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STAFF REPORT

New Solar Homes Partnership Program Quarterly Progress Report

(July 1–September 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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TABLE OF CONTENTS

	Page
Abstract	i
Table of Contents	ii
List of Figures	iii
List of Tables	iii
CHAPTER 1: Introduction and Background	1
CHAPTER 2: Program Status and Activity for All Project Types	3
Reservation Applications	3
Payment Claims.....	4
Applications and Claims Processed.....	5
CHAPTER 3: Other Program Reporting.....	7
Total Installed Systems by Efficiency Levels (Code Compliant, Tier I, Tier II)	7
Overall Progress Toward Meeting Program Goals	9
CHAPTER 4: Budget Reporting.....	10
CHAPTER 5: Conclusion and Outlook	11

LIST OF FIGURES

	Page
Figure 1: Installed Systems by Energy Efficiency Level, All Building Standards.....	7
Figure 2: Installed Systems by Energy Efficiency Level, 2013 Standards Only	8
Figure 3: Progress Toward NSHP MW Goal	9

LIST OF TABLES

	Page
Table 1: Reservation Applications Approved From July Through September	4
Table 2: Payment Claims Approved From July Through September.....	5
Table 3: Energy Efficiency Levels of Payment Claims Approved From July Through September	5
Table 4: Number of Reservations and Payment Claims Submitted and Reviewed From July Through September	6
Table 5: Total Expenditures	10

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 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.

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 to serve 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 July 1, 2016, to September 30, 2016, and fulfills this requirement.

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 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 third quarter of 2016, reservation applications for 3,764 systems were approved, corresponding to more than 15 MW of capacity and \$8.3 million in funding. Table 1 below shows the breakdown of reservation applications that were approved in the third quarter of 2016 (July 1 - September 30). Large developments accounted for roughly 95 percent of reserved systems, 93 percent of reserved capacity, and 91 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. Altogether, affordable housing systems corresponded to 1 percent of reserved capacity and 4 percent of reserved funding over the third 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 that each has an electric meter.

**Table 1: Reservation Applications Approved From
July Through September**

Project Type	# of Systems	Encumbrances	Capacity (kW AC)
Large Developments	3,570	\$ 7,525,073	14,060
Affordable Housing	5	\$ 296,852	219
Custom Homes	36	\$ 163,261	247
Other	153	\$ 317,031	623
Totals	3,764	\$ 8,302,217	15,148

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 third quarter of 2016. Similar to approved reservations, the bulk of approved payment applications were for systems in large developments (89 percent), which corresponded to 77 percent of installed capacity and 72 percent of paid incentives. Affordable housing payments accounted for just over 1 percent of approved payment claims, 8 percent of installed capacity, and 14 percent of paid incentives. In total, payment claims were approved for 1,252 systems, corresponding to more than 4 MW (4,091 kW) of installed capacity and \$4.3 million in incentives.

Table 2: Payment Claims Approved From July Through September

Project Type	# of Systems	Incentive Amount	Capacity (kW AC)
Large Developments	1,118	\$ 3,113,573	3,155
Affordable Housing	14	\$ 596,651	332
Custom Homes	49	\$ 298,207	339
Other	71	\$ 319,388	265
Totals	1,252	\$ 4,327,819	4,091

Source: California Energy Commission

Table 3: Energy Efficiency Levels of Payment Claims Approved From July Through September

Energy Efficiency Level	# of Systems	Incentive Amount	Capacity (kW)
Code Compliant	621	\$ 1,193,393	1,838
Tier I	511	\$ 2,166,810	1,790
Tier II	120	\$ 667,616	463
Totals	1,252	\$ 4,327,819	4,091

Source: California Energy Commission

Applications and Claims Processed

Table 4 shows the total number of reservation applications and payment claims submitted and reviewed during the third quarter of 2016. The 188 reservation applications submitted accounted for 7,334 systems totaling 24.6 MW. The 7,334 systems submitted during the third quarter represent a 194 percent increase over the 3,771 systems that were submitted during the previous quarter. Similarly, the total capacity of 24.6MW submitted during the third quarter represents a 168 percent increase over the 14.6MW that was submitted during the previous quarter. It is likely this increase in capacity and number of systems submitted to the Energy Commission corresponds with the near attainment of capacity target for the current incentive level.

Previous expected incentive level drops have been preceded by an increase in the number of applications submitted to the program.

Table 4: Number of Reservations and Payment Claims Submitted and Reviewed From July Through September

	Submitted	Reviewed
Reservations	188	138
Payments	1,642	1,241

Source: California Energy Commission

CHAPTER 3:

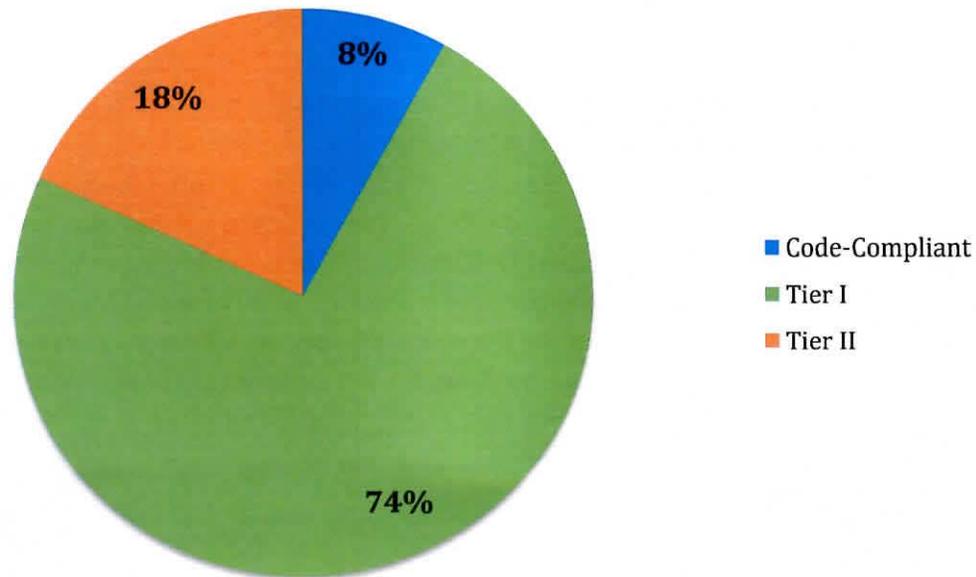
Other Program Reporting

This chapter contains data that covers the entire life of the NSHP program through September 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.

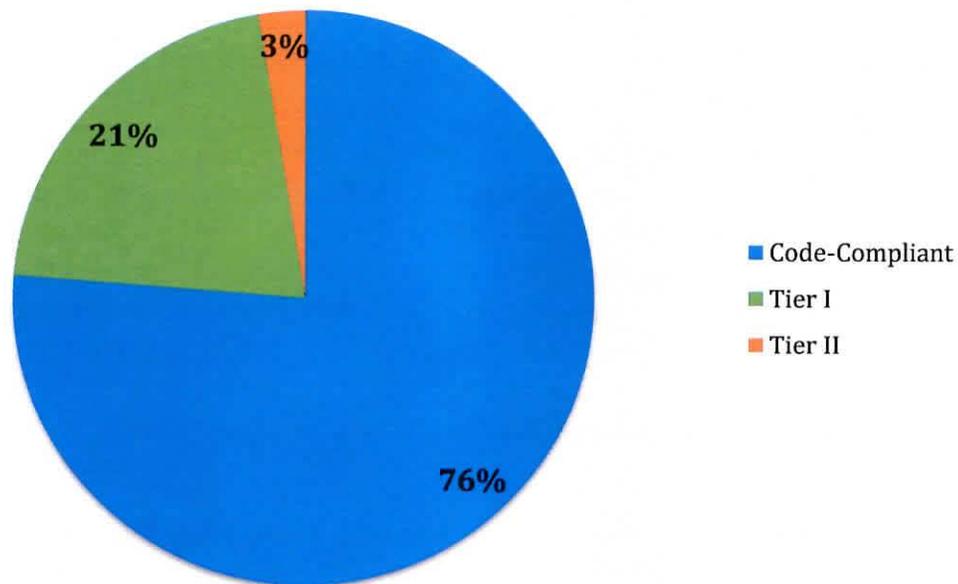
Figure 1: Installed Systems by Energy Efficiency Level, All Building Standards



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 18 percent Tier II and 8 percent code-compliant.

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



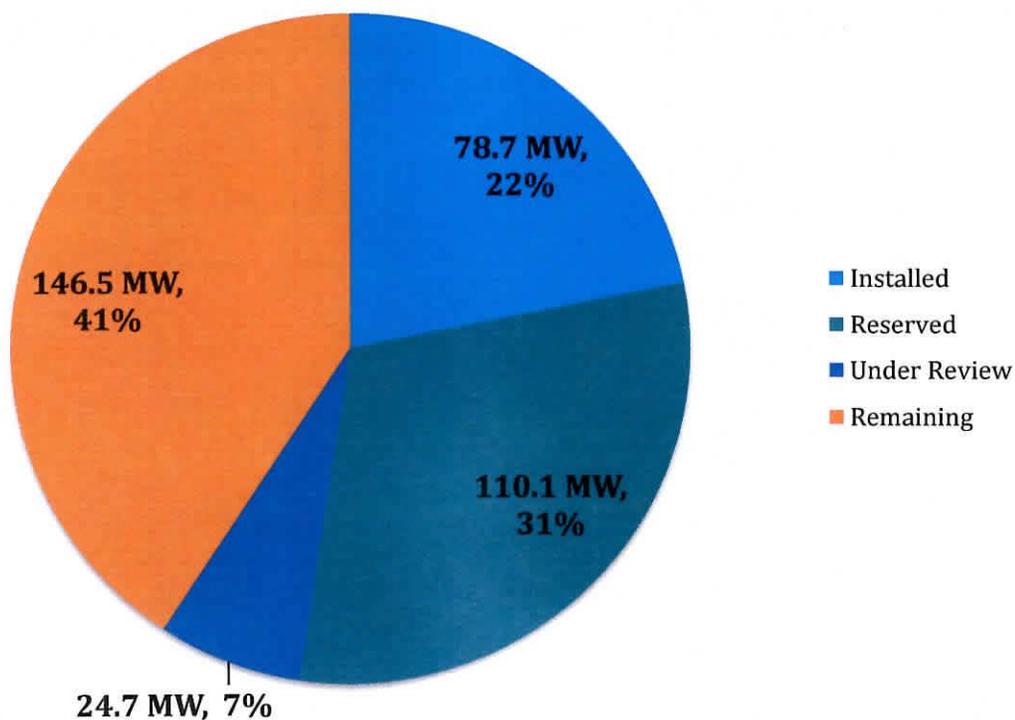
Source: California Energy Commission

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 1, the majority of systems for which all three incentive levels are available opt for the code-compliant option (76 percent), with 21 percent Tier I and only 3 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 October 4, 2016, 78.7 MW have been installed with 110.1 additional MW reserved, and 24.7 MW under review. As shown in Figure 3, NSHP has reserved funds for or installed 53 percent of the total capacity goal for the program. In addition, applications for systems corresponding to 7 percent of the overall capacity goal are under review by the Energy Commission. Assuming all capacity under review is approved and installed, 41 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 October 4, 2016, available funding in the Renewable Resources Trust Fund (RRTF) is about \$34.1 million, with applications totaling \$17.8 million under review, leaving around \$16.3 million available for new applications. Based on past average monthly encumbrances, program funding may be exhausted by the end of 2016. In future reporting periods, the NSHP budget will reflect additional funds authorized by CPUC Decision 16-06-006

Table 5: Total Expenditures

	\$ (Millions)	MW (AC)
Available Funding	34.1	
Under Review	17.8	25.2
Remaining Funding	16.3	

Source: California Energy Commission

CHAPTER 5: Conclusion and Outlook

The NSHP program saw significant program activity during the third quarter of 2016, with new applications submitted for 7,334 systems totaling 24.6 MW of capacity. During this period, the program reserved \$8.3 million in funding for more than 15 MW of new solar capacity and paid \$4.3 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 program history have achieved the Tier I or Tier II energy efficiency levels. Since the 2013 *Building Energy Efficiency Standards* have come into effect, more than 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 59 percent of the overall 360 MW target, with 41 percent remaining to be installed.

Under CPUC 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 market failure that can occur when the homebuilder (principal) makes decisions about renewable energy investments on behalf of the homebuyer (agent) when interests are misaligned; increasing affordable housing participation; measurement and evaluation, and outreach strategies targeting the new single-family home market.

Energy Commission staff is working on a tenth edition of the *NSHP Guidebook* to simplify and streamline the program participation process for both market-rate and affordable housing projects. Energy Commission staff plans to incorporate stakeholders' feedback from the July 9, 2016, public workshop into the upcoming NSHP guidebook revision. Here is a summary of the major comments received at the workshop:

- Although the hard costs associated with solar energy systems continue to fall, soft cost reductions remain a major barrier. In some cases, soft costs (such as labor costs, marketing, and customer acquisition) have increased in recent months.
- Builders are increasingly willing to install solar on new homes as demand from homebuyers increases, but the upfront cost remains a challenge especially for smaller builders.
- The NSHP incentive has historically proven crucial in deploying on new homes, but the Energy Commission may need to consider slowing the decline of the incentive or

reduce associated program costs to ensure the incentive remains an effective tool for aiding builders with deploying solar.

- The number of solar installations in low-income and disadvantaged communities remains low compared to market-rate housing and would benefit from further incentives or other support from NSHP. Installing solar in these areas would serve those that would benefit the most from the solar offset, but these developers are also the most challenged by funding and scheduling constraints.
- The Energy Commission should continue to evaluate and update as necessary eligibility and other criteria to ensure the program functions as efficiently and effectively as possible while ensuring adequate protection and use of ratepayer monies.
- The Energy Commission should continue to work with the CPUC and stakeholders to ensure that program statistics and data are up to date and include information most relevant to all parties involved.

The Energy Commission has tentatively scheduled a public workshop in early November to discuss the proposed changes to the *NSHP Guidebook*. This workshop will solicit stakeholders' input on the proposed changes to ensure that the program design for NSHP adequately addresses stakeholders' considerations, updates to the Energy Efficiency Requirements in the California Building Code, and current market conditions in the solar and new construction industries. The tenth edition of the *NSHP Guidebook* is anticipated to be considered by the Energy Commission at its December 14, 2016, Business Meeting and, if approved, will become effective January 1, 2017.