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STAFF REPORT

New Solar Homes Partnership Program Quarterly Progress Report

(April 1–June 30, 2016)

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, approved 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) (SB 1) 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 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.

Although NSHP was established by SB 1 as a \$400 million program under the CSI, the program relied on money in the Renewable Resource Trust Fund (RRTF) that was allocated to the Energy Commission's Emerging Renewables Program and supported by the Public Goods Charge collections under Public Utilities Code Section 399.8. The Legislature ended collection of funds for the RRTF on December 31, 2011, when the Public Goods Charge expired. The sum of RRTF monies allocated to the Emerging Renewables Program and NSHP totaled about \$282 million through 2011. This amount is far short of the funding level authorized in SB 1 for the NSHP.

To address this funding shortfall, on November 13, 2015, the Energy Commission requested the CPUC to continue the NSHP program under Public Utilities Code Section 2851(e)(3). Section 2851 (e)(3) authorizes the CPUC to require the state's IOUs Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company to continue the NSHP program under guidelines established by the Energy Commission until the amount authorized in statute of \$400 million is reached. Section 2851(e)(3) also authorizes the CPUC to designate a third party, including the Energy Commission, to administer the continuation of the NSHP program.

The CPUC considered the Energy Commission's request as part of CPUC Rulemaking 12-11-005 and, on June 9, 2016, approved Decision 16-06-006, which requires the IOUs to

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.

collect funds from ratepayers totaling \$111.78 million to continue the NSHP program, designates the Energy Commission as program administrator, and establishes administrative and oversight-related requirements for continuing the program. The decision also directs the Energy Commission to submit quarterly and annual reports to the CPUC detailing program status and other various activities that are discussed in the following chapters. This quarterly report covers April 1, 2016, to June 30, 2016, and fulfills this requirement.

CHAPTER 2: Program Status and Activity for All Project Types

Reservation Application

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 based on either an 18- or 36-month reservation period. Large developments 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 include residential unit projects and common area projects and 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 and market-rate common areas. Other projects and custom home projects receive an 18-month reservation period.

During the second quarter of 2016, reservation applications for 4,079 systems were approved, corresponding to more than 17 MW of capacity and \$9.8 million in funding. Table 1 below shows the breakdown of reservation applications that were approved in the second quarter of 2016 (April 1 - June 30). Large developments accounted for about 95 percent of reserved systems, 92 percent of reserved capacity, and 85 percent of reserved funding. Affordable housing systems accounted for less than 1 percent of reserved systems. These systems are often virtual net-energy-metered² and serve multiple units and/or common areas, so the total number of systems is lower than the number of residential units served directly or indirectly (in the case of common area projects) by the solar energy system. These systems correspond to 4 percent of reserved capacity and 10 percent of reserved funding over the second quarter.

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.

Table 1: Reservation Applications Approved From April Through June

Project Type	# of Systems	Encumbrances	Capacity (kW AC)
Large Developments	3,880	\$ 8,422,194	15,995
Affordable Housing	10	\$ 1,028,674	662
Custom Homes	36	\$ 176,719	262
Other	153	\$ 230,627	457
Totals	4,079	\$ 9,858,214	17,376

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. Under the current guidebook, the NSHP offers three incentives for different levels of energy efficiency: “code-compliant,” where the structure is between 0 and 14.9 percent above the current Title 24 building energy efficiency standards; “Tier I,” where the structure exceeds the energy efficiency standard between 15 and 29.9 percent; and “Tier II,” where the structure exceeds the standard by 30 percent or more (along with 30 percent beyond the standard for cooling).

Table 2 displays the number of payment claims approved in the second quarter of 2016. Similar to approved reservations, the bulk of approved payment applications were for systems in large developments (90 percent), which corresponded to 80 percent of installed capacity and 79 percent of paid incentives. Affordable housing payments accounted for fewer than 1 percent of approved payment applications, 5 percent of installed capacity, and 6 percent of paid incentives. In total, payment applications for 1,431 systems, corresponding to more than 4 MW (4,435 kW) of installed capacity and \$4.6 million in incentives, were approved.

Table 2: Payment Claims Approved From April Through June

Project Type	# of Systems	Incentive Amount	Capacity (kW AC)
Large Developments	1,295	\$ 3,715,725	3,570
Affordable Housing	10	\$ 302,096	204
Custom Homes	52	\$ 355,614	405
Other	74	\$ 304,092	256
Totals	1,431	\$ 4,677,527	4,435

Source: California Energy Commission

Table 3: Energy Efficiency Levels of Payment Claims Approved From April Through June

Energy Efficiency Level	# of Systems	Incentive Amount	Capacity (kW)
Code-Compliant	748	\$ 1,764,314	1,988
Tier I	564	\$ 2,177,754	1,921
Tier II	119	\$ 735,459	526
Totals	1,431	\$ 4,677,527	4,435

Source: California Energy Commission

Applications and Claims Processed

Table 4 shows the number of reservation applications and payment claims submitted and reviewed during the second quarter of 2016. The 144 reservation applications submitted accounted for 3,771 systems totaling 14.6 MW.

Table 4: Number of Reservations and Payment Claims Submitted and Reviewed From April Through June

	Submitted	Reviewed
Reservations	144	125
Payments	2,164	1,612

Source: California Energy Commission

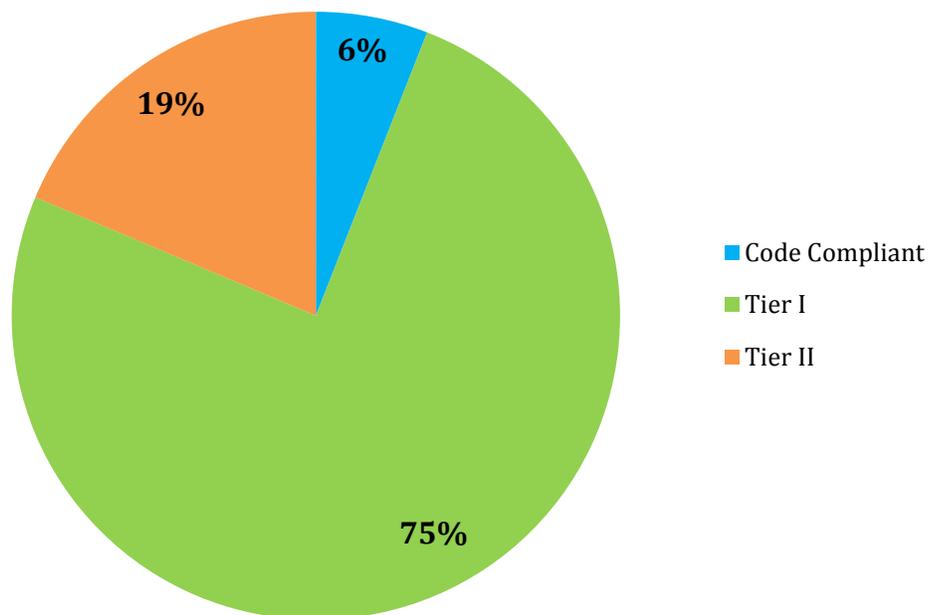
CHAPTER 3: Other Program Reporting

This chapter contains data that cover the entire life of the NSHP program through June 30, 2016.

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 Title 24 *Building Energy Efficiency 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 Title 24 Standards, the NSHP program began offering a code-compliant incentive for homes subject to the 2013 update of the Title 24 Standards (“2013 Standards”) as long as the home met code requirements before claiming any efficiency compliance credit for the solar energy system.

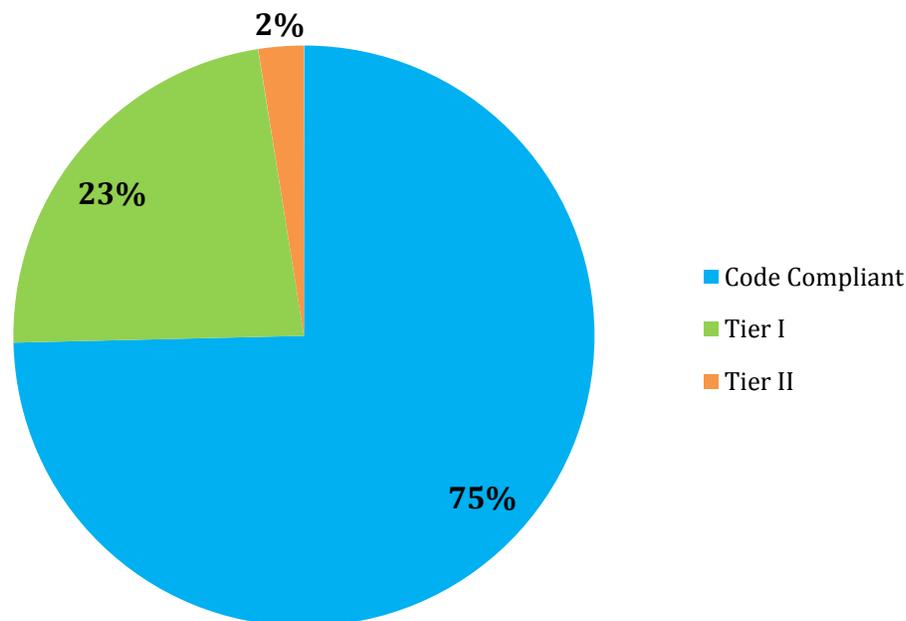
Figure 1: Installed Systems by Energy Efficiency Level, All Building Standards



Source: California Energy Commission

Figure 1 shows the efficiency level of installed systems over the life of the program. Nearly 75 percent of installed systems were Tier I projects, with 19 percent Tier II and 6 percent code-compliant. However, while the NSHP program first installed systems in 2008, the code-complaint incentive was not available until the effective date of the 2013 Standards (July 1, 2014) and was not available for homes subject to the previous standards.

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



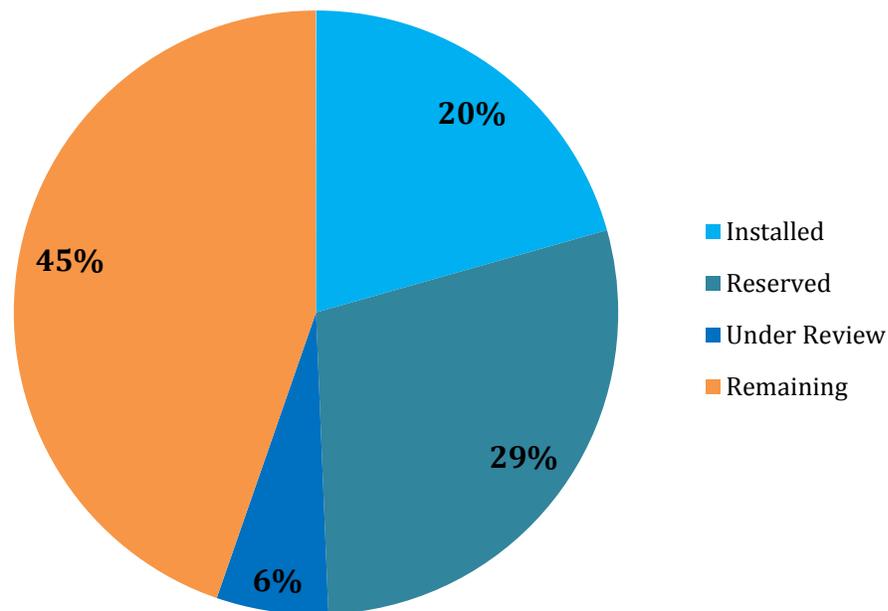
Source: California Energy Commission

Figure 2 shows the efficiency level of installed systems for projects subject to the 2013 Standards, which are the only projects for which a code-compliant incentive is available. In contrast to Figure 2, the majority of systems for which all three incentive levels are available opt for the code-compliant option (75 percent), with 23 percent Tier I and only 2 percent Tier II. The code-compliant homes are not necessarily less efficient than earlier projects, as the 2013 Standards are roughly 25 percent more energy-efficient relative to the 2008 Standards and 40 percent more energy efficient relative to the 2005 Standards. The 2016 Standards will be about 57 percent more efficient relative to the 2005 Standards.

Overall Progress Toward Meeting Program Goals

The overall NSHP program goal is to install 360 megawatts by the end of the program. As of July 1, 2016, 74.6 MW have been installed with 100.1 additional MW reserved, and 21.7 MW under review. As shown in Figure 3, NSHP has reserved funds for or installed 49 percent of the total capacity goal for the program. In addition, applications for systems corresponding to 6 percent of the overall capacity goal are under review by the Energy Commission. Assuming all capacity under review is approved and installed, 45 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 July 6, 2016, available funding in the Renewable Resources Trust Fund (RRTF) is roughly \$40.1 million, with applications totaling \$11.7 million under review, leaving about \$28.4 million available for new applications. Based on past average monthly encumbrances, program funding may be exhausted by the fourth quarter of 2016. The NSHP budget will reflect additional funds authorized by CPUC Decision 16-06-006 beginning with the fourth quarter of 2016.

Table 5: Total Expenditures

	\$ (Millions)	MW (AC)
Available Funding	40.1	
Under Review	11.7	21.7
Remaining Funding	28.4	

Source: California Energy Commission

CHAPTER 5

Conclusion and Outlook

The NSHP program saw significant program activity during the second quarter of 2016, with new applications submitted for 3,771 systems totaling 14.6 MW of capacity. During this period, the program reserved \$9.8 million in funding for more than 17 MW of new solar capacity and paid \$4.6 million in incentives for more than 4 MW of installed systems.

During the program, projects have been funded in 51 out of California's 58 counties. Based on the median income of zip codes where NSHP projects are located, the program has served a wide range of household incomes. The majority of all installed projects over the history of the program have achieved the Tier I or Tier II energy efficiency levels. Since the *2013 Building Energy Efficiency Standards* have come into effect, nearly 75 percent of payment applications for eligible projects have elected for the code-compliant efficiency level. Based on installed, reserved, or under review capacity, the program has achieved 55 percent of the overall 360 MW target, with 45 percent remaining.

Since the approval of Decision 16-06-006 on June 9, 2016, the NSHP program is transitioning to a new program administration model that includes working closely with the CPUC. Energy Commission staff is already coordinating with the CPUC and IOUs to develop and transition to new invoicing procedures for the recently approved program funds.

Under Decision 16-06-006, the Energy Commission noticed and hosted a public workshop on July 8, 2016, to discuss NSHP incentive redesign; ways that the NSHP program can be used to confront the underlying principal-agent barrier³; increasing affordable housing participation, and measurement, evaluation; and outreach strategies targeting the new single-family home market.

Energy Commission staff has also been streamlining the program to simplify and improve the program participation process for both market-rate and affordable housing projects for the next revision of the NSHP Guidebook. Energy Commission staff will incorporate stakeholder feedback from the July 9, 2016, public workshop into this upcoming guidebook revision as well.

³ The principal-agent barrier is the result of the conflicting goals and information asymmetry between the agent (homebuilder) and the principal (homebuyer). There may be less investment in solar and energy efficiency features on new homes as the agent aims to maximize profits and maintain wider appeal of its products while the principal seeks to maximize energy cost savings.