

Clean Energy States Alliance Webinar

State Leadership in Clean Energy: Award-Winning Programs in California & New York

Hosted by
Warren Leon, Executive Director, CESA
July 26, 2016

Housekeeping



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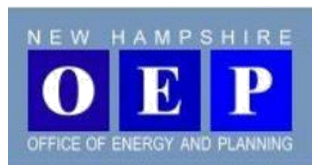
Submit your questions at any time by typing in the Question Box and hitting Send.

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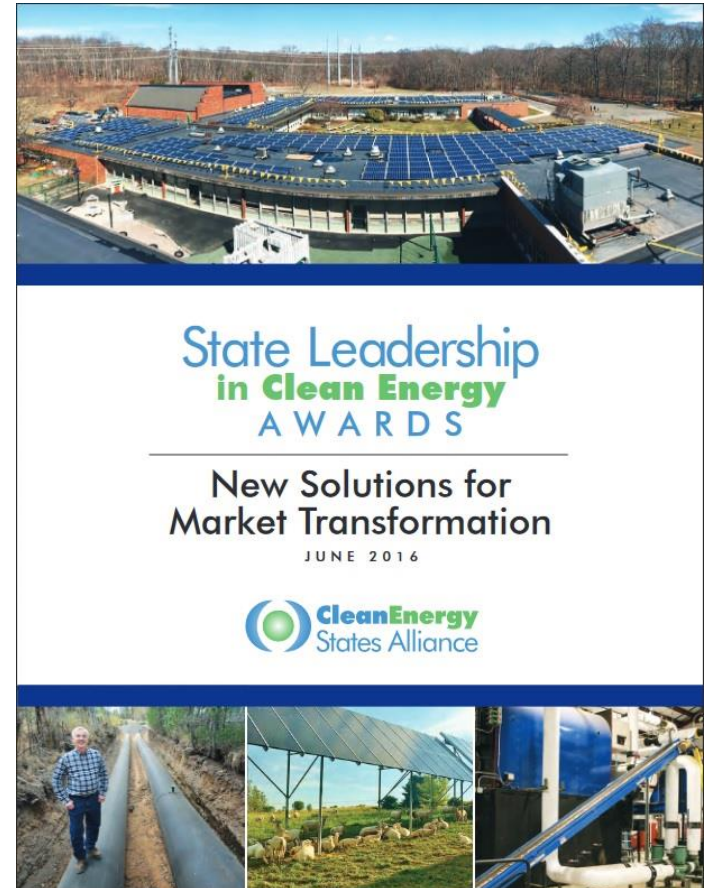
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The 2016 State Leadership in Clean Energy Awards



More information, including case studies about the winning programs and information about upcoming webinars, is available at: <http://cesa.org/projects/state-leadership-in-clean-energy/2016/>.



Today's Guest Speakers

- **Lisabeth Tremblay**, Assistant Project Manager, NYSERDA
- **Luke Forster**, Assistant Project Manager, NYSERDA
- **Joe Omoletski**, NSHP Program Specialist, California Energy Commission
- **Elizabeth Hutchison**, NSHP Program Lead, California Energy Commission





NY-Sun

NYSERDA

NY-Sun Initiative



July 26, 2016

NY- Sun Presenters

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Agenda

- NY-Sun Overview
- NY-Sun Incentive Program (MW Block)
- NY-Sun Soft Cost Reduction Programs

NY-Sun Overview

New York's Energy Policy

- Reforming the Energy Vision (REV) Governor Cuomo's strategy to build a clean, resilient and affordable energy system for all New Yorkers.
- Clean Energy Standard goal of 50% renewable by 2030.
- Clean Energy Fund (CEF)
 - 10-year, \$5 billion funding commitment
 - Reshapes New York's energy efficiency, renewable energy and energy innovation programs
 - Reduces cost of clean energy
 - Accelerates adoption of energy efficiency to reduce load
 - Increases renewable energy to meet demand
 - Mobilizes private investment in clean energy

NY-Sun Initiative

- Significantly expand installed solar capacity
- Attract private investment
- Enable sustainable development of a robust industry
- Create well-paying skilled jobs
- Improve the reliability of the electric grid
- Reduce air pollution
- Make solar available to all New Yorkers

Statewide Goal of 3 GW by 2023

Approx. \$1 Billion Total
Budget

Self-
Sustaining
Market

Reduce
Soft Costs

New York's Solar Market

- Unprecedented growth – 575% growth in solar from 2012 to 2015
- 18,313 solar projects installed in 2015
- 525 MW installed by 2015 – enough to power nearly 85,000 homes
- Strong job growth – 8,250 employed in solar industry in 2015 – New York ranked 4th in the U.S. for number of solar workers

NY-Sun Incentive Program

NY-Sun Incentive Program: MW Block

Capacity-based cash incentive available to eligible contractors.

Three Regions:

- Con Edison (New York City and South Westchester)
- Long Island
- Upstate (Rest- of-State or ROS)

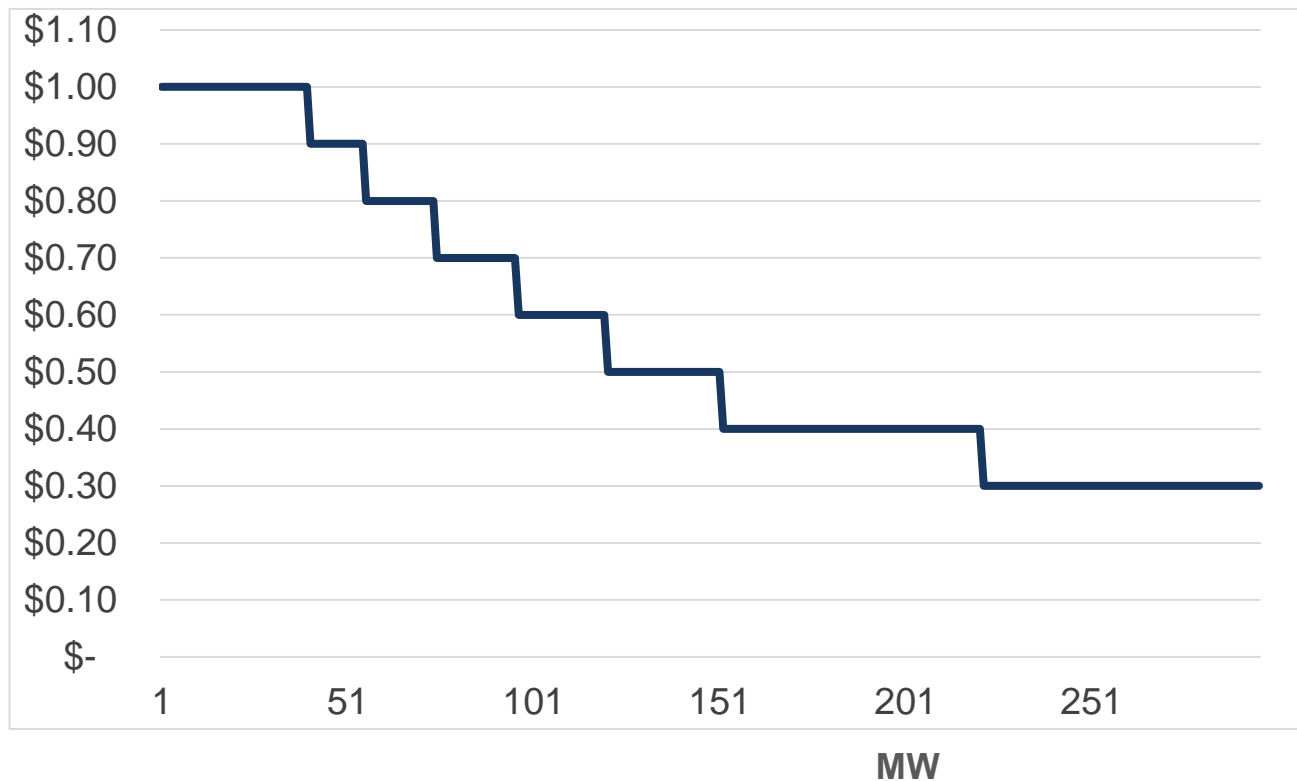
Three Sectors:

- Residential: up to 25 kW
- Small Non-residential: up to 200 kW
- Commercial/Industrial: >200 kW

Incentive is available through Dec 29, 2023 or until funds are fully committed.

NY-Sun Incentive Program: MW Block

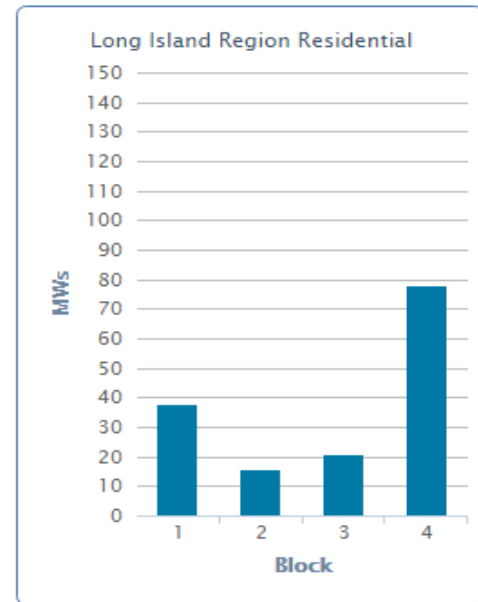
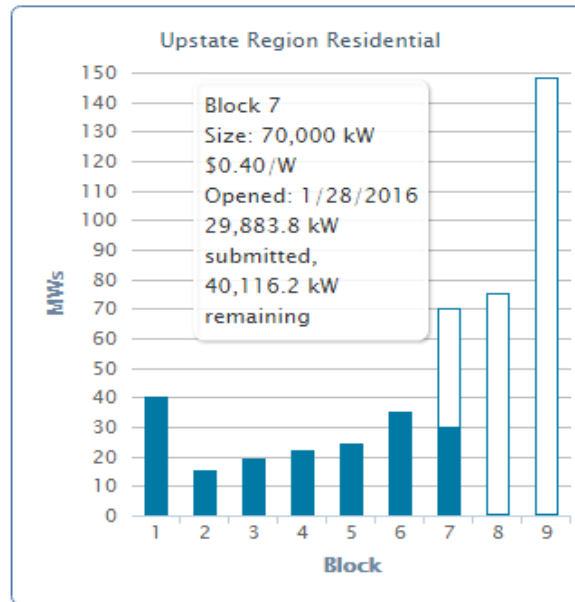
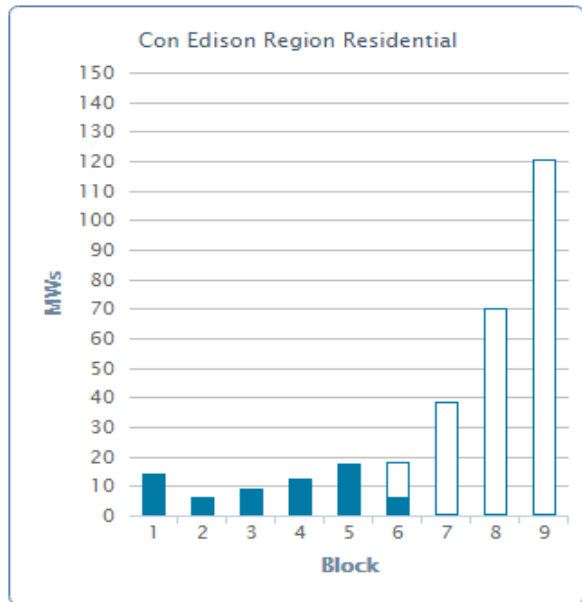
Example: Upstate Residential MW Block Structure



NY-Sun Incentive Program

Residential / Small Commercial

Refresh



■ Submitted □ Available

Hold the cursor over a column in any chart to get the block details.

Affordable Solar

Added incentive for low-to-moderate (LMI) income residents:

- Doubles the applicable MW Block incentive

Eligibility

- Household Income below 80% area or state median income

Requirements

- Energy efficiency lighting and hot water upgrades
- Projects must satisfy cost savings requirements
- No price escalators allowed for third-party-owned projects

Soft Cost Reduction Programs

NY-Sun Soft Cost Reduction Programs

- Community Solar
- PV Trainers Network: Assistance to local governments
- NY Unified Solar Permit and supporting documents
- Interconnection Distributed Generation Ombudsman/
Working Groups
- NY Soft Cost Baseline Study
- Technical Assistance Program
- Green Jobs – Green NY financing
- Solar-Ready Vets: PV training program for military veterans
- Rigorous QA program: field and photo inspections

Community Solar in NY

- Solarize
- K-Solar
- Shared Solar



What is Solarize?

- Community-driven outreach and customer aggregation campaign
- Competitive selection of solar installers
- Limited time (6-9 months)
- Well-established model with room for innovation
- Support from NYSERDA



Solarize Results

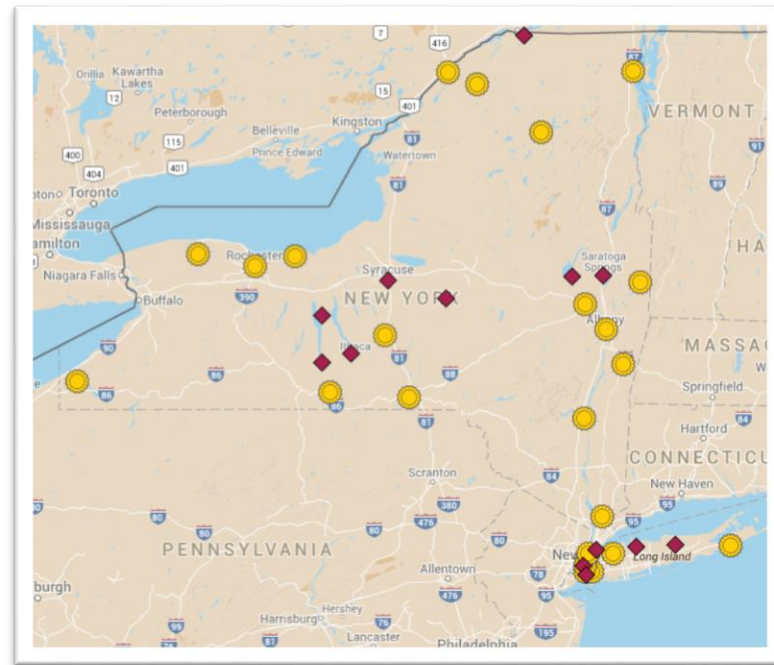
Round 1

- 26 campaigns participated
- 900 projects
- 8.4 MW
- 4,000 leads
- \$1.4 million cost saved
- Avg. \$1,590 saved per installation

Round 2

- 30 campaigns launched spring 2016

Solarize campaigns in NY

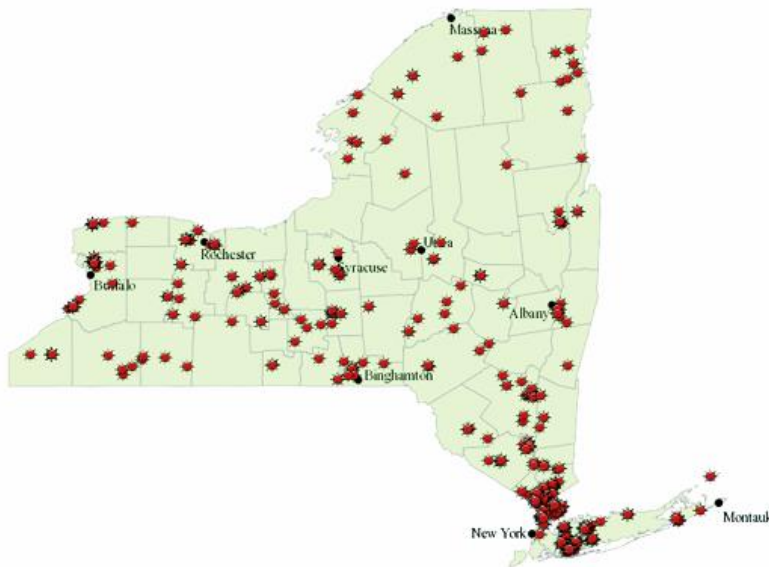


Solarize Google Maps.

- Current
- Past

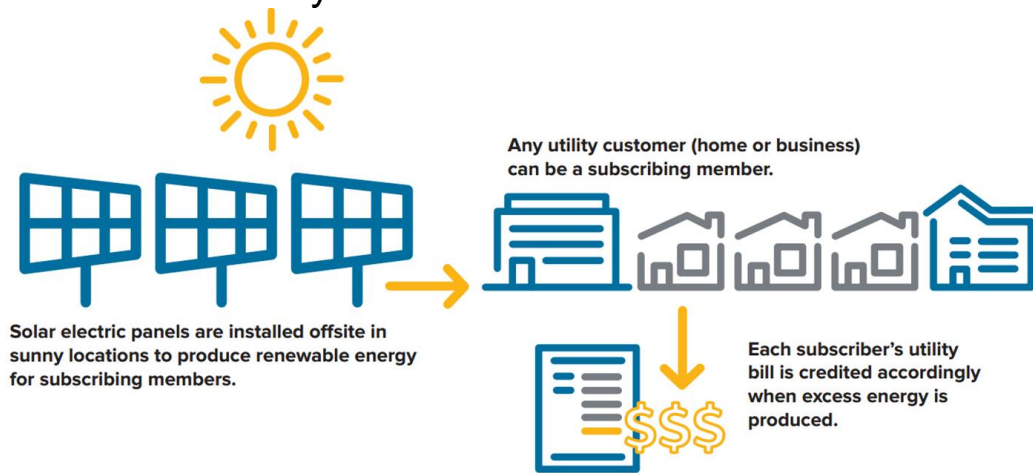
K-Solar

- A joint project of the New York Power Authority (NYPA) and NYSERDA, K-Solar provides NYS school districts, at no cost or obligation, with the tools and expertise to bring solar energy to their facilities and reduce their energy costs.



Shared Solar

- Allows a single large installation to credit production to many remote off takers
 - 60% minimum proportionate share of output for members less than 25 kW
 - 40% maximum proportionate share of output for members greater than 25 kW
- Projects can interconnect statewide as of May 1, 2016
- Net metering structure
- Makes solar accessible to many more New Yorkers



NY-Sun PV Trainers Network

Offers training to help local governments and jurisdictions identify opportunities, mitigate barriers, and create programs that drive the development of PV markets through education, training, and one-on-one technical assistance.


Available Trainings Include

- Expanding Commercial Solar with PACE
- Intro to Shared Solar
- Intro to Solar Policy Workshop
- Land Use and Planning for Solar
- Solar Procurement for Local Governments
- Streamlining Solar Permitting
- Full list available by visiting training.ny-sun.ny.gov



NY Unified Solar Permit

- Standard Solar Electric Permit for New York State Local Officials
- Helps to remove barriers to local economic development in the growing solar industry
- Simplifies and streamlines permitting for solar installers



New York State Unified Solar Permit
Expedited Solar Permit Process for Small-Scale Photovoltaic Systems

Requirements for Application Submittal - STEP 1

For use in all New York State counties with the exception of Nassau County and Suffolk County.

The expedited solar permitting process uses a unified permit across municipalities in New York State.






A combined building and electrical permit for a grid-tied photovoltaic (PV) system will be issued pending proper completion of forms, submission of approved plans and approval by municipality. All applicants must submit:

- 1. Unified Solar Permit for Small-Scale Photovoltaic Systems Eligibility Checklist - STEP 2**
- 2. One (1) set of plans (number may vary by municipality) that include:**
 - Site Plan showing location of major components of solar system and other equipment on roof or legal accessory structure. This plan should represent relative location of components at site, including, but not limited to, location of array, existing electrical service location, utility meter, inverter location, system orientation and tilt angle. This plan should show access and pathways that are compliant with New York State Fire Codes, if applicable.
 - One-Line or 3-Line Electrical Diagram. The electrical diagram required by NYSERDA for an incentive application and/or utility for an interconnection agreement can be used here.
 - Specification Sheets for all manufactured components. If these sheets are available electronically, a web address will be accepted in place of an attachment, at the discretion of the municipality.
 - All diagrams and plans must include the following: (a) Project address, section, block and lot number of the property; (b) Owner's name, address and phone number; (c) Name, address and phone number of the person preparing the plans; and (d) System capacity in kW-DC.
- 3. Unified Solar Permit for Small-Scale Photovoltaic Systems Application - STEP 3**
- 4. Permit Fee Amount**

Permit Review and Inspection Timeline

Permit determinations will be issued within 14 days upon receipt of complete and accurate applications. The municipality will provide feedback within 7 days of receiving incomplete or inaccurate applications. If an inspection is required, a single inspection should be sufficient and will be provided within 7 days of inspection request.

The NY-Sun Initiative, a dynamic public-private partnership, will drive growth of the solar industry and make solar technology more affordable for all New Yorkers.
Visit ny-sun.ny.gov for more information on the NY-Sun Initiative.

Thank you



ny-sun.ny.gov



New Solar Homes Partnership Program

Elizabeth Hutchison
Joseph Omoletski

July 26, 2016



Purpose

Senate Bill 1 (SB 1, Murray, 2006) goals:

- 3,000 MW of installed DG solar PV capacity
- Self-sufficient solar industry
- Solar installed on 50% of new homes

NSHP-specific goals:

- 360 MW of installed solar PV capacity
- PV on highly efficient residential construction



California Energy Commission

Eligibility Requirements



- New residential construction
- In IOU electric service territory
- Interconnected solar energy systems ≥ 1 kW AC
- Third-party verified systems and energy efficiency
- Eligible equipment with 10-year warranty



California Energy Commission

CEC Lists of Eligible Equipment

- Incentive Eligible Equipment in Compliance with SB1 Guidelines

Updated as of July 8, 2016

Manufacturer Name	Module Model Number	Description	BIPV*	PTC*	Notes
A10Green Technology	A10J-S72-175	175W Monocrystalline Module	N	151.2	
A10Green Technology	A10J-S72-180	180W Monocrystalline Module	N	155.7	
A10Green Technology	A10J-S72-185	185W Monocrystalline Module	N	160.2	
A10Green Technology	A10J-M60-220	220W Polycrystalline Module	N	189.1	
A10Green Technology	A10J-M60-225	225W Polycrystalline Module	N	193.5	
A10Green Technology	A10J-M60-230	230W Polycrystalline Module	N	204.1	
A10Green Technology	A10J-M60-235	235W Polycrystalline Module	N	208.7	
A10Green Technology	A10J-M60-240	240W Polycrystalline Module	N	213.3	
A2Peak Power	POWER ON P220-6x10	220W Polycrystalline Module	N	195.0	
Aavid Solar	ASMS-165P	165W Polycrystalline Module	N	146.3	
Aavid Solar	ASMS-180M	180W Monocrystalline Module	N	159.7	
Aavid Solar	ASMS-185M	185W Monocrystalline Module	N	164.3	
Aavid Solar	ASMS-220P	220W Polycrystalline Module	N	196.6	
Aavid Solar	ASMS-225M	225W Monocrystalline Module	N	200.9	
Aavid Solar	ASMS-230P	230W Polycrystalline Module	N	206.9	
Aavid Solar	ASMS-235M	235W Monocrystalline Module	N	210.0	
Aavid Solar	ASMS-270P	270W Polycrystalline Module	N	244.4	
Aavid Thermalloy	ASMP-175M	175W Monocrystalline Module	N	154.0	
Aavid Thermalloy	ASMP-180M	180W Monocrystalline Module	N	158.6	
AblyTek	5MN6C175-A0	175W Monocrystalline Module	N	151.2	
AblyTek	5MN6C180-A0	180W Monocrystalline Module	N	155.7	
AblyTek	5MN6C185-A0	185W Monocrystalline Module	N	160.2	
AblyTek	6PN6A220-A0	220W Polycrystalline Module	N	189.1	
AblyTek	6PN6A225-A0	225W Polycrystalline Module	N	193.5	
AblyTek	6PN6A230-A0	230W Polycrystalline Module	N	204.1	



Incentive Structure

- One-time, upfront incentive
- Tiered incentive structure with volumetric targets; incentives decline when megawatt targets achieved
- Expected Performance Based Incentive (EPBI)
- Incentives limited to the first 7.5 kW AC per residential unit AND incentive amount cap
 - Market-rate housing cap: 50%
 - Affordable housing cap: 75%

Example Calculator 07/20/2016 2:13:13 PM

Project Title _____ Date _____
 1516 9th St
 Project Address/Lot Number _____
 Sacramento, CA
 City/State/ZIP _____
 Sacramento 12
 City Used in Calculator Run Climate Zone

FOR OFFICIAL USE ONLY

Reservation _____

PV _____

Date _____

Number of Sites with Solar: 1 Number of Inverters per Site: 1
 with Identical Design Details

Project Address List
 1516 9th St

Project Description: Single Family, Market Rate, Tier I EE, Dwelling Unit

PV SYSTEM INFORMATION

Module Manufacturer and Model: Example Module
 Inverter Manufacturer and Model: ABB PVI-3 6-OUTD-US (240V)
 Series Modules in each String: 40 Parallel Strings: 1 Total Modules per Inverter: 40
 Mounting (BIPV or Rack Mounted): Building Integrated
 Standoff Height (if rack mounted): N/A

Installation Option: Detailed

Azimuth: 170 degrees Tilt: 26.8 degrees Mounting Height Above Ground: Two-Story
 Shading Type: Minimal Shading Tracking: Fixed

Orientation	Obstruction Type	Altitude Angle to Shading Obstruction	Distance To Height Ratio	Minimum Distance To Small Tree	Minimum Distance To Medium Tree	Minimum Distance To Large Tree
ENE (53-79)	N/A	Min Shading	2	N/A	26	56
E (79-101)	N/A	Min Shading	2	N/A	26	56
ESE (101-124)	N/A	Min Shading	2	N/A	26	56
SE (124-146)	N/A	Min Shading	2	N/A	26	56
SSE (146-169)	N/A	Min Shading	2	N/A	26	56
S (169-191)	N/A	Min Shading	2	N/A	26	56
SSW (191-214)	N/A	Min Shading	2	N/A	26	56
SW (214-236)	N/A	Min Shading	2	N/A	26	56
WSW (236-259)	N/A	Min Shading	2	N/A	26	56
W (259-281)	N/A	Min Shading	2	N/A	26	56
WNW (281-305)	N/A	Min Shading	2	N/A	26	56

CEC PV CALCULATOR RESULTS

kW AC System Size:	<u>1.88</u>	kW AC System Size:	<u>1.88</u>
Annual kWh:	<u>3,466</u>	Annual kWh:	<u>3,466</u>
Annual TDV kWh:	<u>49,102</u>	Annual TDV kWh:	<u>49,102</u>

The CEC PV Calculator determines the appropriate incentive amount for a PV system as calculated by the Expected Performance Based Incentive approach outlined in the NSHP Guidebook. The expected performance of a system provided by the CEC PV Calculator is an estimate and actual performance will be different.
 CEC PV 4.1 The NSHP incentive may be reduced to a maximum percentage of the total system cost. Refer to NSHP Guidebook, 7th edition, Chapter III, Section D. MOD4.1g/INV4.1g



California Energy Commission

Remaining Incentive Levels

Market Rate	Step	Code	Tier I	Tier II	Reserved volume (MW-AC)
	8	\$0.50	\$0.75	\$1.25	60
	9	\$0.35	\$0.50	\$1.00	65
	10	\$0.25	\$0.35	\$0.75	72

Step	Code	Tier I/II	Reserved volume (MW-AC)
6	\$1.50	\$1.85	3.5
7	\$1.15	\$1.50	5.0
8	\$0.80	\$1.25	6.0
9	\$0.55	\$1.00	6.5
10	\$0.35	\$0.75	7.2

Affordable Housing



California Energy Commission

NSHP Energy Efficiency Requirements

Energy Efficiency Tier	2008 Standards	2013 Standards
Code-Compliant	Not available	0%
Tier I	15%	15%
Tier II	30%/30%*	30%/30%*

* Required space cooling improvement



California Energy Commission

Reservation Periods

Reservation Period	Project Types
36 Months	<ul style="list-style-type: none">• Large Development: 50%+ of homes receive solar (minimum six homes)• Affordable Housing (residential or common area): 20%+ of dwelling units are income restricted• Virtual Net-Metered
18 Months	<ul style="list-style-type: none">• Custom Home: single site project• Small Development: fewer than six homes• Solar Not as Standard: less than 50% of homes• Market-Rate Common Area



Involved Parties

Applicant

- Homeowner
- Homebuilder/Developer

Contractor

- Retailer/Seller
- Installer

Efficiency and Solar Consultants

- Certified Energy Analyst
- HERS Rater



California Energy Commission

The Basic Process



Reservation

- Applicant submits reservation application package via online application tool.
- Energy Commission reviews and approves. Incentive is reserved for applicant.



Installation and Verification

- Applicant installs PV system and energy efficiency measures (as appropriate).
- HERS rater verifies and tests measures installed.
- Building department finalizes solar permit.
- Applicant applies to utility for interconnection.



Payment Claim

- Applicant submits payment claim package via online application tool.
- Energy Commission reviews and approves. Incentive is paid.



California Energy Commission

Reservation Application Document Overview

General Project Information

- NSHP-1

Proof of New Residential Construction

- Building Permit/Subdivision Map

Commitment to Solar

- Calculator Form
- Installation Contract

Energy Efficiency

- Building Energy Model (Title 24)
- Construction Plan Set



Payment Claim Document Overview

General Information

- NSHP-2

Warranty Coverage

- NSHP-3

Third-Party Verification

- Solar Verification
- Energy Efficiency Verification (Mandatory and Above-Code)

Interconnection

- Interconnection Letter

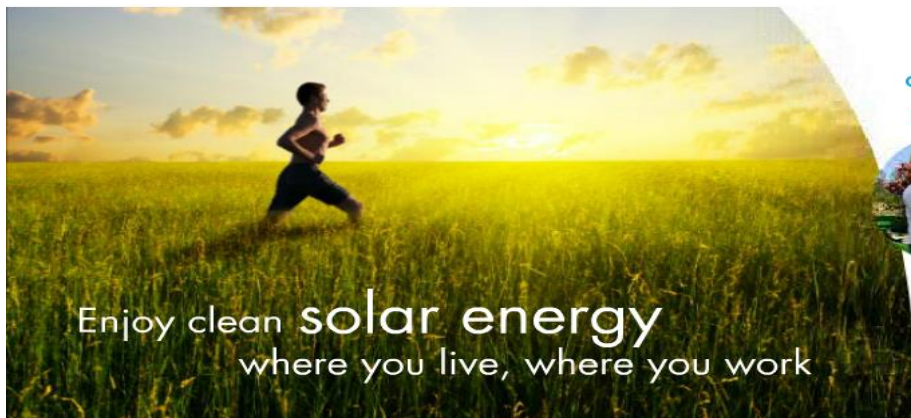


Go Solar California Website



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COMMUNITY SOLAR CALENDAR

CALCULATE YOUR SAVINGS

GETTING STARTED

Upcoming Events

- April 07, 2016 [Understanding PG&E's NEM 2.0](#)
- April 12, 2016 [Solar for Homeowners](#)
- April 14, 2016 [Understanding PG&E's NEM 2.0](#)
- April 21, 2016 [Understanding PG&E's NEM 2.0](#)
- April 28, 2016 [Understanding PG&E's NEM 2.0](#)
- May 05, 2016 [Solar for Homeowners](#)

California Leads the Nation

- 489,799** solar projects
- 3,872** megawatts installed
- \$5.23** avg cost/watt <10kW
- \$4.14** avg cost/watt >10kW

NOTE: Above figures include non-CSI data last updated: March 30, 2016 [data sources](#)

ANNOUNCEMENTS

- [BP Solar Issues Product Advisory](#).
- [Governor's Office of Planning and Research - California Solar Permitting Guidebook](#).
- [Rebates - Solar Water Heating](#)
- [Newsletter January - March 2016](#)
- [SAVE-Check your PV value](#)



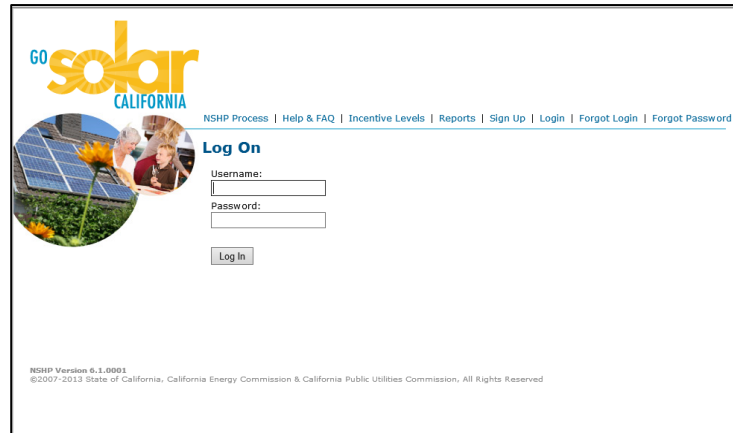
CSI Consumer Warning



NSHP Web Tool

- Applicants can submit applications electronically
- Allows applicants to track the status
- Serves as collection point for program data
- Sign up here:

<https://www.newsolarhomes.org/WebPages/Public/Login.aspx>

A screenshot of the NSHP Web Tool login page. The page features the "GO solar CALIFORNIA" logo in the top left corner. Below the logo is a circular image showing a woman and a child looking at solar panels. To the right of the image is a navigation menu with links: "NSHP Process | Help & FAQ | Incentive Levels | Reports | Sign Up | Login | Forgot Login | Forgot Password". Below the menu is a "Log On" section with a "Username:" label, a text input field, a "Password:" label, another text input field, and a "Log In" button. At the bottom left of the page, there is small text: "NSHP Version 6.1.0001 ©2007-2013 State of California, California Energy Commission & California Public Utilities Commission, All Rights Reserved".



California Energy Commission

NSHP Participants



Over 75 Builders

KB Homes

Lennar Homes

Richmond American Homes

Shea Homes

Standard Pacific Homes

TRI Pointe Homes, Inc.

Over 30 Retailers and Installers

SunPower Corporation

SolarCity Corporation

SunStreet Energy Group

PetersenDean, Inc.



Photos Courtesy of Sherrill
Neidich





California Energy Commission

NSHP Program Totals

	Number of Applications	Number of Systems	Dollars (Millions)	MW (AC)
Under Review	185	4,893		
Reserved	964	30,259	96.9	104.2
Installed	2,591	23,876	149.9	74.7
Total	3,740	59,028	246.8	178.9

Source: [Go Solar California](#) as of 7/6/2016



Available Funding

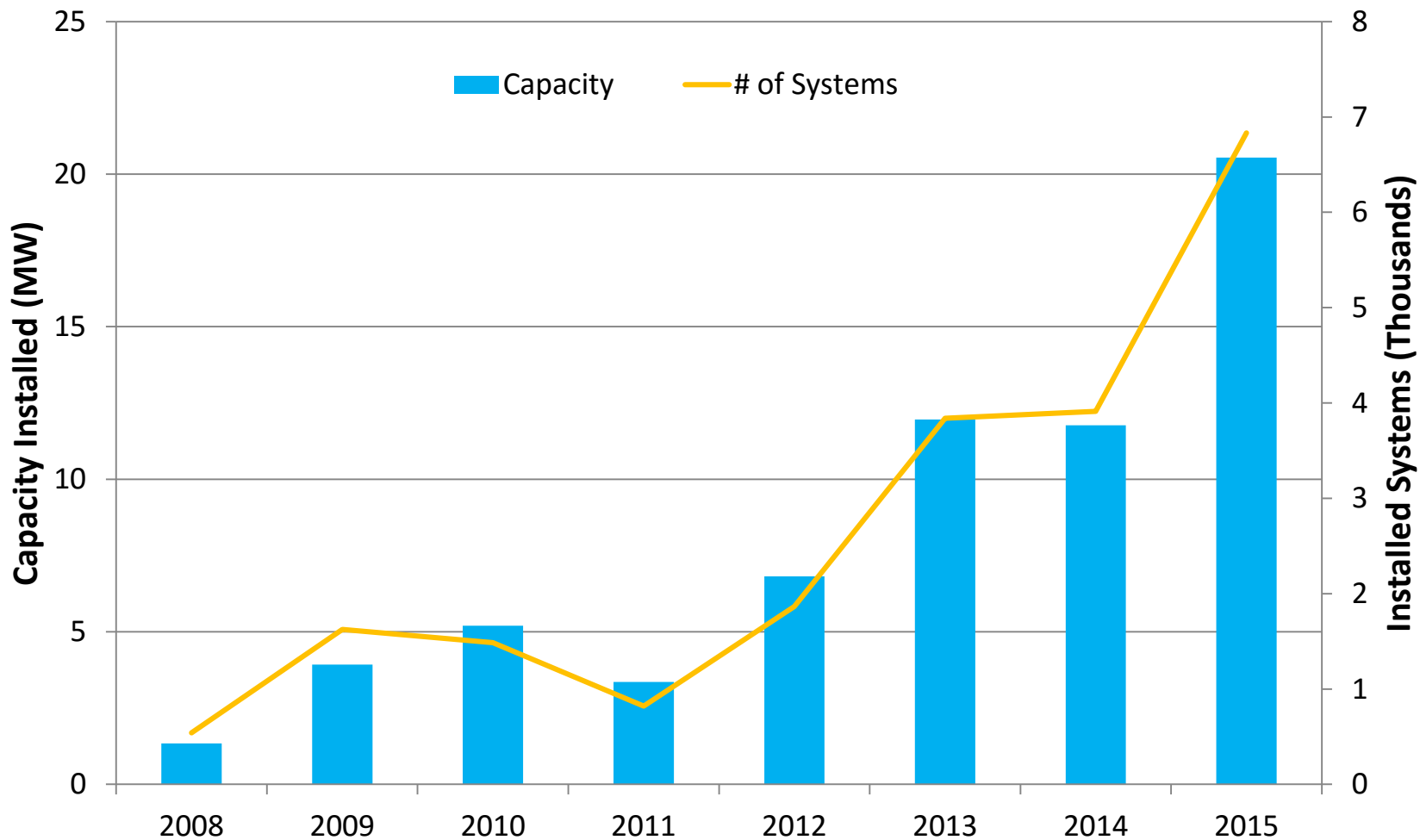
	Dollars (millions)	MW (AC)
Available Funding	40.1	
Under Review	11.7	18.5
Remaining Funding	28.4*	

Source: [Go Solar California](#) as of 7/6/2016



California Energy Commission

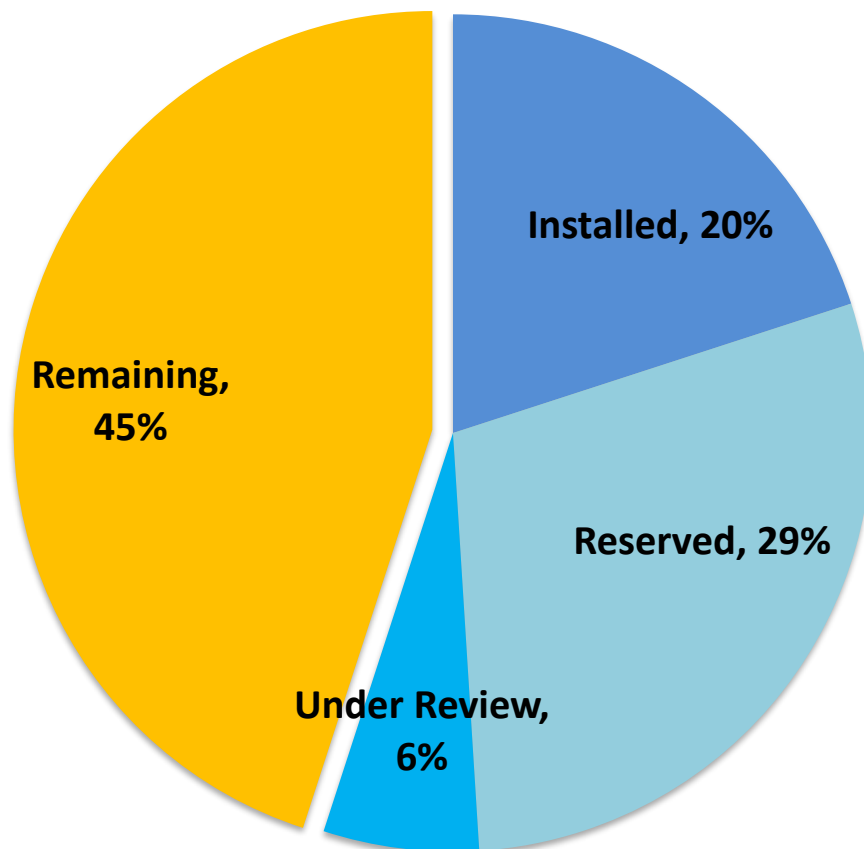
NSHP Installations Per Year





California Energy Commission

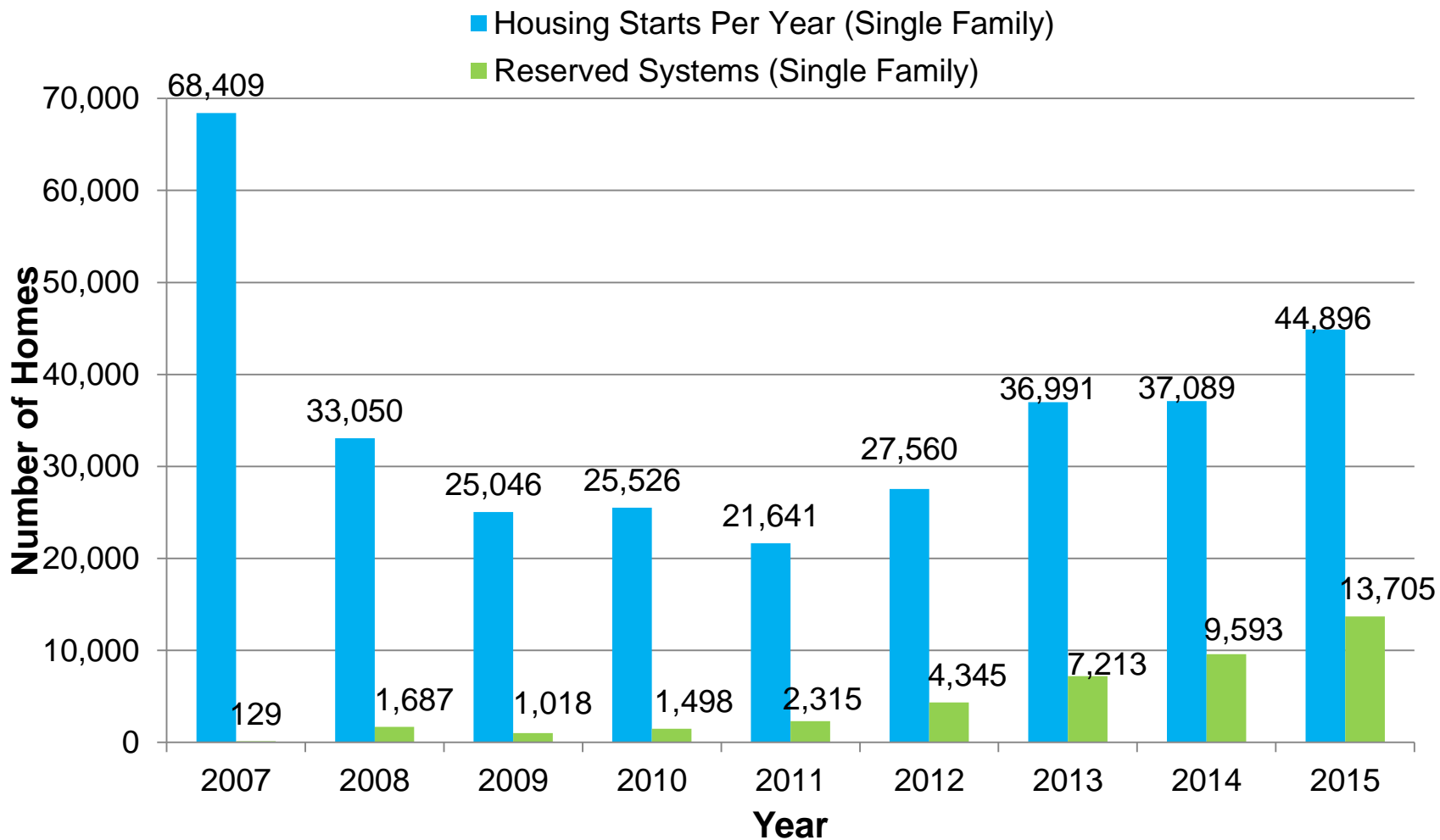
Progress Toward 360 MW Goal





California Energy Commission

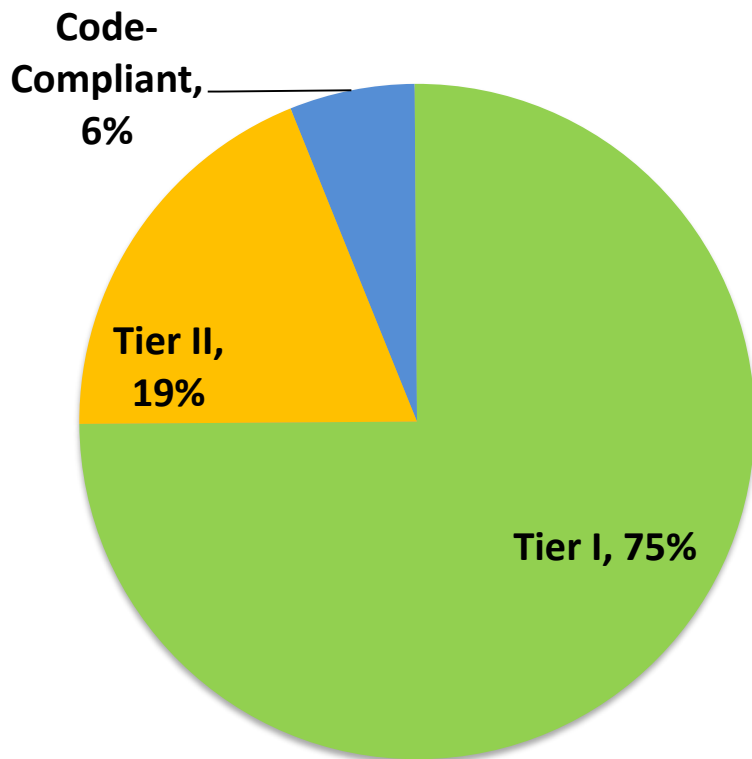
Housing Starts and NSHP Participation



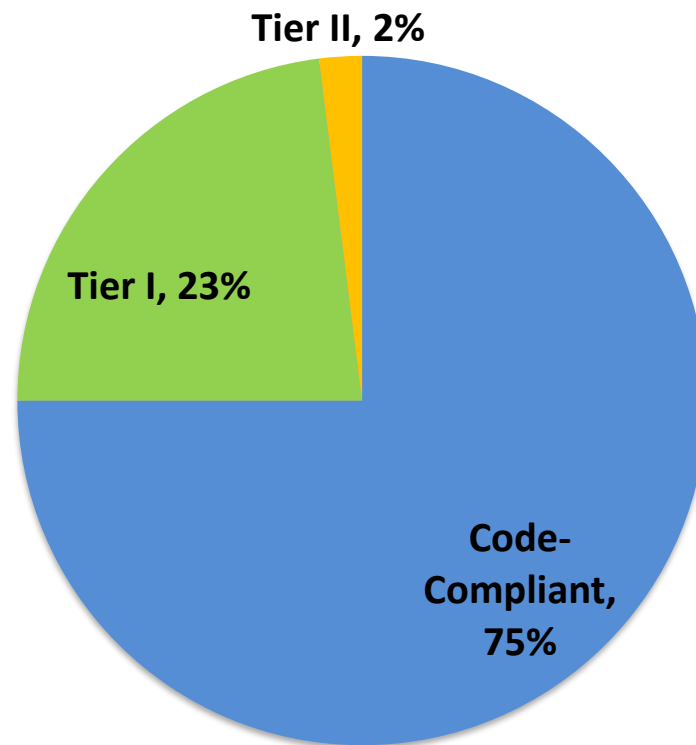


Installed Systems by Energy Efficiency Level

All Installed Systems



2013 Building Standards

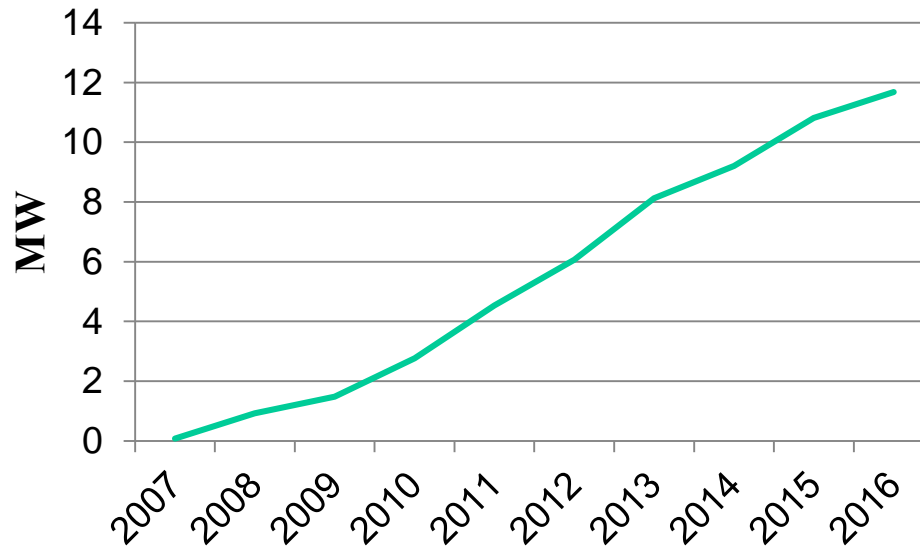




Affordable Housing Activity

- As of June 2016:
 - 7.13 MW installed in affordable housing residential and common area projects (~11% of overall)
 - \$20.5 million in incentives paid to these projects (~15% of overall)

Cumulative Capacity Reserved





Spotlight: Mutual Housing at Spring Lake

- 62 affordable residential units in Woodland, CA
- Community center
- Nation's first 100% zero net energy (ZNE) rental community
- Size: 184 kW Incentive: \$384,742



Photo Credit: California Energy Commission



Program Future

- CPUC approved \$111.78M additional funding
- Upcoming workshop on program streamlining
- Program sunset date of June 1, 2018
- Last day to pay out is December 31, 2021



California Energy Commission

Contact Information

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Thank you for attending our webinar

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