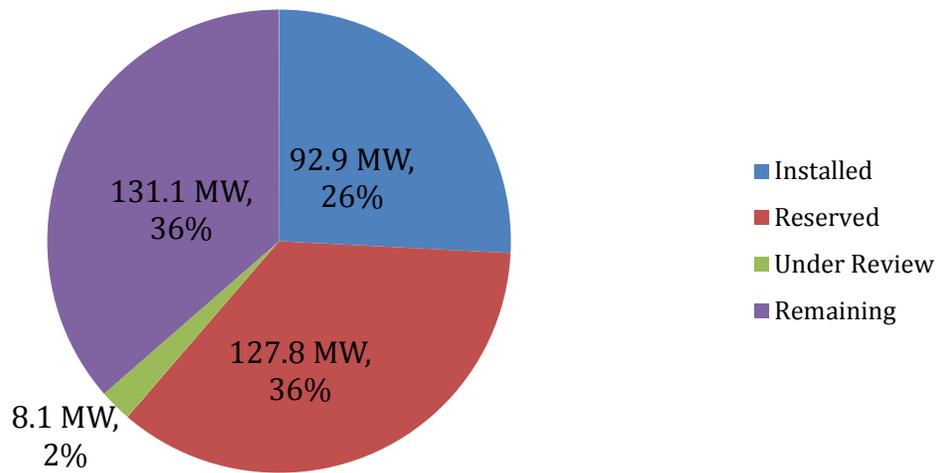
The *2016 Energy Standards* went into effect on January 1, 2017, and NSHP program guidelines for these projects were made available in the *NSHP Guidebook, Tenth Edition*. The *2016 Energy Standards* are about 57 percent more efficient relative to the *2005 Energy Standards*. Only a code-compliant option is available for projects subject to the *2016 Energy Standards*. Applicants can now submit reservation applications for projects subject to the *2016 Energy Standards*, but as of the end of the first quarter of 2017, the Energy Commission has not approved any such projects.

Overall Progress Toward Meeting Program Goals

The overall NSHP Program goal is to install 360 MW by the end of the program. As of March 31, 2017, 92.9 MW have been installed, with 127.8 additional MW reserved and 8.1 MW under review. As shown in Figure 3, NSHP has reserved funds for or installed 62 percent of the total capacity goal for the program. In addition, applications for systems

corresponding to 2 percent of the overall capacity goal are under review by the Energy Commission. Assuming all capacity under review is approved and installed, 36 percent of the overall program capacity goal remains for newly submitted applications.

Figure 3: Progress Toward NSHP MW Goal



Source: California Energy Commission

CHAPTER 4:

Budget Reporting

Current data show that as of March 29, 2017, funding available for NSHP incentives from the Renewable Resources Trust Fund (RRTF) is roughly \$25.5 million, with applications totaling \$6.5 million under review, leaving about \$19 million available for new reservation applications. Based on past average monthly encumbrances, RRTF program funding may be exhausted in late 2017. CPUC Decision 16-06-006 authorized an additional \$111.78 million in funds for the continuation of the NSHP Program.

When reserved projects have payment claims that are disapproved or reduced from the original reserved amount, or reservations expire and are not extended, funds are returned (disencumbered) and become available for new reservations in the current incentive level. The remaining funding, as shown in Table 5, reflects changes due to new encumbrances as well as disencumbrances in the quarter.

Table 5: Total Expenditures

	\$ (Millions)	MW (AC)
Available Funding	25.5	
Under Review	6.5	17.2
Remaining Funding	19.0	

Source: California Energy Commission

CHAPTER 5:

Conclusion and Outlook

NSHP Program activity during the first quarter of 2017 included new applications submitted for 1,651 systems totaling 9.5 MW of capacity. During this period, the program reserved just over \$9 million in funding for more than 16.9 MW of new solar capacity and paid nearly \$5.5 million in incentives for more than 6.6 MW of installed systems.

The majority of all installed projects over the program history have achieved the Tier I or Tier II energy efficiency levels. Since the *2013 Energy Standards* came into effect, more than 80 percent of payment claims for eligible projects have elected the code-compliant incentive level. The *2016 Energy Standards* went into effect on January 1, 2017, and apply to all new construction permits applied for after this date. Only a code-compliant option is available for projects under the *2016 Energy Standards*.

Based on installed, reserved, or under review capacity, the program has achieved 64 percent of the overall 360 MW target, with 36 percent remaining to be installed.

At the March 8, 2017, Energy Commission Business Meeting, the Commission adopted the *NSHP Guidebook, Tenth Edition*. This guidebook included program changes to encourage program participation and streamline program processes for both market-rate and affordable housing projects including:

- Simplified incentive calculations using the new FLEXIBLE INCENTIVE [FI] calculator.
- Simplified verification.
- Incentive level and calculation changes to encourage participation from affordable housing projects and projects located in Disadvantaged Communities.
- Change in the incentive level structure to encourage program participation and address costs associated with participation in NSHP.

The *NSHP Guidebook, Tenth Edition* also addresses energy efficiency requirements for new reservation applications subject to the *2016 Energy Standards*. The *2016 Energy Standards* allow the installation of solar PV systems as an option to meet energy efficiency code compliance by using a calculated solar compliance credit (“PV credit”) in the energy efficiency evaluation. Under the *NSHP Guidebook, Tenth Edition*, if a new home uses the PV credit to comply with the *2016 Energy Standards*, NSHP incentives are available only for the portion of the installed system that exceeds the system size needed for the PV credit. In addition, the *NSHP Guidebook, Tenth Edition* eliminates the Tier I and Tier II incentive levels for projects subject to the *2016 Energy Standards*.