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California Energy Commission  
**STAFF REPORT**

# **New Solar Homes Partnership Program Quarterly Progress Report**

(October 1–December 31, 2016)

**California Energy Commission**

Edmund G. Brown Jr., Governor



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# California Energy Commission

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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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# TABLE OF CONTENTS

|  | Page |
|--|------|
| <b>Abstract</b> .....  | i    |
| <b>Table of Contents</b> .....   | ii   |
| <b>List of figures</b> .....   | iii  |
| <b>LIST of Tables</b> .....  | 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 October Through December .....                                   | 4    |
| Table 2: Payment Claims Approved From October Through December .....   | 5    |
| Table 3: Energy Efficiency Levels of Payment Claims Approved From October Through<br>December .....              | 5    |
| Table 4: Number of Reservations and Payment Claims Submitted and Reviewed From<br>October Through December ..... | 6    |
| Table 5: Total Expenditures .....  | 10   |



# CHAPTER 1:

## Introduction and Background

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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.<sup>1</sup>

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

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<sup>1</sup> 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 October 1, 2016, to December 31, 2016, and fulfills this requirement.

# CHAPTER 2: Program Status and Activity for All Project Types

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## 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 fourth quarter of 2016, reservation applications for 3,670 systems were approved, corresponding to more than 14 MW of capacity and \$8 million in funding. Table 1 below shows the breakdown of reservation applications that were approved in the fourth quarter of 2016 (October 1 - December 31). Large developments accounted for roughly 92 percent of reserved systems, 88 percent of reserved capacity, and 83 percent of reserved funding. Affordable housing systems accounted for just over 1 percent of reserved systems. These systems are often virtual net energy-metered<sup>2</sup> 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 3 percent of reserved capacity and 8 percent of reserved funding over the fourth quarter.

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<sup>2</sup> *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 October Through December**

| <b>Project Type</b>       | <b># of Systems</b> | <b>Encumbrances</b> | <b>Capacity (kW AC)</b> |
|---------------------------|---------------------|---------------------|-------------------------|
| <b>Large Developments</b> | 3,372               | \$ 6,691,521        | 12,408                  |
| <b>Affordable Housing</b> | 41                  | \$ 653,593          | 491                     |
| <b>Custom Homes</b>       | 34                  | \$ 156,472          | 239                     |
| <b>Other</b>              | 223                 | \$ 566,881          | 1,009                   |
| <b>Totals</b>             | <b>3,670</b>        | <b>\$ 8,068,467</b> | <b>14,147</b>           |

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 *New Solar Homes Partnership Guidebook (NSHP Guidebook), Ninth Edition*, the NSHP Program offers different incentives levels depending on the *Title 24 Building Energy Efficiency Standards* under which the project complies: “code-compliant,<sup>3</sup>” where the structure is between 0 and 14.9 percent above the current building standards; “Tier I,” where the structure exceeds the building standards by between 15 and 29.9 percent; and “Tier II,” where the structure exceeds the building standards 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 fourth quarter of 2016. Similar to approved reservations, the bulk of approved payment applications were for systems in large developments (85 percent), which corresponded to 78 percent of installed capacity and 73 percent of paid incentives. Affordable housing payments accounted for less than 1 percent of approved payment claims, 5 percent of installed capacity, and 8 percent of paid incentives. In total, payment claims were approved for 2,004 systems, corresponding to more than 6.5 MW (6,525 kW) of installed capacity and nearly \$6 million in incentives.

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<sup>3</sup> Code-compliant incentives are available only for projects permitted under the *2013 Building Standards*.

**Table 2: Payment Claims Approved From October Through December**

| Project Type       | # of Systems | Incentive Amount    | Capacity (kW AC) |
|--------------------|--------------|---------------------|------------------|
| Large Developments | 1,709        | \$ 4,371,673        | 5,090            |
| Affordable Housing | 6            | \$ 482,608          | 343              |
| Custom Homes       | 47           | \$ 252,440          | 334              |
| Other              | 242          | \$ 845,362          | 757              |
| <b>Totals</b>      | <b>2,004</b> | <b>\$ 5,952,083</b> | <b>6,524</b>     |

Source: California Energy Commission

**Table 3: Energy Efficiency Levels of Payment Claims Approved From October Through December**

| Energy Efficiency Level | # of Systems | Incentive Amount    | Capacity (kW) |
|-------------------------|--------------|---------------------|---------------|
| Code Compliant          | 1,161        | \$ 2,724,844        | 3,625         |
| Tier I                  | 708          | \$ 2,405,631        | 2,330         |
| Tier II                 | 135          | \$ 821,608          | 569           |
| <b>Totals</b>           | <b>2,004</b> | <b>\$ 5,952,083</b> | <b>6,524</b>  |

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 fourth quarter of 2016. The 82 reservation applications submitted accounted for 1,867 systems totaling 8.9 MW. The 1,867 systems submitted during the fourth quarter represent a 75 percent decrease from the 7,334 systems that were submitted during the previous quarter. Similarly, the total capacity of 8.9 MW submitted during the fourth quarter represents a 64 percent decrease from the 24.6 MW that were submitted during the previous quarter.

It is likely this decrease in capacity and number of systems submitted to the Energy Commission corresponds with the attainment of capacity target for the previous incentive level, which ended at the beginning of this quarter. Previous expected incentive level drops have been followed by a decrease in the number of applications submitted to the program. Furthermore, submissions are usually lower during the winter months which are included in quarter four.

**Table 4: Number of Reservations and Payment Claims Submitted and Reviewed From October Through December**

|                     | <b>Submitted</b> | <b>Reviewed*</b> |
|---------------------|------------------|------------------|
| <b>Reservations</b> | 82               | 136              |
| <b>Payments</b>     | 1,688            | 1,523            |

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

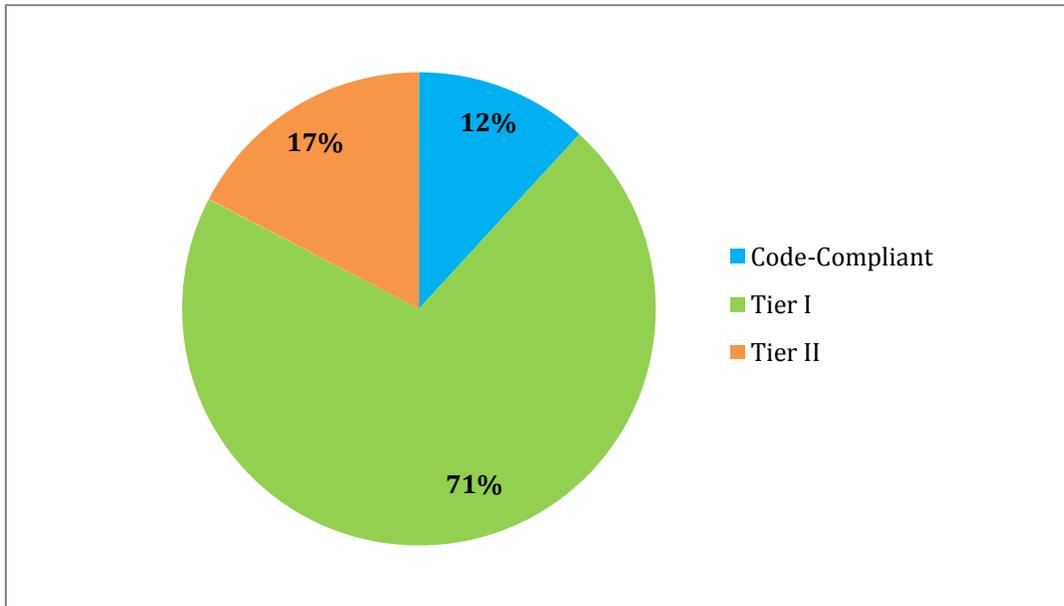
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This chapter contains data that covers the entire life of the NSHP Program through December 31, 2016.

## 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 building 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.

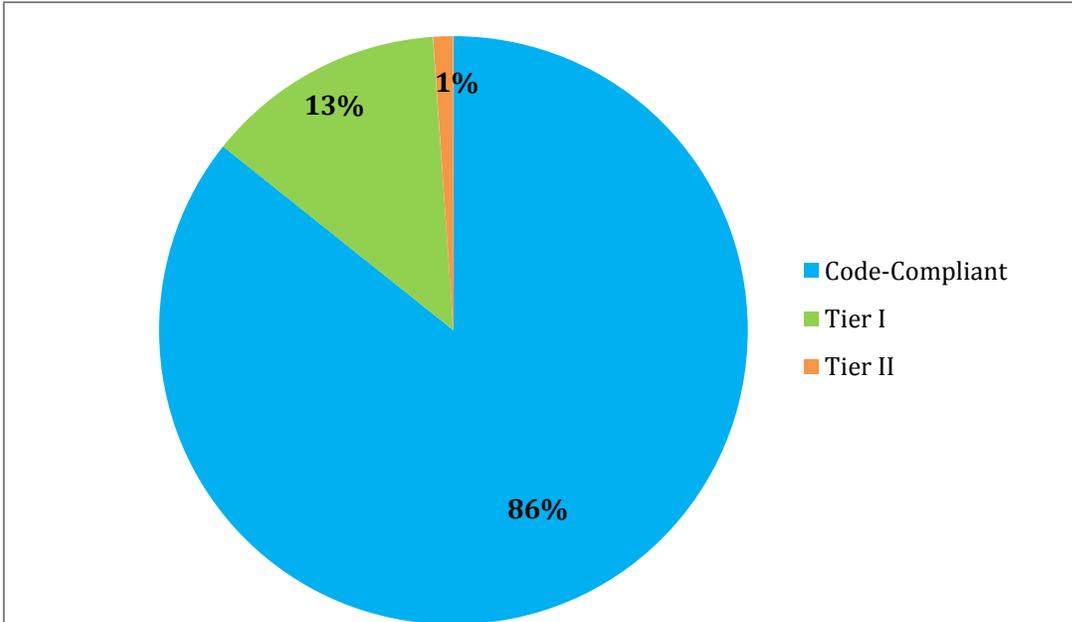
**Figure 1: Installed Systems by Energy Efficiency Level, All Building Standards**



Source: California Energy Commission

Figure 1 shows the efficiency level of installed systems over the life of the program. About 71 percent of installed systems were Tier I projects, with 17 percent Tier II and 12 percent code-compliant.

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



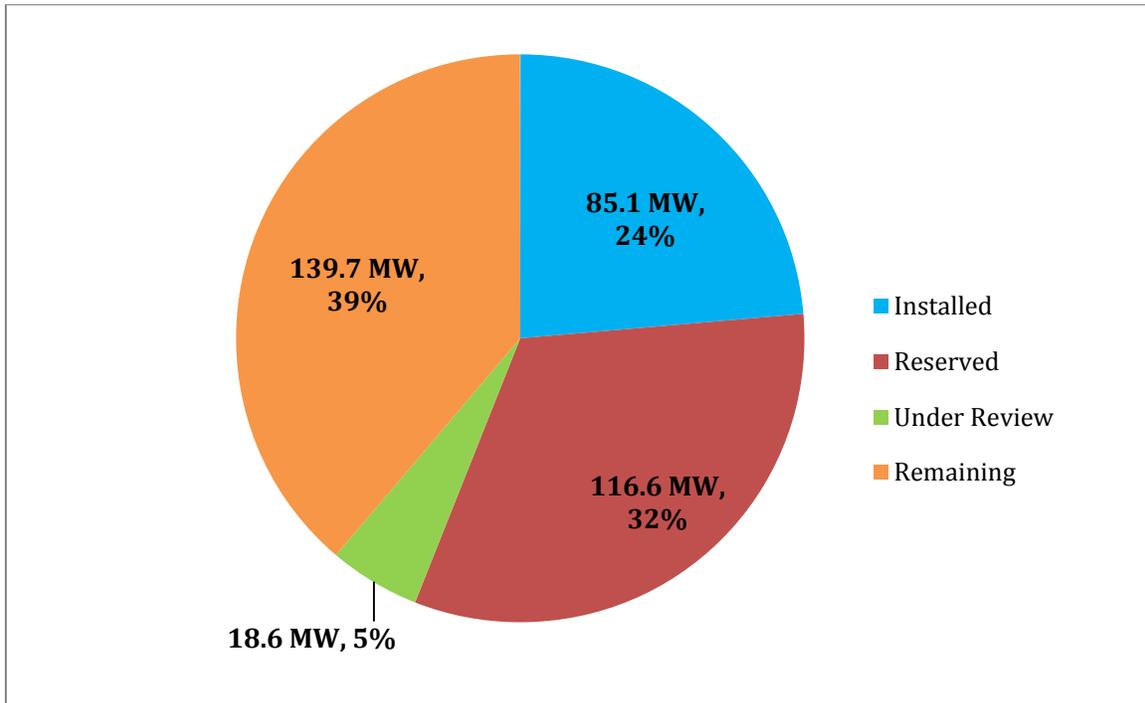
Source: California Energy Commission

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 (86 percent), with 13 percent Tier I and only 1 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 MW by the end of the program. As of January 5, 2017, 85.1 MW have been installed, with 116.6 additional MW reserved and 18.6 MW under review. As shown in Figure 3, NSHP has reserved funds for or installed 56 percent of the total capacity goal for the program. In addition, applications for systems corresponding to 5 percent of the overall capacity goal are under review by the Energy Commission. Assuming all capacity under review is approved and installed, 39 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

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Current data show that as of January 6, 2017, funding available for NSHP incentives from the Renewable Resources Trust Fund (RRTF) is roughly \$30.2 million, with applications totaling \$13.5 million under review, leaving about \$16.7 million available for new reservation applications. Based on past average monthly encumbrances, RRTF program funding may be exhausted in early to mid-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 in the quarter as well as disencumbered funds completed in the quarter.

**Table 5: Total Expenditures**

|                          | <b>\$ (Millions)</b> | <b>MW (AC)</b> |
|--------------------------|----------------------|----------------|
| <b>Available Funding</b> | 30.2                 |                |
| <b>Under Review</b>      | 13.5                 | 18.6           |
| <b>Remaining Funding</b> | 16.7                 |                |

Source: California Energy Commission

# CHAPTER 5:

## Conclusion and Outlook

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NSHP Program activity during the fourth quarter of 2016 included new applications submitted for 1,867 systems totaling 8.9 MW of capacity. During this period, the program reserved just over \$8 million in funding for more than 14 MW of new solar capacity and paid nearly \$6 million in incentives for more than 6.5 MW of installed systems.

During the program, projects have been funded in the majority 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* came into effect, more than 86 percent of payment claims for eligible projects have elected the code-compliant incentive level. The *2016 Building Standards* went into effect on January 1, 2017, and apply to all new construction permits applied for after this date. The NSHP Program expects to begin receiving reservation applications under the *2016 Building Standards* in the coming months. When adopted, the *NSHP Guidebook, Tenth Edition* will provide the requirements for projects under the *2016 Building Standards*. Based on installed, reserved, or under review capacity, the program has achieved 61 percent of the overall 360 MW target, with 39 percent remaining to be installed.

Since July 2016, the Energy Commission has been engaged in a robust public process to solicit input on the proposed update to the *NSHP Guidebook*. Energy Commission staff hosted a number of public workshops, focus group sessions and meetings to review proposals and most recently held a public workshop on January 6, 2017, to solicit stakeholder input on the *Draft NSHP Guidebook, Tenth Edition*. The *Draft NSHP Guidebook, Tenth Edition*, includes proposed changes to respond to the CPUC Final Decision approved on June 9, 2016; address the *2016 Building Standards* update effective January 1, 2017; adjust the incentive levels; streamline application and payment processes; and authorize the use of the new Flexible Installation Calculator for payment calculations. A complete overview of proposed changes and the draft are available on the Energy Commission's website, under Docket # 16-NSHP-01, Continuation of the New Solar Homes Partnership Program (NSHP). Following the public comment period, staff will consider additional revisions and develop a draft final *NSHP Guidebook, Tenth Edition*, anticipated to be considered for adoption by the Energy Commission at its March 8, 2017, Business Meeting. If approved, the updated *NSHP Guidebook, Tenth Edition*, will become effective immediately.