CALIFORNIA
PUBLIC UTILITIES
COMMISSION

CALIFORNIA SOLAR INITIATIVE

PROGRAM HANDBOOK

Ohlone College in Newark, California. 449 kW PV system installed by Powerlight. COPYRIGHT 2008 Proehl Studios

January 2009

Center for Sustainable Energy CALIFORNIA

Pacific Gas and Electric Company®

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

SDGE®
A Sempra Energy company

GO solar CALIFORNIA

Arnold Schwarzenegger, *Governor*

The California Public Utilities Commission (CPUC) prohibits discrimination in employment, its regulatory programs, and activities on the basis of race, national origin, color, creed, religion, sex, age, disability, veteran status, sexual orientation, gender identity, or associational preference. The CPUC also affirms its commitment to providing equal opportunities and equal access to CPUC regulated facilities and programs. For additional information or to file a complaint, contact the State Personnel Board, Office of Civil Rights, Discrimination Complaint Monitoring and Analysis, Kristen Trimarche (916) 653-1621.

January 2009 Handbook:
What's New

On December 18, 2008, the CPUC approved Resolution E-4197, which addressed several CSI Program Administrator Advice Letters and made changes to the CSI Program Handbook. Resolution E-4197 made the following changes:

- Transfer of CSI reservation from one site to another: Customers may now transfer their CSI reservations from one site to another if the first site is found unsuitable, and with several conditions (Adds Section 4.4.2 Transfer of Reservation from one Site to Another)
- New panels added to existing inverter: Clarifies that new panels added to an existing inverter are eligible for CSI incentives, with some conditions (Section 2.2.1)

On January 14, 2009, the CPUC approved Advice Letter 2/AL 2297-E/AL 3378-E, which was jointly filed by the California Center for Sustainable Energy, Southern California Edison and Pacific Gas and Electric Co. AL-2/AL 2297-E/AL 3378-E made the following changes:

- Multifamily Affordable Solar Housing (MASH) Program: Several sections have been updated to include the MASH Program (Sections 1.1, 1.1.2,- 1.1.4, 1.2, 1.4, 1.5, 2.1, 2.2.4, 2.2.7.1, 2.9, 3.1, 3.2, 3.2.1, 4.3 – 4.4, 4.7, 4.8.1.2, 4.8.1.6, 4.8.3.6, 8.1, 8.2, 10, and Figure 4, Table 5 - Table 8, Table 11)

On January 18, 2009, the CPUC approved Advice Letter 3/AL 3382-E, which was jointly filed by the California Center for Sustainable Energy and Pacific Gas and Electric Co. AL-3/AL 3382-E made the following changes:

- Metering Requirements, Performance Data Provider (PBI) payment terms and Performance Data Provider (PDP) requirements: Several sections have been updated to include these modifications (Sections 2.8, 3.3, 3.3.2. 3.3.3, 4.1.1, 4.1.5, 4.2.3, 4.5.2.1, 4.5.4, 4.5.4.2, 4.8.3.4, 8.1, 8.2, 11, 11.1, 11.1, 11.1.1, 11.1.3, 11.1.5, 11.1.6, 11.1.7, 11.3, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 17)

In the future, the Program Handbook will be updated to include a number of changes related to the Single Family Low Income Program.

Table of Contents

1. Introduction: California Solar Initiative Program 1
   1.1 Program Overview 1
   1.2 California Solar Initiative Statewide Eligibility 5
   1.3 CSI Application Process 5
   1.4 Getting Started with Solar 6
   1.5 Getting Paid: A Quick Guide to CSI Incentives 8
   1.6 Clean Power Estimator 8
   1.7 CSI Program Forum and Future Program Changes 9
   1.8 CSI Program Administrator Contact Information and Other Important Information 10
2. Program Eligibility Criteria and Requirements 12
   2.1 The Participants in the CSI Program 12
   2.2 Generator System Equipment Eligibility 14
   2.3 Energy-Efficiency Requirements 20
   2.4 Warranty Requirements 22
   2.5 Performance and Permanency Requirements 23
   2.6 Interconnection to the Electric Utility Distribution System 24
   2.7 Time of Use Rates 24
   2.8 Metering Requirements 24
   2.9 Inspection Requirements 25
3. California Solar Initiative Incentive Structure 28

Table of Contents

3.1 GM CSI Program Incentive Trigger Mechanism 29

3.2 Expected Performance Based Buydown (EPBB) Incentives 30

3.3 Performance Based Incentives (PBI) 34

3.4 Incentive Limitations 36

3.5 CSI Program Database 38

4. Application Process for California Solar Initiative Projects 40

4.1 GM CSI Residential (All) and Small Non-Residential Projects (< 10 kW) 40

4.2 Large Non-Residential Projects (≥10 kW) 44

4.3 MASH Projects 55

4.4 Changes to Reservations 61

4.5 Incentive Payment Process 63

4.6 System Changes Affecting Incentive Amount 67

4.7 Field Inspection 67

4.8 Application Forms and Documentation 68

5. Other Installation Requirements and Continuing Site Access Requirements 75

5.1 Connection to the Utility Distribution System 75

6. Additional Information 77

6.1 Circumstances Requiring Additional Documentation 77

7. Measurement and Evaluation Requirements 78

8. Definitions and Glossary 79

8.1 Acronyms 79

Table of Contents

8.2 Definitions 81

9. Additional Program Requirements 93

10. Appendix A: Description of Total Eligible Project Costs 96

11. Appendix B: Metering Requirements 98

11.1 Minimum Meter Requirements 99

11.2 Minimum Communication Requirements 101

11.3 Minimum Performance Monitoring & Reporting Capability Requirements 101

11.4 Eligibility of Performance Monitoring & Reporting Service Providers 103

11.5 Eligible Recipients of Information 103

11.6 Advanced Metering Infrastructure (AMI) Coordination 104

11.7 Overall Cost Constraint 104

12. Appendix C: Supplemental Forms 106

12.1 Current Program Contract Terms 106

13. Appendix D: California IOU SPC Tables (ref 2007 SPC Procedures Manual, Appendix C. January 31, 2007) 108

14. Appendix E – Commercial Btu Meter Accuracy Requirements 111

15. Appendix F – Surfact Orientation Factors for California Locations 112

16. Appendix G – Example PTC Rating for Glazed Solar Collector 114

17. Appendix H -- CSI PBI Data Transfer Rules 116

18. Appendix I-- Other Solar Generating Technologies Application Guidelines 139

1. Introduction: California Solar Initiative Program

1.1 Program Overview

The **California Solar Initiative** is overseen by the CPUC and provides solar incentives to customers in investor-owned utility (IOU) territories of Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric. These three utilities represent about 68 percent of California's electric load. The California Solar Initiative provides cash back for solar for existing homes, as well as existing and new commercial, industrial, government, non-profit, and agricultural properties – within the service territories of the IOUs. The California Solar Initiative has a budget of $2,167 million over 10 years, and the goal is to reach 1,940 MW of installed solar capacity by 2016. This goal includes 1,750 MW from the general market (GM CSI) program, which provides incentives for photovoltaic and non-photovoltaic solar technologies. The goal also includes 190 MW from the two low-income residential incentive programs, the Multifamily Affordable Solar Housing (MASH) program and the Single Family Low Income (SFLI) Program.

This California Solar Initiative (CSI) Program Handbook describes the detailed requirements for receiving funding for the installation of solar projects under the California Public Utilities Commission (CPUC or Commission)-managed incentive programs. Please note, this Program Handbook incorporates the program requirements for the MASH Program, detailed program requirements for the SFLI Program will incorporated into this Program Handbook in the future. The CSI Program builds on nearly 10 years of state solar rebates offered to customers in IOU territories, i.e. Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric. Former solar incentive programs included the Emerging Renewables Program and the Self Generation Incentive Program.

In August 2004, Governor Schwarzenegger widened state support for solar and announced the Million Solar Roofs program. In 2006, the CPUC collaborated with the Energy Commission to develop the framework of the CSI Program through 2016. In August 2006, Governor Schwarzenegger signed Senate Bill 1 (Murray), which authorized the CPUC's CSI Program.[1] In January 1, 2007, the CSI program launched and the program began operating under the CSI Program Handbook. The Energy Commission separately administers the New Solar Homes Program for new residential construction – and they have a separate program handbook, and publicly owned utilities administer solar programs in their respective territories.

1.1.1 CSI Program Budget

This section provides an overview of the CSI Program budget as authorized by the CPUC and reviews the megawatt (MW) targets for the program.

[1] Chapter 132, Statutes of 2006 (SB 1, Murray)

The CSI Program budget for each Program Administrator is as shown in Table 1.

Table 1
CSI Program Budget by Program Administrator, 2007-2016 ($ millions)

Program Administrator	% of Total Budget	Budget (in millions)
PG&E	43.7%	$ 946
SCE	46.0%	$ 996
CCSE[2]/SDG&E	10.3%	$ 223
Total	100%	$ 2,165

All customer segments are eligible for the CSI Program. Table 2 demonstrates the MW expected to be accounted for by customer segments in the CSI Program.

Table 2
CSI MW Target Allocations by Customer Sector

Customer Sector	MW	Percent
Residential	578	33%
Non-Residential	1173	67%
Total	1,750	100%

1.1.2 Currently Applicable Incentive Levels MW Targets and Step Triggers for CSI Program

The currently applicable incentive levels available in each Program Administrator territory are available at www.csi-trigger.com. The incentive levels available through the GM CSI Program are divided into 10 "steps". Each step is for a targeted amount of MWs. As the program receives reservations in each step, it works towards the "trigger" when the next step (i.e. a lower incentive level) is offered. The incentive levels available reduce automatically over the duration of the program based on the volume of MW of solar reservations issued. Projects are counted toward the MW goals once they are deemed eligible, have paid an application fee (if applicable), and have received notice their reservation has been approved. The solar incentive levels available at any particular time may vary by Program Administrator service territory, depending on the pace of solar demand in that territory. Additionally, incentive levels may differ for Residential and Non-Residential customer sectors based on the demand for those customer segments. Table 3 displays the incentives available for each "step" of MWs by Program Administrator service territory and customer class. The incentive levels for the low-income residential programs are not subject to change based on MW Targets and Step Triggers, but at the discretion of the CPUC, may be lowered or raised based on market changes.

2 CCSE is administering the program in SDG&E utility territory.

Table 3
GM CSI MW Targets by Program Administrator and Customer Class

		PG&E (MW)		SCE (MW)		CCSE (MW)	
Step	**MW in Step**	**Res**	**Non-Res**	**Res**	**Non-Res**	**Res**	**Non-Res**
1	50	-	-	-	-	-	-
2	70	10.1	20.5	10.6	21.6	2.4	4.8
3	100	14.4	29.3	15.2	30.8	3.4	6.9
4	130	18.7	38.1	19.7	40.1	4.4	9.0
5	160	23.1	46.8	24.3	49.3	5.4	11.1
6	190	27.4	55.6	28.8	58.6	6.5	13.1
7	215	31.0	62.9	32.6	66.3	7.3	14.8
8	250	36.1	73.2	38.0	77.1	8.5	17.3
9	285	41.1	83.4	43.3	87.8	9.7	19.7
10	350	50.5	102.5	53.1	107.9	11.9	24.2
Total	**1750**	**252.4**	**512.3**	**265.6**	**539.5**	**59.5**	**120.8**
Total by Utility		764.8		805.0		180.3	
Percent		43.7%		46.0%		10.3%	

1.1.3 Incentive Structure

GM CSI offers two types of incentives: Expected Performance Based Buydown (EPBB) and Performance Based Incentives (PBI). All projects in the MASH program are EPBB. The EPBB incentives are paid based on verified solar system characteristics such as location, system size, shading, and orientation. The PBI incentive is a flat cents-per-kWh payment for all output from a solar system over its initial 5 years of operation. The amount of the EPBB or PBI incentive depends on which incentive payment levels will be reduced automatically over the duration of the CSI Program in 10 steps, based on the volume of MW of solar reservations issued by each Program Administrator. The EPBB and PBI levels are directly tied to the 10 steps as outlined in Table 4. See Sections 1.5 and 3.1 for more detail.

Table 4
GM CSI PBI and EPBB Payment Amounts by Step

		EBPP Payments (per watt)			PBI Payments (per kWh)		
MW Step	Statewide MW in Step	Residential	Commercial	Gov't/ Nonprofit	Residential	Commercial	Gov't/ Nonprofit
1	50[3]	n/a	n/a	n/a	n/a	n/a	n/a
2	70	$ 2.50	$ 2.50	$ 3.25	$ 0.39	$ 0.39	$ 0.50
3	100	$ 2.20	$ 2.20	$ 2.95	$ 0.34	$ 0.34	$ 0.46
4	130	$ 1.90	$ 1.90	$ 2.65	$ 0.26	$ 0.26	$ 0.37
5	160	$ 1.55	$ 1.55	$ 2.30	$ 0.22	$ 0.22	$ 0.32
6	190	$ 1.10	$ 1.10	$ 1.85	$ 0.15	$ 0.15	$ 0.26
7	215	$ 0.65	$ 0.65	$ 1.40	$ 0.09	$ 0.09	$ 0.19
8	250	$ 0.35	$ 0.35	$ 1.10	$ 0.05	$ 0.05	$ 0.15
9	285	$ 0.25	$ 0.25	$ 0.90	$ 0.03	$ 0.03	$ 0.12
10	350	$ 0.20	$ 0.20	$ 0.70	$ 0.03	$ 0.03	$ 0.10

For the purpose of the CSI Program, commercial sectors include agricultural and industrial customers. To find the incentive rate currently available in your Program Administrator's service territory, see www.csi-trigger.com.

Table 5
MASH EPBB Payment Amounts by Track

Track 1A Common Area (per watt)	Track 1B Tenant (per watt)	Track 2 (per watt)
$ 3.30	$ 4.00	$ Varies[4]

1.1.4 Special funding for Low Income Programs

The CPUC has allocated 10 percent of the overall CSI Program budget, or $216 million, to incentives for affordable housing/low-income residents. This amount is divided equally between two programs, one for single family residences and one for multifamily residences. The CPUC

3 The first 50 MW are allocated under the 2006 Self-Generation Incentive Program (SGIP) and are not pro-rated by customer class or service territory. In 2006, most residential systems participated in the Energy Commission's Emerging Renewables Program (ERP).

4 See sections 4.3 and 4.4 for details.

adopted the framework for the Single Family Low Income Program in Commission Decision (D.) 07-11-045, and for the Multifamily Affordable Solar Housing Program (MASH) in D.08-10-036.

The Multifamily Affordable Solar Housing (MASH) Program offers incentives for solar installations on existing multifamily affordable housing that meets the definition of low-income residential housing established in Pub. Util. Code § 2852.a.2.

As of January 2009, applications for these two programs are not yet available, but when they become available, they will be posted to Go Solar California (www.GoSolarCalifornia.ca.gov).

1.1.5 Non-photovoltaic (non-PV) technologies

Non-photovoltaic (non-PV) technologies include, but are not limited to, electric displacing solar thermal (generally defined as solar forced air heating and solar cooler or air conditioning) and electric generating solar thermal (generally defined as dish Stirling, solar trough and concentrating solar technologies). The CPUC has included the budget for non-PV technologies within the overall CSI budget, but capped the budget for electric displacing non-PV technologies at $100.8 million. Any MW from non-PV technologies will be counted toward and paid at the currently applicable step level.

1.2 California Solar Initiative Statewide Eligibility

Nearly all residential, commercial, government and non-profit customers of the state's three investor-owned electric utilities—Southern California Edison (SCE), Pacific Gas & Electric (PG&E) and San Diego Gas & Electric (SDG&E)—are eligible for the incentives provided through the California Solar Initiative for solar systems from 1 kilowatt (kW) up to 1 megawatt (MW).

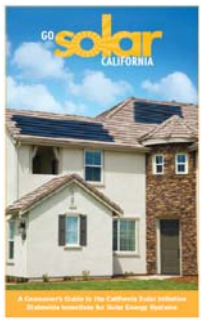
Responsibility for administration of GM CSI and MASH programs is shared by SCE and PG&E for their respective customers, and by the California Center for Sustainable Energy (CCSE), which serves as a third-party administrator for SDG&E customers.

Customers of municipal utilities may also qualify for similar incentives through their municipal service provider.

1.3 CSI Application Process

The CSI application process is also simple. It begins by completing a quick, free energy efficiency audit. After doing so, select an installer, who will then help you determine the correct system size for your premises. They also will fill out the Incentive Reservation Request Application (RRA) and submit it to one of the Program Administrators—SCE, PG&E or CCSE (for SDG&E customers). The Program Administrator will then reserve the incentive amount based on the size of your solar project.

Once your system is installed, you or your installer will contact the utility for permission to connect your system to its electric grid. After your system is inspected and approved, you or your installer will fill out the Incentive Claim Form (ICF) package and submit it to the Program Administrator for payment. Then you will receive a check from the PA for your incentive amount.



More information about the California Solar Initiative is available from our Consumer Guide, available at http://www.gosolarcalifornia.ca.gov/documents/csi.html.

Applicants can also use our online applicant tutorial, available at: http://www.gosolarcalifornia.ca.gov/news/index.html

1.4 Getting Started with Solar

1. Energy Efficiency Self-Audit: Right-Size Your System
Making your home or business energy efficient *before* you Go Solar is an essential first step. Energy-saving actions—such as changing incandescent bulbs to compact fluorescent lamps (CFLs), and replacing old, inefficient appliances—are the best way to save energy and money while providing real, lasting benefits to the environment.

Energy efficiency measures also help reduce the size of the solar system you need, saving you thousands of dollars in up-front installation costs.

You will need to complete a simple energy efficiency survey or audit of your home or business prior to applying for CSI incentives. If you will be working with a contractor, they may be able to assist with your energy audit and energy efficiency goals.

Your California Solar Initiative Program Administrator can provide you with an easy online audit form:

- CCSE (for SDG&E customers): *www.gosolar.energycenter.org*
- PG&E: *www.pge.com/csi*
- SCE: *www.sce.com/csi*

Eligible MASH participants are also encouraged to participate in the CPUC's Low Income Energy Efficiency (LIEE) program. For more information on the LIEE Program, please visit: http://www.cpuc.ca.gov/PUC/energy/consumers/liee.htm.

2. Select the Right Solar Installer
Licensed contractors are your key to getting the most productive solar energy system for your home or business. Typically, the solar installer will apply for the California Solar Initiative incentives on your behalf and arrange for your system to be interconnected to your utility company's power grid. The solar installer may also apply for local permits.

The California Solar Initiative provides a list of solar installers online at *www.gosolarcalifornia.ca.gov/retailers/index.html*. Searching for a solar installer by zip code is the fastest way to find a solar installer closest to you, although any licensed contractor may work on your project. Solar installers typically provide free site evaluations, comprehensive quotes and payback information.

A solar system installer should be able to evaluate factors that will affect your PV system performance, such as the roof size, orientation (tilt and direction) of the system, shading and other factors.

Just as if you were doing any other type of home improvement, you will want to contact at least three solar installers to help ensure you receive the most competitive bid for your project. It is customary for a solar installer to visit your home to help you plan the location and size of your system, as well as choose the incentive type best for you.

You can verify the solar installer is using a valid solar contractor's license by contacting the Contractors State License Board (www.cslb.ca.gov) or 1-800-321-2752.

3. Apply for Incentives

You or your solar installer will submit a Reservation Request Form (RRF) to your California Solar Initiative Program Administrator.

After the Program Administrator receives your RRF, they will reserve funds based on the size of your solar project. These funds will be reserved for a specified period of time during which you must install your solar system. Please remember that there is a deadline by which you must interconnect your system and submit your Incentive Claim Form (ICF).

Reserving your incentive early ensures your access to the highest applicable incentive. As more solar systems are purchased and installed by California consumers, the amount of available incentive dollars decreases.

4. Install Your System

As part of the installation process, your solar installer generally handles any permits required by the city or county. Once the required permits are acquired, a typical residential installation can be completed in three to five days.

Once the system is installed, the city or county may inspect the system. After your new system passes inspection, the utility must be notified to interconnect your system to the grid. Once interconnected, the Program Administrator may also inspect your system as part of program quality control efforts.

Now that your system is interconnected, you can begin reaping the benefits of solar power generation and Net Energy Metering. Each month, electricity you produce in excess of your own consumption will be sent back to the utility grid and credited to your account. These credits are used to offset some or all of your annual electric consumption from the utility.

5. Claim Your Incentive
Once your system has been purchased, installed and is operational, you or your solar installer will submit the Incentive Claim Form (ICF) along with any supporting documentation, including a verification of project cost and a calculation of the expected system output (if there are any changes from the time of your reservation request). The Program Administrator will verify that your system has been properly connected to the utility electric grid before sending your California Solar Initiative incentive payment. Don't forget to apply for any applicable tax credits.

1.5 Getting Paid: A Quick Guide to CSI Incentives

There are two types of incentives available to residential and non-residential customers through the California Solar Initiative Program: the Expected Performance-Based Buydown (EPBB) and the Performance-Based Incentive (PBI). Both incentives reward high-performance systems—the EPBB is a one-time, up-front payment based on a system's expected performance; PBI payments are based on a system's actual performance and paid out over five years.

EPBB	PBI
Intended for residential and small business customers	Ideal for large commercial, government and non-profit customers
GM CSI Systems less than 50 kW* and all MASH systems	Mandatory for all systems 50 kW and greater* Systems less than 50 kW* can opt-in to PBI
Incentive paid per Watt based on your system's expected future performance (factors include CEC-AC system rating, location, orientation and shading)	Incentive paid based on the actual energy produced by your solar system in kilowatt-hours
One-time lump sum up-front payment	Sixty payments over five years

*As of Jan. 1, 2010, this amount will change to 30 kW.

1.6 Clean Power Estimator

The Clean Power Estimator is an online software program available through Go Solar California that provides California residential and commercial electric customers a personalized estimate of the costs and benefits of investing in a PV solar electric generating system.

The calculator takes into consideration customer-specific information to provide the best estimate of a given system's costs and benefits. This information includes the estimated cost of the particular system under consideration, the customer's location, the applicable incentive level, electric rate schedule and other customer information.

The calculator provides a variety of customer specific analysis based on the variables provided by the consumer. Please keep in mind that the Clean Power Estimator provides an estimated incentive amount.

http://gosolarcalifornia.cleanpowerestimator.com/

1.7 CSI Program Forum and Future Program Changes

Commission Decision (D.) 06-08-028 directed that a CSI Program Forum should "provide a public venue for interested parties to identify and discuss ongoing issues related to CSI administration and implementation." The CPUC Energy Division, in partnership with the Program Administrators, hosts quarterly public Program Forums in rotating locations throughout the State. Anyone interested in discussing any aspect of the CSI Program is invited to attend one of these Program Forums and share their comments and ideas. Many of the ideas suggested in these Program Forums have formed the basis for CSI Program Handbook changes. If the Program Forum achieves consensus for more substantive changes beyond the level of the Program Handbook, the Forum may designate a member to file a petition to modify a Commission order or decision relating to the CSI Program.

Information on upcoming CSI Program Forums can be found at: http://www.gosolarcalifornia.ca.gov/news/index.html. Interested parties should also sign up for the CSI Newsletter, available on that same page.

1.8 CSI Program Administrator Contact Information and Other Important Information

Pacific Gas & Electric Company Telephone: Solar Customer Service Center: (877) 743-4112 Solar Hotline: (415) 973-3480 Fax: (415) 973-2510 Mailing Address: PG&E Solar and Customer Generation (CSI) P.O. Box 7433 San Francisco, CA 94120-7433 Overnight Mail: 245 Market St Mail Code: N7R San Francisco, CA 94105-1797	www.pge.com/solar Email: solar@pge.com
Southern California Edison Telephone: (800) 799-4177 Fax: (626) 633-3402 Mailing Address: Southern California Edison CSI Program Administrator 6020 A North Irwindale Avenue Irwindale, CA 91702	www.sce.com/CSI/ Email: csigroup@sce.com
California Center for Sustainable Energy (CCSE) – *offering Solar Rebates in San Diego Gas & Electric Territory and the Solar Hot Water Pilot Program* Telephone: (858) 244-1177 Fax: (858) 244-1178 Mailing Address: 8690 Balboa Ave. Suite 100 San Diego, CA 92123-1502	www.energycenter.org Email: csi@energycenter.org

The CSI **statewide consumer website**, includes information on the CPUC, CEC, and POU programs, including the CSI Program Handbook	www.GoSolarCalifornia.ca.gov
The CSI Program Administrators use an online tool to calculate the up-front Expected Performance Based Buy down (EPBB) incentive, known as the **EPBB Calculator**	www.csi-epbb.com
The CSI Program Administrators use an online application tool and reporting database, known as **PowerClerk**	csi.powerclerk.com
Up-to-date information about the program's current incentive level, or "step" can be found on the online CSI **Trigger Tracker**	www.csi-trigger.com
Information about the **CPUC regulatory** proceeding that deals with the CSI Program	www.cpuc.ca.gov/PUC/energy/solar/
California Solar Statistics contains data information about the progress of the CSI program	www.CaliforniaSolarStatistics.ca.gov
Clean Power Estimator: Online Consumer Tool for estimating solar installation	http://gosolarcalifornia.cleanpowerestimator.com/

2. Program Eligibility Criteria and Requirements

The California Solar Initiative (CSI) program offers monetary incentives for eligible systems up to the first 1,000 kW (1 MW) CEC-AC of generating capacity or displaced grid electric load. To qualify for incentives, all CSI Program eligibility criteria must be satisfied. The effective dates for the CSI Program are January 1, 2007 through December 31, 2016, or until the CSI Program budget has been fully reserved for each Program Administrator.

2.1 The Participants in the CSI Program

Any retail electric distribution customer of Pacific Gas and Electric (PG&E), Southern California Edison (SCE), or San Diego Gas & Electric (SDG&E) is eligible to install a solar project and receive incentives from the CSI Program. Within the nomenclature of the CSI Program, the person who applies for an incentive will be referred to as a Host Customer, a System Owner, and/or Applicant. Other participants include Installers and Equipment Sellers.

2.1.1 Host Customer

Any retail electric distribution customer of PG&E, SCE or SDG&E is eligible to install a solar project and receive incentives from the CSI Program and can, therefore, be a Host Customer.

For GM CSI, the Host Customer is, in most cases, the utility customer of record at the location where the generating equipment will be located. Any class of customer (industrial, agricultural, commercial, or residential) is eligible to be a Host Customer. For MASH, the host customer may also be the owner of, or persons/entity responsible for, the property where the generating equipment will be located. The project's Site must be within the service territory of, and receive retail level electric service[5] from, PG&E, SCE, or SDG&E. Municipal electric utility customers are not eligible to receive incentives from the designated Program Administrators. If a Host Customer ceases to be a retail level electric distribution customer of PG&E, SCE, or SDG&E, they will not be eligible to receive any remaining unpaid PBI payments.

In circumstances where the Host Customer is not on the Electric Service Provider Account, a letter of explanation must be sent to the Program Administrator explaining the relationship of the Host Customer to the person(s) who is on the utility service bill and interconnection agreement. This letter is waived for MASH.

The Host Customer becomes the incentive reservation holder. The Host Customer may act as the Applicant and/or System Owner. The Host Customer alone will retain sole rights to the incentive reservation and corresponding incentive reservation number. The Host Customer has the right to designate the Applicant, energy services provider, and/or system installer to act on their behalf. However, the Host Customer shall be party to the CSI Program contract.

5 "…retail level electric service…" means that the Host Customer pays for and receives distribution services, as defined by their respective utility rate schedule.

The Host Customer or Applicant is encouraged to submit the CSI application as early as possible in the process in order to confirm their reservations amount. All projects must meet all eligibility requirements in order to receive the CSI incentives.

The following are *not* eligible for incentives under the CSI Program:

- Customers who have entered into utility contracts for distributed generation (DG) services (e.g., DG installed as a distribution upgrade or replacement deferral) and who are receiving payment for those services. This does not include third-party ownership arrangements, i.e., power purchase agreements, which are allowed.
- Customers who have entered into agreements that entail the export and sale of electricity from the Host Customer Site. This does not include net energy metering agreements, which are allowed.
- Any portion of customer load that is committed to electric utility interruptible, curtailable rate schedules, programs, or any other state agency-sponsored interruptible, curtailable, or demand-response programs. For electric utility customers who are on an interruptible rate, only the portion of their electric load that is designated as firm service is eligible for the CSI Program. Customers must agree to maintain the firm service level at or above capacity of the proposed solar system for the duration of the required applicable warranty period (see Section 2.5). Customers may submit a letter requesting an exemption to the firm service rule if they plan to terminate or reduce a portion of their interruptible load.
- Publicly owned or investor-owned gas, electricity distribution utilities or any electrical corporation (ref. Public Utility Code 218) that generates or purchases electricity or natural gas for wholesale or retail sales.
- Residential new construction systems are not eligible for the CSI Program and should apply to the California Energy Commission's New Solar Homes Partnership Program.

2.1.2 System Owner

The System Owner is the owner of the generating equipment at the time the incentive is paid. For example, when a vendor sells a turnkey system to a Host Customer, the Host Customer is the System Owner. In the case of a third-party-owned system (or leased system, for example), the third party (or lessor) is the System Owner.

The System Owner should be designated on the Reservation Request Form, if known at that time, and on the Incentive Claim Form. If different from the Host Customer, the System Owner shall also be a party to the CSI Program contract. The Program Administrator may require documentation substantiating equipment ownership.

2.1.3 Applicant

The Applicant is the entity that completes and submits the CSI Program application and serves as the main contact person for the CSI Program Administrator throughout the application

process. Host Customers may act as the Applicant or they may designate a third party to act as the Applicant on their behalf. Applicants may be third parties (e.g., a party other than the Program Administrator or the utility customer) such as, but not limited to, engineering firms, installation contractors, equipment distributors, energy service companies (ESCO) and equipment lessors.

2.1.4 Installer

Except for those systems that are self-installed, all systems must be installed by appropriately licensed California contractors in accordance with rules and regulations adopted by the State of California Contractors State Licensing Board (CSLB). Installation contractors must have an active A, B, C-10, or a C-46 license for photovoltaic (PV) systems. Please see Section 2.4 for Warranty Requirements of Self-Installed systems and Section 6.1 for documentation of Self-Installed systems.

Although not required, installation contractors are encouraged to become certified by the North American Board of Certified Energy Practitioners (NABCEP). For additional information on NABCEP, go to www.nabcep.org.

In all cases, systems must be installed in conformance with the manufacturers' specifications and with all applicable electrical and building codes and standards.

The Program Administrator will verify that the Installer has an active license with the California Contractors State Licensing Board (CSLB), in accordance with the above requirement, during Reservation Confirmation.

2.2 Generator System Equipment Eligibility

Although PV systems (i.e., systems that cause direct conversion of sunlight to electricity) are expected to be the common technology to receive incentives from the CSI Program, the CSI Program also accepts applications for eligible non-PV technologies. Guidelines for non-PV technologies (including estimation, measurement and metering) are included in this CSI Handbook.

Details of the eligibility requirements for generation system equipment follow.

2.2.1 New Equipment, Not Pilot or Demonstration Systems

All major system components (panels and inverters) must be new and must not have been previously placed in service in any other location or for any other application. Rebuilt, refurbished, or relocated equipment is not eligible to receive CSI Program incentives, save in rare relocation exceptions (see Sections 2.5 and 2.9).

Components that are critical to the PV systems must have at least 1 year of documented commercial availability to be eligible. Commercially available means that the major solar system components are acquired through conventional procurement channels, installed and operational at a Site (see Section 8.2 for definition). Ineligible equipment includes field demonstrations for

proof-of-concept operation of experimental and non-conventional systems partially or completely paid for by research and development funds. Pilot and Demonstration systems are ineligible for CSI incentives. Components that are enhancements to existing products and new models of existing product lines do not have to meet the commercial availability requirement as long as they are UL-certified and performance data exists to allow the Program Administrators to estimate their expected performance.

An alternative method of seeking eligibility for solar systems that use new technologies is to obtain certification from a nationally recognized testing laboratory indicating that the technology meets the safety and/or performance requirements of a nationally recognized standard. System component ratings must also be certified by the Energy Commission as described in Section 2.2.4.

As an exception, the Applicant may specify equipment that has not yet received Energy Commission certification, but the equipment must be certified prior to the first incentive payment.

New panels added to an existing inverter that is already in service are eligible to receive a CSI incentive if the system met Program requirements at the time of installation and was partially funded by the Program Administrators in accordance with SB1.

2.2.2 Eligibility of Replacement PV Systems

Any replacement solar systems must meet the criteria for new systems and are eligible for the CSI Program only if the removed system did not previously receive an incentive through the CSI Program, the Self-Generating Incentive Program, the Energy Commission's Emerging Renewables Program, or Rebuild a Greener San Diego Photovoltaic Incentive Program.

2.2.3 Eligibility of Non-PV Systems

Eligible non-PV technologies are categorized as either electric displacing[6] or electric generating, and include –

- **Electric Displacing**
  - Solar space & process heating
  - Solar driven cooling (absorption & adsorption chillers, desiccant systems, etc.)

- **Electric Generating**
  - Dish Stirling
  - Solar Trough
  - Dish and Lens
  - Concentrating Solar

[6] Electric displacing non-PV technologies are subject to an incentive cap of $100.8 million. Per D.06-01-024, solar thermal technologies that are domestic hot water are not eligible to receive CSI incentives.

Note that the measurement and metering methods discussed in this document are not applicable to solar water heating systems eligible for California Center for Sustainable Energy's solar water heating pilot program[7].

2.2.4 Equipment Must Serve On-Site Electrical Load

To be eligible, the system must be sized so that the amount of electricity produced by the system primarily offsets part or all of the customer's electrical needs at the Site of installation. Unless additional load substantiation documentation is submitted, the estimated annual kWh production of the proposed system as shown on the EPBB may not be higher than the previous 12-months energy usage.

Except for systems 5 kW or less, the Applicant must show evidence of the system sizing with the submittal of the initial application.

For systems less than or equal to 10kW where historical electrical load can not be determined due to extensive remodeling, on-site electrical load can be determined using the calculation of 2 watts per square foot.

For MASH systems, common load areas will be subject to the same rules as above and will be considered separately from tenant areas. Tenant units will be aggregated for sizing limits. For example, up to 50 kW of a system may be allocated to 10 units in a building without requiring system size justification because the average will be 5 kW or less.

2.2.5 Equipment Certifications and Rating Criteria

PV system components must be certified through the Energy Commission's program that certifies major components of PV systems and provides lists of eligible equipment. The list of the currently certified equipment is available through:

- The California Energy Commission: www.energy.ca.gov
- California Energy Commission Call Center: (800) 555-7794

The Program Administrators will confirm that equipment identified in a reservation application meets eligibility requirements prior to providing a confirmed reservation notice. As described in Section 2.2.1, one exception would be for new equipment that has not yet received certification but for which the process has been initiated. Equipment is periodically added and removed from the lists of eligible equipment so Applicants should confirm that the components purchased for a system are eligible prior to installing them.

The Energy Commission certifies modules, inverters, and system performance meters. The system must be interconnected to the grid. Inverters and modules must each carry a 10-year warranty, and meters a one-year warranty, in 2007 and 2008. If the meter is integrated into the

[7] Per D.06-01-024, CCSE has proposed, and is implementing, a solar hot water heating pilot program. In that order, the Commission directed CCSE to draft and file a plan for a solar water heating pilot program in the SDG&E territory.

inverter, then the meter must also carry a 10-year warranty. Eligibility requirements for components are summarized below:

- PV modules must be certified to UL 1703 by a nationally recognized testing laboratory (NRTL).
- Performance meters must measure kWh (or Watt hours) with a manufacturer's uncertainty of ±2 or ±5 percent (depending on rating size and incentive), retain data in the event of a power outage, and be easy to read for the customer's benefit. See Section 11.1.2.
- Inverters must be certified to UL 1741 by a Nationally Recognized Testing Laboratory (NRTL). They also must have completed the Energy Commission's required weighted efficiency testing.

Non-PV technologies systems must be safety and performance certified by a Nationally Recognized Testing Laboratory (NRTL).

2.2.6 Non-PV System Capacity Rating

The CEC-AC capacity rating for non-PV electric generators must be established at PVUSA Test Conditions[8] (PTC) by an NRTL[9].

Non-PV electric displacement thermal systems output must be rated by an NRTL, at PTC. However, the non-PV thermal capacity must be converted into an electric capacity representing the potential electric displacement. For non-PV thermal systems a Performance Ratio (Pr) is used to convert non-PV system thermal capacity to electric capacity. The Performance Ratio is the heating or cooling energy output of the conventional electric heating or cooling system being displaced divided by its electric energy input at rated conditions.

The Performance Ratio may be calculated one of the following two ways –

1) From the minimum efficiency standards for the type and size of the conventional electric heating or cooling system being displaced. The minimum efficiency standards for this equipment is found in the statewide Standard Performance Contract program (Appendix D) and the California Appliance Efficiency Regulations[10]. For electric resistive heating systems, the Performance Ratio will be assumed to be 1.0. Integrated Part-Load Value (IPLV), ratings will be used for systems that modulate capacity. Energy Efficiency Ratio (EER), Seasonal Energy Efficiency Ratio (SEER), Heating Seasonal Performance Factor (HSPF) or Coefficient of Performance (COP) ratings will be used for systems that do not modulate capacity. The conversion of IPLV, EER, SEER, HSPF and COP to the dimensionless Performance Ratio is accomplished as follows -

For IPLV: PR = IPLV / 3.412

[8] The PTC rating is based upon 1,000 Watt/m2 solar irradiance, 20 Celsius ambient temperature, and 1 meter/second wind speed. PTC ratings for non-PV systems should be established by a NRTL. An example CEC-AC rating using the SRCC OG100 efficiency equation for a glazed solar collector can be found in Appendix G.
[9] Examples of qualified NRTL's include, but are not limited to, Solar Rating and Certification Company or National Renewable Energy Laboratory.
[10] Appliance Efficiency Regulations, California Energy Commission, CEC-400-2006-002, December 2006.

For SEER: PR = SEER / 3.412
For HSPF: PR = HSPF / 3.412
For EER: PR = EER / 3.412
For COP: PR = COP

2) An engineering model of the facility's heating or cooling load resulting in the electric consumption and output of the conventional electric heating or cooling system being displaced, assuming a minimum efficiency rating for the conventional system. The Performance Ratio is then calculated by dividing the modeled annual output by the electric input and converting to dimensionless units.

For non-PV solar electric generators, the system rating (CEC-AC) is the net electric power output of the system at PTC.
CEC-AC = E_{PTC}

Where;

CEC-AC = System electric rating at PTC.

"E_{PTC}" = Net electric output of the non-PV system at PTC.

For non-PV thermal systems that displace electric load the system rating (CEC-AC) is the rated thermal output at PTC, divided by the Performance Ratio of the electric equipment being displaced, less any solar thermal system ancillary loads at rated conditions.

CEC-AC = (T_{PTC} / PR) – E_{AUX}

Where;

CEC-AC = System displaced electric rating at PTC.

"T_{PTC}" = Thermal output (cooling or heating) of the non-PV system in kilowatts thermal (kWT) at PTC and the operating temperature of the solar collector. If the system includes an absorption chiller or other heat driven cooling system, the system thermal rated output is either the PTC rated thermal output of the panels multiplied by the rated COP15 of the absorption chiller, or the rated capacity of the absorption chiller, which ever is less.

"P_R" = Dimensionless Performance Ratio of the conventional electric heating or cooling system calculated by the heating or cooling energy output of the system divided by its electric energy input.

"E_{AUX}" = The load of the non-PV system ancillary electric equipment (e.g. pumps, etc.), at rated conditions, used for the solar thermal system operation. Ancillary electric loads may be ignored if the load magnitude is less than 5% of the gross system capacity.

2.2.7 System Size

The minimum system size eligible for an incentive is 1 kW CEC-AC. The maximum incentive provided for a Host Customer Site under the CSI Program is 1,000 kW (1 MW) CEC-AC; however, a Host Customer Site may elect to install up to 5 MW of generation.[11] If an Applicant has already received 1 MW of funding from another solar incentive program (such as the SGIP or ERP), they can apply for up to another 1 MW of new generation under the CSI Program on the same site as long as they can demonstrate that the electricity produced by the combined system sizes does not exceed the actual energy consumed during the previous 12 months at the Site, based on the process provided in Section 2.2.4.

Program Administrators will use the CEC-AC rating, but not a Design Factor, to determine eligibility according to these minimum and maximum sizes. Program Administrators will also use the CEC-AC rating without a Design Factor to determine eligibility for the EPBB or PBI incentive.

Because the average annual residential electricity consumption in California is approximately 7000 kWh/yr, systems that are 5 kW or less, are assumed to be in compliance with being sized to serve on-site electric load.

For all systems, the system size must be calculated using the CEC-AC rating standards,[12] including inverter DC-to-AC losses. To calculate the CEC-AC rating, the following formula should be used:

System Size Rating (kilowatts) = Quantity x CEC Rating of Photovoltaic Modules x CEC Inverter Efficiency Rating/ 1000 (watts/kilowatt)

However, for the Program Administrators to allocate applications against their MW in step (Section 1.3), the Program Administrators will multiply the system size rating by a design factor that reflects the system's "effective capacity."

For systems that participate under the EPBB, this is relatively straightforward, since this ratio is equal to the design factor generated by the EPBB calculator. Thus for EPBB systems, system size is equal to the system size rating times the design factor generated by the EPBB calculator for that system.

For PBI systems, the program administrators will need to derive a design factor based on the following calculations:

1. Estimated Capacity Factor = Estimated annual kWh [13] ÷ (8760 x CEC-AC rating)
2. Proxy Design Factor = Estimated Capacity Factor from #1 ÷ Prevailing Capacity Factor [14]

11 Because the CSI Program and statutes only allow for customers to receive incentives up to the first MW, PBI payments for energy output on systems larger than 1 MW will be prorated based on the ratio of 1 MW to the entire size of the site. See Section 3.3 for further detail.

12 The CEC-AC rating standards are based upon 1,000 Watt/m2 solar irradiance, 20 °Celsius ambient temperature, and 1 meter/second wind speed. The CEC-AC Watt rating is lower than the Standard Test Conditions (STC), a Watt rating used by manufacturers.

13 Found in the EPBB Calculator results (www.csi-epbb.com).

3. CSI System Size (kW) = Proxy Design Factor x CEC-AC system size

This calculation would allow the Program Administrators to estimate annual production from the EPBB Calculator that adjusts for performance of non-crystalline PV technology.

2.2.7.1 System Sizing Based on Future Load Growth

In the case of Applicants with new or expanded sites with no electric bill history or where the existing electric bill does not reflect the Applicant's expected expanded consumption, the Applicant must include an estimate of the expected expanded consumption. An engineering estimate is preferred. The engineering estimate must include the appropriate substantiation of the forecast of the Host Customer Site's annual energy use (in kWh) if the generating system size is based on future load growth, including new construction, load growth due to site expansion or other load growth circumstances. Suggested methods of demonstrating load growth include Application for Service with corresponding equipment schedules and single line diagram; building simulation program reports such as eQUEST, EnergyPro, DOE-2, and VisualDOE; or detailed engineering calculations or lists of equipment with corresponding equipment schedules. The Program Administrator will verify the load growth predicted before moving forward with the Confirmed Reservation notice. Systems that are 5 kW or less, are assumed to be in compliance with being sized to serve on-site electric load and do not require substantiation.

For small residential, installing systems of less than or equal to 10kW, a calculation of 2 watts per square foot can be used instead of an engineering estimate. Systems over 10 kW would require an engineering estimate. See Section 2.2.4. for MASH exception.

2.3 Energy-Efficiency Requirements

Beginning January 1, 2007 all existing residential and commercial customers are required to have an energy efficiency audit conducted of their existing home or building if they chose to apply for a solar incentive. The acceptable audit protocols will consist of an on-line audit or telephone audit provided by the Utilities. The Utilities may also provide additional audit tools available for customers in addition to the on-line and phone audits. Customers are responsible for submitting a copy of a completed energy efficiency audit to the CSI Program Administrator with their solar incentive application.

Non- Utility Providers:

Non-utility entities may also provide audits at the expense of the customer. At a minimum, the provider must perform an online or phone audit.

14 This equals .18 for steps 2 and 3, and .20 for steps 4-10.

Audit Exemptions:

Existing Construction:
An existing home or building may be exempt from the audit requirement if it meets one of the following circumstances and a copy of the documentation must be submitted with the customer's solar incentive application:

1. Having an acceptable energy audit report during the past three years
   - Examples of acceptable energy audit reports: Copy of energy audit report summary completed through a customer's local utility company, home inspection report from an independent vendor or consultant, Home Energy Rating Summary (HERS) from a certified HERS rater, etc.

2. Proof of Title 24 energy efficiency compliance within the past three years

   Title 24 Certificate of Compliance Forms:

   - Residential: CF-1R that was used to demonstrate Title 24 Compliance of the 2001 or 2005 Energy Efficiency Standards and was generated on or after January 1, 2003.
   - Commercial: One or more of the Certificates of Compliance forms listed below that were used to demonstrate Title 24 Compliance of the 2001 or 2005 Energy Efficiency Standards and was generated on or after January 1, 2003.

Envelope	**Mechanical**	**Lighting**	**Outdoor Lighting**
ENV-1-C	MECH- 1-C	LTG-1-C	OLTG-1-C

Only compliance documents completed by persons who are Certified Energy Plans Examiners (CEPE) by the California Association of Building Energy Consultants (CABEC) are accepted. More information about this certification process can be found at: http://www.cabec.org. The above compliance documents must also be generated by one of the Energy Commission's approved Title 24 software programs: Micropas or Energy Pro.

3. Having one of two national certifications of energy efficiency:
   - LEED or
   - Energy Star

Customer must submit a copy of a certificate or other documentation from LEED or Energy Star which contains the building address and date of certification.

New Construction:
Commercial New Construction:
- Commercial New Construction project participants in the solar incentive program must submit copies of their current Title 24 documentation. Participants can use one or more of the Certificates of Compliance forms listed below that demonstrate Title 24 Compliance 2005 Energy Efficiency Standards in effect as of October 1, 2005.

Envelope	Mechanical	Lighting	Outdoor Lighting
ENV-1-C	MECH- 1-C	LTG-1-C	OLTG-1-C

Only compliance documents completed by persons who are Certified Energy Plans Examiners (CEPE) by the California Association of Building Energy Consultants (CABEC) are accepted. The above compliance documents must also be generated by one of the Energy Commission's approved Title 24 software programs: Micropas or Energy Pro.

Residential New Construction:

- Residential New Construction projects (single family home, custom homes and multifamily buildings) are currently handled by the California Energy Commission (CEC) under the New Solar Homes Partnership. Please contact the CEC for applications and program requirements at www.GoSolarCalifornia.ca.gov.

In 2007, the California Energy Commission developed eligibility criteria and conditions for receiving future CSI incentives, including new energy efficiency requirements. Please see http://www.energy.ca.gov/sb1/meetings/index.html for more information.

2.4 Warranty Requirements

Currently, all systems must have a minimum 10-year warranty provided in combination by the manufacturer and installer to protect the purchaser against defective workmanship, system or component breakdown, or degradation in electrical output of more than fifteen percent from their originally rated electrical output during the ten-year period. The warranty must cover the solar generating system only, including PV modules (panels) and inverters, solar collectors, tracking mechanisms, heat exchangers, pumps, heat driven cooling systems associated with the solar system and provide for no-cost repair or replacement of the system or system components, including any associated labor during the warranty period.

Self-installed systems must have a minimum 10-year warranty on the equipment to be installed to protect the purchaser against breakdown or electrical output degradation of major system components. In this case, the warranty need not cover the labor costs associated with removing or replacing major components because any repairs would be done by the self-installer or at the self-installer's expense.

Meters must have a one-year warranty to protect against defective workmanship, system or component breakdown, or degradation in electrical output of more than fifteen percent from their originally rated electrical output during the warranty period. For meters that are integrated into the inverter, the meter warranty period must be 10 years.

The system owner will acknowledge on the Incentive Claim Form that they have received a 10-year warranty for no cost repair and replacement of the generating system.

2.5 Performance and Permanency Requirements

Equipment installed under the CSI Program is intended to be in place for the duration of its useful life. Only permanently installed systems are eligible for incentives. This means that the solar system must demonstrate to the satisfaction of the Program Administrator adequate assurances of both physical and contractual permanence prior to receiving an incentive.

Physical permanence is to be demonstrated in accordance with industry practice for permanently installed equipment. Equipment must be secured to a permanent surface. Any indication of portability, including but not limited to temporary structures, quick disconnects, unsecured equipment, wheels, carrying handles, dolly, trailer, or platform, will deem the system ineligible.

In rare occasions, there may be extenuating circumstances that warrant equipment relocation. The Program Administrators will use their discretion whether to allow the relocation to continue to receive program incentives. Contractual permanence, corresponding to a time period of 10 years, is to be demonstrated as follows:

- All agreements involving the generation system receiving an incentive are to be provided to the Program Administrator for review as soon as they become available (e.g., at the proof-of-project milestones stage or the incentive-claim stage at the latest). These agreements include, but are not limited to, system purchase and installation agreements, warranties, leases, energy or solar services agreements, energy savings guarantees, and system performance guarantees.
- The System Owner agrees to notify the Program Administrator in writing a minimum of 60 days prior to any change in either the site location of the solar system or change in ownership of the generation system if the change(s) takes place within the applicable warranty period. The warranty period for the CSI Program is 10 years.
- If the solar system is removed prior to end of the 10 year warranty period, either:
  - The solar system may be installed at another site within the Program Administrator service territory within 6 months. The system installed at the alternate site would not be eligible for an additional CSI EPBB incentive; or
  - The System Owner would be unable to participate in the CSI Program for any additional installations under the CSI Program, including any active reservations that have not yet been paid.
- If the house or business is sold, the new owners can continue to receive the Performance-Based Incentives (PBI) and be eligible to receive future CSI Program incentives if they complete a new interconnection agreement. If the sellers remove the panels, they can continue to receive the incentive payments and be eligible to receive future CSI Program incentives if the panels they removed are installed within the same service territory within 6 months, and they complete an interconnection agreement at the new address. PBI recipients will receive a full five year PBI payment period (not including the period between

removing and reinstalling the system), as long as they reinstall their systems within the specified timeframe.

2.6 Interconnection to the Electric Utility Distribution System

Eligible solar electric generating energy systems must be permanently interconnected to the electrical distribution grid of the utility serving the customer's electrical load. Portable systems are not eligible. The system interconnection must comply with applicable electrical codes and utility interconnection requirements.

The Host Customer, or designate, must also submit an application and enter into an interconnection agreement with their local electric utility for connection to the electrical distribution grid. Please note that there may be insurance requirements for the Host Customer associated with the utility interconnection process. Proof of interconnection and parallel operation is required prior to receiving an incentive payment.

The local electric service provider will convey proof of interconnection to the Program Administrator.

A customer would still be eligible for an incentive for up to 12 months after receiving a final interconnection authorization letter, however after 12 months the project would no longer be eligible for an incentive

2.7 Time of Use Rates

In order to provide additional incentives for customers to install solar systems that coincide with California's peak electricity demand, CSI Applicants were required under state law (SB1) and CPUC D. 06-12-033 to take their electric service under applicable Time-Of-Use (TOU) tariffs. However, state law (AB 1714)[15] and CPUC D.07-06-014 have modified this order such that these TOU requirements are currently optional for CSI Applicants not otherwise required to take service on TOU rates until the CPUC develops and makes effective TOU tariffs that meet the requirements of Public Utility Code Section 2851(a)(4). Entities that receive the CSI incentive after the new TOU rates are established must go on the new TOU rates.

2.8 Metering Requirements

The CSI Program requires accurate energy production meters for all projects that receive CSI Program incentives. Accurate measurement of solar energy output is of paramount importance to ensure optimum value for both solar owners and ratepayers. For solar electric generating systems receiving an EPBB incentive, a basic meter with accuracy of ±5 percent is required. For systems receiving PBI payments, an interval data meter (or equivalent Metering System) with a combined accuracy of ±2 percent or better, taking into consideration current and

15 Chapter 11, Statutes of 2007 (AB 1714, Levine)

transformer accuracy, potential transformer accuracy and computational errors is required. An extensive discussion on metering is contained in Appendix B.

For non-PV electric displacing thermal systems, the output must be measured with a Btu meter with a combined accuracy of +/- 5 percent or better, taking into consideration differential temperature, flow and computational errors (see Appendix E for further details).

EPBB program participants must provide Program Administrators or their authorized agents with physical access to the meter for testing or inspection, and if applicable, data gathering. If the customer's meter is located in a place that is not readily accessible, such access will be by appointment. To avoid inconvenience to customers, Installers are encouraged to locate meters in areas that are easily accessible.

PBI customers must provide Program Administrators or their authorized agents with physical access to the meter at all times.

2.9 Inspection Requirements

It is the intent of the CSI Program to provide incentives for reliable, permanent, safe systems that are professionally installed, and comply with all applicable federal, state, and local regulations. Program Administrators will conduct a system inspection visit for every EPBB system rated greater than 30 kW in order to verify that the project is installed as represented in the application, is operational, is interconnected, and conforms to the eligibility criteria of the CSI Program[16]. Program Administrators will perform random field inspections to verify system characteristics for EPBB systems less than 30 kW. These inspections will reflect a statistically reasonable random sample. Systems receiving PBI may still be required to have a field inspection.

A mandatory site inspection is required for all relocated equipment. System Owners that have received an EPBB incentive and have relocated their system must orient their relocated equipment to produce at least the same generation as their initial incentive payment was based upon.

2.9.1 Systems that Fail Inspections

After a field inspection is completed, the Program Administrators will evaluate the results of the inspection. A failure may be issued for a project if the inspection results are not within the approved tolerances, which have been developed by the Program Administrators, as shown in the chart below:

[16] All MASH systems will be inspected.

Inspection results	PA Action	Applicant Action	Failure
Results within set tolerance: Tilt ±3°, Azimuth ±5°, Shading ±5% of summer shading *Equipment matches	Accepts submitted EPBB Calculator and initiates payment as normal	No Action Necessary	No
Results outside set tolerance, but within 5% of submitted incentive *Equipment matches	Recalculate Incentive based on inspected EPBB calculator results. If new incentive is within 5% of submitted incentive, then notify Applicant of a new incentive amount change.	Applicant accepts the incentive amount change or disputes with PA for resolution	No
Results outside set tolerance and not within 5% of submitted Incentive. *Equipment matches	Recalculate Incentive based on inspected EPBB calculator results. If new incentive is not within 5% of submitted incentive, then notify Applicant of a new incentive amount change and issue a Failure.	Applicant accepts the incentive amount change or disputes with PA for resolution	Yes
Results show that the equipment differs than submitted EPBB, but within 5% of submitted incentive.	Recalculate Incentive based on inspected EPBB calculator results. If incentive is within 5% of submitted incentive, then email Applicant of a new incentive amount change.	Applicant accepts the incentive amount change or disputes with PA for resolution	No
Results show that the equipment differs than submitted EPBB and not within 5% of submitted tolerance.	Recalculate Incentive based on inspected EPBB calculator results. If new incentive is not within 5% of submitted incentive, then notify Applicant of a new incentive amount change and issue a Failure.	Applicant accepts the incentive amount change or disputes with PA for resolution	Yes

If a system fails a field inspection, the Program Administrator will notify the Applicant, Host Customer, and/or System Owner with the reasons for the field inspection failure. Once notified, the Applicant, Host Customer, or System Owner will either accept the failure and change in the incentive amount or dispute the inspection results through the appeals process defined below (see last paragraph of this section). The Program Administrator will be authorized to identify the responsible party (Applicant, Installer, Seller, or other responsible party), based on available information obtained during the inspection and from applicable forms, that will receive the failure.

The Program Administrators will also exercise their judgment in assessing fraud, which can occur due to gross negligence or intentional submission of inaccurate system information in an attempt to collect more incentive dollars. The responsible party will be immediately prohibited from participating in the program for one year.

Installers, Applicants, Sellers, or other responsible parties that fail two inspections Statewide will be on probation, wherein every project will be inspected. If the entity on probation fails a third inspection, the entity will be disqualified from participating in the CSI Program for one year, except in cases of fraud. Once on probation, if no additional failures occur within one calendar year of the second failed inspection, the entity will be removed from probation, placed back into the regular CSI inspection protocol, and all failures removed.

High volume Installers, Applicants, Sellers, or other responsible parties (those that apply or install more than 200 systems per year Statewide) that fail four inspections Statewide, will be on probation wherein every project will be inspected. If the high volume entity on probation fails a fifth inspection, the entity will be disqualified from participating in the CSI Program for one year, except in cases of fraud. Once on probation, if no additional failures occur within one calendar year of the fourth failed inspection, the entity will be removed from probation, placed back into the regular CSI inspection protocol, and all failures removed.

After an entity has served its one year disqualification period, it may become eligible as determined through the appeals process defined below (see last paragraph of this section). If the entity becomes eligible, it will be considered on probation and will be able to end the probation as described above.

If an Installer or Applicant disputes the failed inspection or disqualification, he or she may appeal in writing within 30 days of notification of the failed inspection via US certified mail to the Program Administrator. A panel of all of the Program Administrators and a representative from the Energy Division of the California Public Utilities Commission will review the appeal. Written appeals should substantiate any reasons he or she believes warrant reconsideration of the failure or disqualification. The appealing party may request an audience with the panel. The panel may also request additional information to substantiate the written appeal. The final decision will be provided to the Applicant or Installer within 60 days of receipt of the written appeal and the appeal decision of the panel shall be final.

2.9.2 Inspector Training Criteria

The CPUC requires that all system inspection visits must be performed by trained personnel, whether the inspection is performed by utility interconnection inspectors, other utility personnel, or contractors. The Program Administrators have developed and submitted a consistent statewide site inspectors' training plan to the CPUC Energy Division.

3. California Solar Initiative Incentive Structure

This section provides a general overview of the California Solar Initiative (CSI) Incentive structure. The CSI Program offers two types of incentives: PBI and EPBB. Table 6 provides an overview of the two incentive structures under the CSI Program. For the purpose of the CSI Program, commercial sectors include agricultural and industrial customers. Typically, the incentive structure is determined by the size of the system installed. However, customers installing smaller systems have the option to choose the PBI structure regardless of the size of their system.

Table 6
CSI Incentive Structures

Type of CSI Incentive	Size Category	Payment Structure	Customers Eligible	Notes
GM CSI Performance Based Incentive (PBI)	≥ 50 kW	Payments based on $/kWh produced over 5 year term	Residential, Commercial, Government and Nonprofit	❖ Smaller systems may opt into PBI ❖ In 2008, PBI required for all systems ≥ 50 kW
GM CSI Expected Performance Based Buydown (EPBB)	< 50 kW	One lump sum based on $/watt	Residential, Commercial, Government and Nonprofit	❖ Residential New Construction projects are funded through the Energy Commission's New Solar Homes Partnership (not CSI)
MASH Track 1 Expected Performance Based Buydown (EPBB)	ALL	One lump sum based on $/watt	Residential	❖ Track 2 may include additional incentive based on criteria described in section 4.2 and 4.3.

Both PBI and EPBB incentives are available for residential and Non-Residential customers as displayed in Table 7.

Table 7
Type of CSI Incentive by Customer Sector

Type of CSI Incentive	Size Category	Residential[17]	Commercial	Gov't and Nonprofit
GM CSI Performance Based Incentive (PBI)	≥ 50 kW[18]	√	√	√
GM CSI Expected Performance Based Buydown (EPBB)	< 50 kW	√	√	√
MASH Expected Performance Based Buydown (EPBB)	ALL	√		

3.1 GM CSI Program Incentive Trigger Mechanism

The incentive payment levels will automatically be reduced over the duration of the CSI Program in 10 steps, based on the volume of MW of confirmed reservations issued within each utility service territory.[19] On average, the CSI incentives are projected to decline at a rate of 7 percent each year following the start of implementation in 2007. The incentives will gradually phase out over the 10 steps. Table 4 outlines the 10 steps for the incentive levels for the CSI Program.

The duration of that phase-out will be dependent on: (1) whether the incentive budgets are depleted; (2) when the Program Administrators reach their MW goal; or (3) by the end of the program or 2016, whichever comes first. Table 3 displays the MW targets by Program Administrator service territory and customer class.

Program Administrators will count an application's size towards their step goals using a design factor as described in detail in Section 2.2.7.

Projects are counted toward the MW trigger once they are deemed eligible, have paid an application fee (if applicable), and have been issued a confirmed reservation. As the number of MW allocated through the confirmed reservations reaches its maximum within any particular step, the Program Administrators will move to the next step.

If there are any MWs that remain unused and unaccounted for in any previous steps, due to events such as Applicants dropping out of the process or reducing the size of their systems, those MWs will be added to the current step under which Program Administrators are issuing reservations and incentives, thus increasing the number in that step and ensuring that no MW are left outstanding. Similarly, when MWs drop out of the current step, those MW will be returned to the current step. Any reallocation of MWs from a higher step to a lower step due to drop outs or system size reductions can take place as long as the reallocation is consistent with how the MWs were initially reserved for either residential and non-residential projects. Reallocations from Step 1 may be assigned to either residential or non-residential applicants, at

17 Residential installations on existing structures. New residential construction projects will be funded through the Energy Commission's New Solar Homes Partnership.

18 Smaller systems may opt-in to receive a PBI incentive rather than the EPBB incentive.

19 Investor-owned utility service territories only (PG&E, SCE, SDG&E)

the discretion of the Program Administrators. The Program Administrators will provide updates to their solar application websites as close as possible to real time and no less than weekly to indicate the total MWs available for incentives at each step and in each customer sector, including those MWs newly available due to reallocations.

The CSI Program incentive levels may vary by service area, depending on the pace of solar demand in each Program Administrator's territory. Additionally, the CSI Program incentive levels may differ based on demand in the residential and non-residential customer sectors. Refer to www.csi-trigger.com to determine the step and incentive rate that is currently applicable to each customer sector in that utility's service territory.

The status of each Program Administrator's trigger, and therefore incentive level, is shown at www.csi-trigger.com.

3.2 Expected Performance Based Buydown (EPBB) Incentives

The GM CSI Program will pay incentives to solar projects with system ratings of less than 50 kW CEC-AC through an up-front incentive known as an EPBB. All MASH projects will receive EPBB incentives. These EPBB incentives are based on an estimate of the system's future performance. EPBB incentives combine the benefits of rewarding performance with the administrative simplicity of a one-time incentive paid at the time of project completion. Applications for new non-residential construction projects are eligible for EPBB if the system size complies with EPBB size requirements.

The Program Administrators will use the Energy Commission's CEC-AC method to determine the system rating. The following formula determines the EPBB incentive:

EPBB Incentive Payment = Reserved Incentive Rate x System Rating[20] x Design Factor

The design factor is a ratio comparing a proposed system to a reference system. Very simply, it reflects:

Design Factor =	$\frac{\text{Proposed System}}{\text{Reference System}}$

More specifically, the Design Factor is calculated as follows:

DF = Dcorr * Gcorr * Icorr

Dcorr (Design Correction) = Ss,p,p / Ss,p,o

Ss,p,p = The system's estimated summer kWh output at the proposed location, with proposed tilt & azimuth

20 CEC-AC System Rating (kilowatts) = Quantity of Modules x CEC Rating of Photovoltaic Modules x CEC Inverter Efficiency Rating / 1000 (watts/kilowatt)

Ss,p,o = The system's estimated summer kWh output at the proposed location, with summer optimized tilt & azimuth allowing for equal treatment of proposed systems oriented from South to West (i.e. the optimized system's orientation shall be the same as the proposed system for orientations due south to due west).

Gcorr (Geographic Correction) = As,p,o / As,r,o

As,p,o = The system's estimated annual kWh output at the proposed location, with summer optimized tilt & south azimuth

As,r,o = The system's estimated annual kWh output at the reference location, with summer optimized tilt & south azimuth

Icorr (Installation Correction) = PTCadj / PTC

PTCadj = The adjusted PTC DC rating accounting for mounting method, NOCT and power temperature coefficient for that specific module. See Appendix A of this User Guide for a detailed description of the modified PTC calculation.

PTC = The DC rating of the panels at PVUSA Test Conditions.

In sum, the design factor for EPBB will:

- Treat all systems oriented between 180° and 270° equally
- Assign optimal orientation tilt for each compass direction in range of 180° and 270°, optimized for summer production
- Include location-specific criteria to account for weather variation and shading
- Be based on an optimal reference system and location
- Determine optimal reference latitude tilt that relates to local latitude.

Please refer to the EPBB User Guide for more detailed explanation of the calculator's methodology and instructions, at www.csi-epbb.com.

For non-PV systems, the Design Factor is the Surface Orientation Factor (SOF)[21],[22]. The SOF is determined by reading the value from the chart Surface Orientation Factor for the location, tilt

[21] The "Surface Orientation Factor" and how it is calculated is detailed in "Effects of Tilt and Azimuth on Annual Incident Solar Radiation for United States Locations", Proceedings of Solar Forum 2001, April 21-25, Washington D.C

[22] SOF charts for various California locations may be found in Appendix F of this paper.

and azimuth of the system. Charts of SOF for various California locations may be found in Appendix F. The chart for the closest location to the system's location should be chosen and the SOF determined by reading it off of the chart using the system's tilt and azimuth. Note that the described EPBB methodology is appropriate for solar systems displacing only electric load. For solar systems designed to displace both gas and electric loads, the solar energy displacing the electric load must be metered under a PBI arrangement described in Section 3.3.1.

The CPUC and its Program Administrators have developed an EPBB calculator that helps applicants determine the EPBB incentive level. As it gains experience with the EPBB and the performance of the California Solar Initiative, the CPUC reserves the right to modify the calculator at any time without advance notice to applicants.

If the changes to the EPBB calculator do not impact the incentive amount on a given project, the PAs are not required to notify the applicant of that given project.

However, if the calculator is revised between the time an applicant submits an application and the Program Administrator's Pending Payment stage and the revision(s) alter the project's incentive amount, the Program Administrator (PA) will notify the applicant by letter (PA notification letter) and/or email.

If the Applicant received a Reservation Confirmation notice *before* such a calculator revision, s/he can either:

(A) resubmit the application using the new calculator (If the applicant chooses to resubmit, s/he will not lose his/her place in the queue or application fee); or

(B) notify the PA that s/he wishes to remain at the incentive level calculated in the existing application (even if the incentive would drop under the new calculator).

In both cases, the applicant must notify the PA of his/her intent, in writing, within 30 days of the date of the PA notification. If the applicant does not notify the PA of his/her intent within 30 days of the date of the PA notification, the application will remain in the queue at the level projected under the calculator used in the initial application process.

If the applicant has *not* received a Reservation Confirmation notice before such a calculator revision, the PA shall notify the Applicant of the calculator change and how it impacts the incentive amount in the Application when the Reservation Confirmation notice is issued. The notification shall contain a response portion wherein the Applicant shall sign whether they accept the newly-calculated incentive or wish to withdraw their application. The Applicant must either:

(A) return the notification to the PA indicating s/he accepts the recalculated incentive amount using the new calculator (If the applicant chooses to resubmit, s/he will not lose his/her place in the queue or application fee); or

(B) return the notification to the PA indicating s/he wishes to withdraw the application (If the Applicant chooses to withdraw the application, the PA will reimburse the application fee).

In both cases, the applicant must notify the PA of his/her intent, in writing, within 30 days of the date of the PA notification. If the applicant does not resubmit or withdraw his/her application within 30 days of the date of the PA notification, the Program Administrator will cancel the application, and the applicant will lose both his/her application fee and place in the queue.

3.2.1 Incentives for Residential Installations

Residential installations will be provided a one-time payment under the EPBB program to help reduce the cost of installation provided the system size is within EPBB size eligibility. The amount of the EPBB incentive payment is as calculated pursuant to the formula in Section 3.2, with the incentive rate portion of the formula determined as shown by Table 4.

The GM CSI Program incentive levels may vary by utility service area, depending on the pace of solar demand in each utility's territory. Refer to www.csi-trigger.com to determine the currently-effective step and incentive rate. MASH Track1 incentive levels will remain constant throughout the utility service territories.

A Power Purchase Agreement on a residence is considered a residential application.

Incentives for residential new construction projects will be funded through the Energy Commission's New Solar Homes Partnership program.

3.2.2 Incentives for Non-Residential Installations

Non-Residential installations will be provided a one-time payment under the EPBB program to help reduce the cost of installation provided the system size is within EPBB size eligibility. There are different incentive rates for System Owners who are commercial entities or Government or Non-Profit entities. If a Government or Non-Profit entity is not the System Owner, the incentive amount will be determined by the tax status of the System Owner. The amount of the EPBB incentive payment is as calculated pursuant to the formula in Section 3.2, with the incentive rate portion of the formula determined as shown in Table 4.

Government and Non-Profit entities will be required to submit verification of their tax-exempt status to receive this incentive amount. Additionally, Government and Non-Profit entities must include a certification under penalty of perjury from their chief financial officer or equivalent that they are a Government or Non-Profit entity and that the system is not receiving and will not in the future receive federal tax benefits through financial arrangements for the entire warranty period of the system (i.e., the System Owner if a third-party, which will be receiving tax benefits from the system).

The CSI Program incentive levels may vary by utility service area, depending on the pace of solar demand in each utility's territory. Refer to www.csi-trigger.com to determine the currently effective step and incentive rate.

3.3 Performance Based Incentives (PBI)

The CSI Program will pay PBI for solar projects with systems equal to or greater than 50 kilowatts (kW) CEC-AC in 2008 (and 30 kW and greater after January 1, 2010), with monthly payments based on recorded kilowatt hours (kWh) of solar power produced over a 5-year period, provided the Host Customer remains a retail level electric distribution customer of PG&E, SCE, or SDG&E. The Commission has determined that customers who receive incentives under a performance-based approach will be motivated to focus on proper installation, maintenance, and performance of their systems. Therefore, systems above the EPBB eligibility size limits are required to participate in the PBI program. Furthermore, systems of any size may elect to opt into the PBI program.

Once the PBI incentive rate has been determined and final incentive claim approval has been issued, the $/kWh incentive rate will remain constant for the 5-year term. PBI payments shall begin on a monthly basis after incentive claim approval. For electric generating systems, these payments will be based on the per-kWh incentive rate and the gross energy (kWh) produced in that time period. For Non-PV electric displacing systems, these payments will be based on the per-kWh incentive rate and the net energy (kWh) displaced during that time period.

PBI payments will be calculated for solar energy systems that exceed 1 MW in size by prorating the energy output based on the ratio of 1 MW to the size of the site. Thus, if a customer has installed a 5 MW system, the customer would receive PBI payments for 1/5 of the output of the system. As an alternative, and if possible, the customer may, at its election and cost, separately meter a 1 MW element of a larger system.

3.3.1 PBI for Non-PV Electric Displacing Thermal Systems

For non-PV electric displacing thermal systems, the thermal output of the system serving the customer's thermal load must be metered, divided by the Performance Ratio for the backup, displaced or replaced electric heating or cooling system. The location of the metering is critical for correct assessment of the useful thermal output of the non-PV system. Metering should be placed in the process such that the thermal energy delivered (or removed in the case of cooling) to the customer's thermal load is accurately measured.

Note that hot air solar systems will be paid incentives based on the EPBB method described in Section 3.2[23].

Ancillary electric loads for solar thermal heating and cooling systems, under PBI, will be measured and subtracted from the calculated gross avoided electric consumption. However, ancillary load measurements will be required only if the ancillary rated load is ≥ 5% (i.e., within the uncertainty of the thermal measurement) of the gross avoided electric load potential.

The avoided monthly electric energy (kWh/month) will be calculated by dividing the measured delivered cooling or heating (in equivalent electric thermal) by the appropriate Performance Ratio and, if required, subtracting the system's measured ancillary load (kWh/month). The

[23] Metering the thermal output of solar hot air systems, within reasonable accuracy and cost is difficult.

incentive payment is then determined by multiplying the net avoided electric load with the incentive rate ($/kWh).

Example #1 – Solar Space Cooling System

EDE = ((TNPV / 3,412) / PR) - E_{AUX}

$PBI = EDE x $Erate

Where;

"EDE" = Displaced electricity from the grid.

"TNPV" = Measured thermal (heating or cooling) output of the non-PV system (which may include an absorption chiller or other heat driven cooling system) in Btu/month.

"PR" = Dimensionless Performance Ratio of the conventional electric heating or cooling system calculated by the heating or cooling energy output of the system divided by its electric energy input. In this example, the conventional cooling system is a 20 Ton (240 kBtu/hr) air cooled packaged chiller with a standard IPLV of 9.2. The Performance Ratio for this system is 2.7.

"E_{AUX}" = Ancillary electric equipment (e.g. pumps, etc.) used for the solar thermal system operation.

"$PBI" = Monthly PBI incentive payment.

"$Erate" = Current step PBI incentive rate (e.g. $0.34/kWh)

3.3.1.1 PBI for Non-PV Electric Displacing Thermal Systems

For hydronic solar heating and cooling systems, the BTU meter specifications shall be as follows –
• Provides totalizing outputs in BTUs per period.
• Capable of remote communications.
• Monthly totalizing accuracy of ≤ 5%[24].
• Flow meter and temperature sensor accuracy is National Institute of Standards and Technology (NIST) traceable.

3.3.2 PBI for Residential Projects

Monthly payments will be made based on gross electricity generated in kWh as per the performance data report. Monthly payments for Non-PV energy displacing technologies will be made based on the net-kWh-equivalent electricity displaced as per the performance data report. The residential PBI incentive rate ($/kWh) shall be in accordance with Table 4 above.

[24] At least one BTU meter supplier has provided information showing that 5% accuracy is achievable. See Appendix E for an example Btu meter accuracy calculation.

The PBI incentive levels may vary by utility service area, depending on the pace of solar demand in each utility's territory. Refer to www.csi-trigger.com to determine the currently effective step and incentive rate.

3.3.3 PBI for Non-Residential Projects

There are different incentive rates for commercial entities and for Government or Non-Profit entities that are the System Owners. If a Government or Non-Profit entity is not the System Owner, the incentive amount will be determined by the tax status of the System Owner. The Program Administrators will make the monthly payments based on gross electricity generated in kWh as per performance data report. Monthly payments for Non-PV energy displacing technologies will be made based on the net kWh-equivalent electricity displaced as per the performance data report. The incentive amount ($/kWh) will be in accordance with Table 4.

The PBI incentive levels may vary by the Program Administrators' territory, depending on the pace of solar demand in each territory. Refer to www.csi-trigger.com to determine the currently effective step and incentive rate.

Government and Non-Profit entities will be required to submit verification of their tax-exempt status to receive this incentive amount. Additionally, Government and Non-Profit entities must include a certification under penalty of perjury from their chief financial officer or equivalent that they are a Government or Non-Profit entity and that the system is not receiving and will not in the future receive federal tax benefits through financial arrangements for the entire warranty period of the system (i.e., the System Owner is a third-party, who will be receiving tax benefits from the system). This certification must be renewed annually if receiving PBI payments.

3.4 Incentive Limitations

Incentive amounts and project eligibility for the CSI Program are limited by a number of factors, including:

- Total eligible project costs
- Other incentives or rebates received
- Project size and Host Customer Site limitations.

3.4.1 Total Eligible Project Costs

No project can receive total incentives (incentives from the CSI Program combined with other programs) that exceed total eligible project costs. The Applicant must submit project cost details to report total eligible project costs and to ensure that total incentives do not exceed out-of-pocket expenses for the System Owner. See Appendix A for eligible cost items. Total eligible project costs cover the solar system and its ancillary equipment. Equipment and other costs outside of the project envelope defined in Appendix A are considered ineligible project costs but also must be reported. For large, multifaceted projects where the solar system costs are embedded, applications must include a prorated estimate of the total eligible costs for the solar

system. Applications must include the project cost breakdown worksheet available from the Program Administrators' websites.

3.4.2 Other Incentives or Rebates

Customers may not receive CSI Program incentives for the same self-generation equipment from more than one Program Administrator (e.g., PG&E, SCE, and CCSE). For projects receiving incentives under other programs, the CSI Program incentive may be reduced, depending on the source of the other incentive. For projects that receive "other incentives" for the same generating equipment that are funded by California investor-owned utility ratepayers (e.g., utility or Energy Commission public goods charge programs, etc.), the CSI Program incentive is discounted by the amount of the other incentive. For projects that receive "other incentives" funded from other sources than utility ratepayers (federal and state grants, air district grants, tax credits, etc.) no adjustment is made to the CSI incentive, except where a CSI incentive would otherwise cause total incentives to exceed total costs.

In no event may the combined incentives received from CSI Program and other funding sources exceed the total eligible project cost. Host Customers, Applicants and System Owners are required to disclose information about all other incentives, including incentives for equipment or systems ancillary to the solar system, post-installation performance payments, or additional incentives. Program Administrators will enter applications into a statewide database that will permit universal tracking of applications for this and other programs.

3.4.3 Right to Audit Final Project Costs

The Program Administrators reserve the right to conduct spot checks to verify that payments were made as identified in the final invoices or agreements provided by equipment sellers and/or installers. As part of these spot checks, the Program Administrators will require Applicants to submit copies of cancelled checks, credit card statements, or equivalent documentation to substantiate payments made to the equipment seller and/or installer. When submitting this documentation, Applicants are encouraged to remove their personal account numbers or other sensitive information identified in the documentation. Applicants must explain the difference if the final amount paid by the Applicant is different from the amount of the purchase or installation shown in any agreement or invoice or in the previously submitted Reservation Request.

If selected for a random audit, Applicants must submit final system cost documentation clearly identifying the final amount paid or legally incurred to purchase the system and the final amount paid to install the system. The cost documentation must provide proof of the final amount paid or legally incurred by the System Owner to the equipment seller and/or installer and provide sufficient information to clearly identify the equipment purchased and the labor paid. The final amount paid or legally incurred to the equipment seller and/or the final amount paid to the installer must match the cost information identified in the Reservation Confirmation and Incentive Payment Claim Form. To meet this requirement, the System Owner must submit final invoices and/or a copy of the final agreement. The actual amount paid or legally incurred by the purchaser to the equipment seller and/or the actual amount paid to the installer must be clearly

indicated. If there is no direct proof of actual payment from the System Owner to an appropriately licensed installer or seller, the incentive will be cancelled or reduced.

In addition, the final invoices or agreements should clearly indicate the extent to which the California Solar Initiative program incentive lowered the cost of the system to the System Owner. If the System Owner has entered into an agreement to pay the equipment seller over time rather than in lump sum, the final agreement must indicate the terms of payment and the amount of any deposits or payments paid by Applicant to the equipment seller to date. The System Owner must pay the cost of any system installation prior to submitting a payment request to the Program Administrator.

3.4.4 Site and Host Customer Limitations

There are restrictions on the amount of incentive funding a Host Customer can reserve and receive. Host Customers can reserve up to 1 MW of maximum incentive funding from the CSI Program for a single Site for the duration of the CSI Program.

3.5 CSI Program Database

One of the notable features of the CSI Program is the on-line database. The Program Administrators are maintaining an up-to-date database on their websites, and via the www.GoSolarCalifornia.ca.gov website or directly to csi.powerclerk.com, that lists information on the progress of the CSI Program. The database shows detailed information on the number of applications, confirmed reservations, and installed PV systems from January 2007 forward. The online system or the Program Administrators' websites will have links to the archived database of all systems installed under the Energy Commission's Emerging Renewables Program, Self-Generation Incentive Program, and Rebuild a Greener San Diego Photovoltaic Incentive Program.

The database will include the following data and information from each project:

- Installer
- Seller
- City
- ZIP code
- Utility name
- Technology
- Size (Watts)
- Installed price approval
- PV manufacturer
- PV model
- Inverter manufacturer
- Inverter model
- Date completed

- Date of approved reservation.

It is anticipated that once fully developed, the database will provide program data on, or close to, a real-time basis.

4. Application Process for California Solar Initiative Projects

Through the California Solar Initiative (CSI) program, funding may be reserved for Applicants who have committed to purchase and install an eligible solar energy system at a given Site. A funding reservation provides the purchaser assurance that the reserved funds will be available when the payment claim is made.

Table 8 describes various situations and identifies the subsections that provide details on how to apply for funding.

Table 8
Summary of Application Procedures by Track

Track	Sector	Application Fee	System Size	Reservation Period	Relevant Section
1	All GM CSI Residential	**No**	All	12 months	**Section 4.1**
1	Commercial	**No**	Less than 10 kW	*12 months for retrofit *18 months for new construction projects	**Section 4.1**
1	Government, Non-profit, Public Entities (small projects)	**No**	Less than10 kW	12 months	**Section 4.1**
1	Affordable Housing (MASH)	**No**	All	18 months	**Section 4.2**
2	Commercial	**Yes**	Greater than or equal to 10 kW	*12 months for retrofit projects *18 months for new construction projects	**Section 4.2 Section 4.2.1**
2	Government, Non-profit, Public Entities	**Yes**	Greater than or equal to 10 kW	18 months	**Section 4.2 Section 4.2.2**

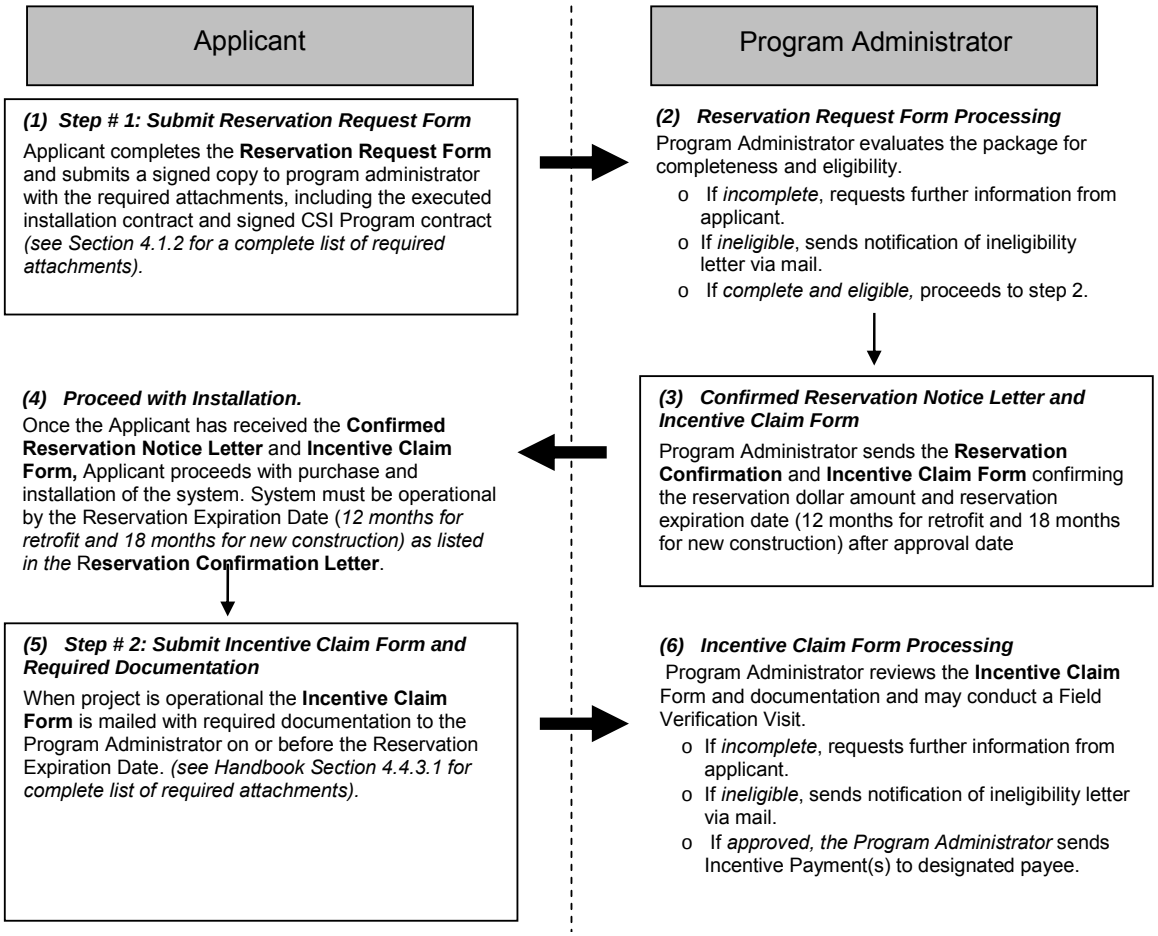
4.1 GM CSI Residential (All) and Small Non-Residential Projects (< 10 kW)

This section describes the application process for all projects installed on a residential Host Customer Site as well as projects less than 10 kW installed on Non-Residential Host Customer Sites. All residential and small projects are eligible to receive a lump sum EPBB incentive payment. However, there is an option to opt in to receive PBI based on $/kWh produced.

The CSI Program uses an on-line application tool to simplify the application process and confirm the rebate amount reserved, contingent on receiving all documents. The Reservation Request Form may be downloaded from the Program Administrators' websites or www.GoSolarCalifornia.ca.gov or from csi.powerclerk.com.

Figure 1 outlines the application process for residential and small projects less than 10 kW.

Figure 1
Residential (all) and Small Project Application Process Flow Chart <10 kW



4.1.1 Two-Step Process for Residential and Small Non-Residential Applicants

There are two primary steps for residential and small Non-Residential Applicants as follows:

1. Complete and submit an Application (on line or available at the Program Administrator's website) and Reservation Application Package
2. Complete and submit the Incentive Claim Form (on line or available at the Program Administrator's website)

Table 9 details the application forms and documentation requirements for the two-step application process. See Section 4.7 for required documentation.

Table 9
Two-Step Application Process – Forms and Documentation Requirements

Step 1: Reservation Request
Completed Reservation Request Form and Program Contract with Original Signature on CSI Program Contract
Proof of Electric Utility Service for Site
Electrical System Sizing Documentation (new/expanded load for systems greater than 5 kW)
Certification of tax-exempt status and AB1407 compliance (Gov't and Nonprofit only)
Documentation of an Energy Efficiency Audit (or Title 24 documentation or other exemptions)
Printout of EPBB Tool Calculation (www.csi-epbb.com) (for non-PV a copy of the SOF chart marking the correct data point)
Copy of Executed Agreement of Solar System Purchase and Installation
Copy of Executed Alternative System Ownership Agreement (If System Owner is Different from Host Customer)
Step 2: Reservation Confirmation and Claim
Complete Incentive Claim Form with Original Signatures
Copy of Executed PMRS Contract or PMRS Cost Cap Exemption Documentation
(PBI Only) Copy of Executed PDP Contract
Revised EPBB Calculation Printout (if applicable) (for non-PV a copy of the revised SOF chart marking the correct data point)
Final Project Cost Breakdown Worksheet
Final Project Cost Affidavit

4.1.2 Step # 1: Submit Reservation Request Application Package

Once the customer has decided to install a solar system and has an executed contract with their system installer, an Application (on-line or available at the Program Administrator's website) and Reservation Request Application Package are submitted in the first step of the application process.

The Reservation Request Form must have original signatures of Applicant and Host Customer and should be submitted with the following documentation:

1. Completed Reservation Request Form and Program Contract with Original Signature.
2. Proof of Electric Utility Service for Site
3. Electrical System Sizing Documentation (new/expanded load only) for projects > 5 kW

4. Certification of tax-exempt status and AB1407 compliance (Gov't and Nonprofit only)
5. Documentation of an Energy Efficiency Audit (if you have not met Title 24 or other exemptions)
6. Printout of EPBB Tool Calculation (www.csi-epbb.com) (for non-PV, a copy of the SOF chart marking the correct data point)
7. Copy of Executed Agreement of Solar System Purchase and Installation
8. Copy of Executed Alternative System Ownership Agreement (If System Owner is Different from Host Customer)

Refer to Section 4.7 for more information on the above-referenced forms and documents.

Detailed instructions are included with the Reservation Request Form. The Reservation Request Form may be downloaded from the Program Administrators' websites or www.GoSolarCalifornia.ca.gov.

The Host Customer and System Owner must sign the Reservation Request Form.

4.1.3 Incomplete Reservation Requests

If an application is found to require clarification, the Program Administrator will request additional information. Applicants have 20 calendar days to respond to the clarification request with the necessary information. If after 20 calendar days the Applicant has not submitted the requested information, the application will be canceled. Resubmitted application packages will be treated as new applications (i.e., all required documents must be resubmitted) and processed in sequence along with other new applications.

Incentive funds are not reserved until the Program Administrator receives all information and documentation required for the Reservation Request and the project is approved.

4.1.4 Approval of Reservation Request

Once received, the Program Administrator will review the application package for completeness and determine eligibility. Applications will also be screened to ensure that the project has not applied for incentives through other Program Administrators or other state- or government-sponsored incentive programs.

Once the Program Administrator approves the reservation request, the Program Administrator will issue a Confirmed Reservation notice that confirms that a specific incentive amount is reserved for the project. This confirmation notice will also include an Incentive Payment Claim Form.

The system must be purchased, installed, and put into operation by the Reservation Expiration Date (see Section 4.1.4.1 for length of reservation) as listed in the Confirmation Reservation notice. The Incentive Payment Claim Form will list the specific reservation dollar amount and the

Reservation Expiration Date. For more information on the Incentive Claim Form package, refer to Section 4.7.

4.1.4.1 Reservation Period

Incentives can be reserved for up to 12 months for residential retrofit projects and commercial retrofit projects. Incentives can be reserved for up to 18 months for government, non-profits and public entities and also for new construction projects.

4.1.5 Step # 2: Submit Incentive Claim Form Package

After the solar system is purchased, installed, and put into operation, the Applicant should submit the Incentive Claim Form and the required supporting documentation.

The Incentive Claim Form Package must have original signatures of Applicant and Host Customer and should be submitted with the following documentation:

1. Incentive Claim Form with Original Signatures
2. Copy of Executed PMRS Contract or PMRS Cost Cap Exemption Documentation
3. (PBI Only) Copy of Executed PDP Contract
4. Revised EPBB Calculation Printout (if applicable) (for non-PV, a copy of the SOF chart marking the correct data point)
5. Final Project Cost Breakdown Worksheet
6. Final Project Cost Affidavit

The online tool can be used to assist at the Incentive Claim Form stage even if it had not been used for the original Reservation Request Application Package.

Although the Applicant is no longer required to submit Proof of Authorization to Interconnect, the Program Administrators will verify interconnection prior to any incentive payment.

For more detailed information on submitting the Incentive Claim Form package, refer to Section 4.7.3.

4.2 Large Non-Residential Projects (≥10 kW)

This section describes the application process for all Non-Residential projects ≥10 kW for commercial and industrial, Government, Non-Profit, and Public Entities.

Please note that Non-Residential projects (≥10kW) may opt into the two-step process if they would like to, but are still subject to the eligibility requirements based on their system size and type. See section 4.1.1 for required timelines and paperwork.

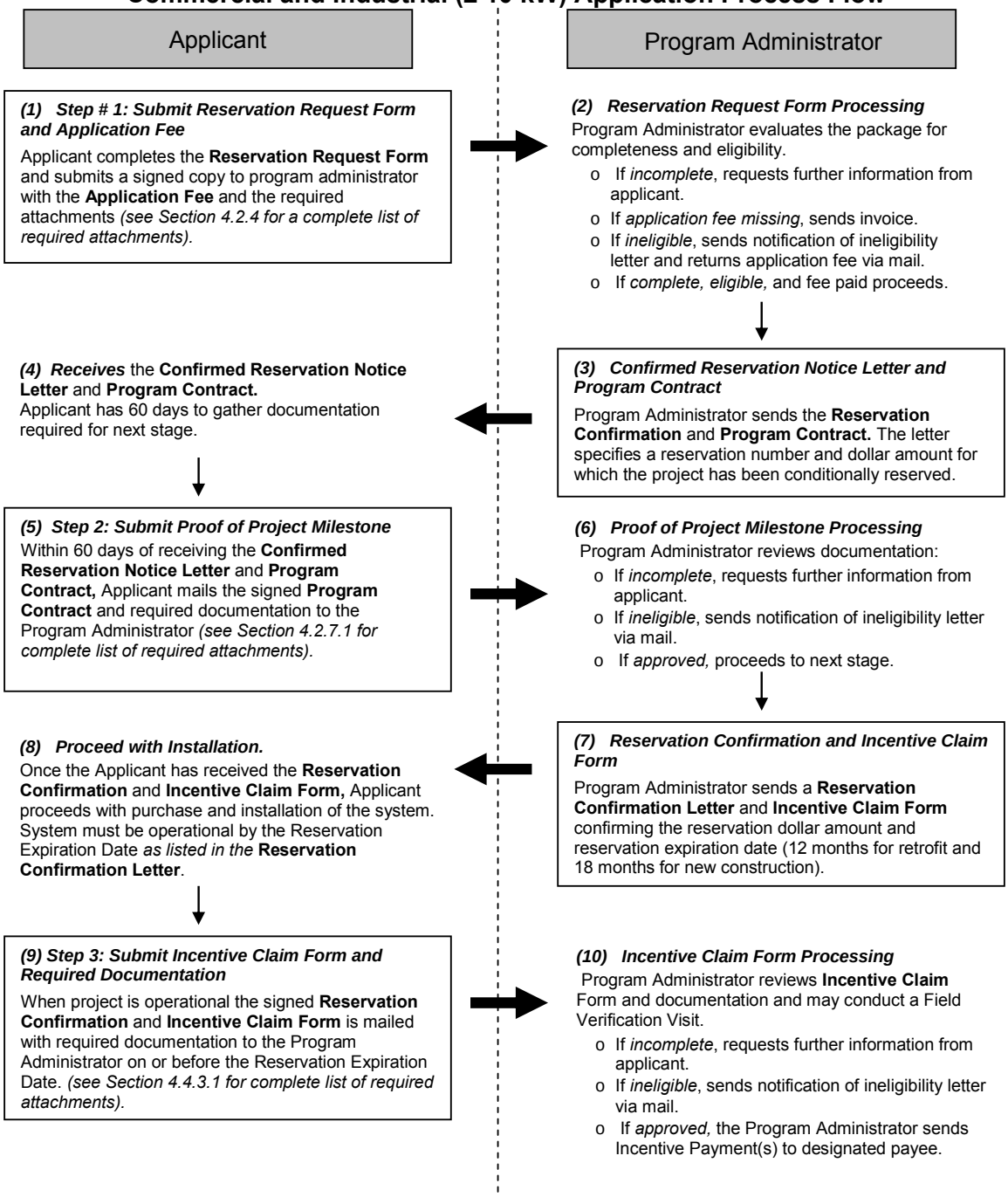
The Applicant can expedite the three step process by providing the requisite information to the program administrators in two steps. Non-residential projects (≥10 kW) are still subject to the eligibility requirements based on their system size and type, including the submission of any required application fees. See section 4.2.3 for required timelines and paperwork.

The CSI Program anticipates an on-line application tool to simplify the application process.

4.2.1 Application Process Flow Chart for Commercial Industrial Applicants (≥10 kW)

Figure 2 documents the application process for commercial and industrial customers.

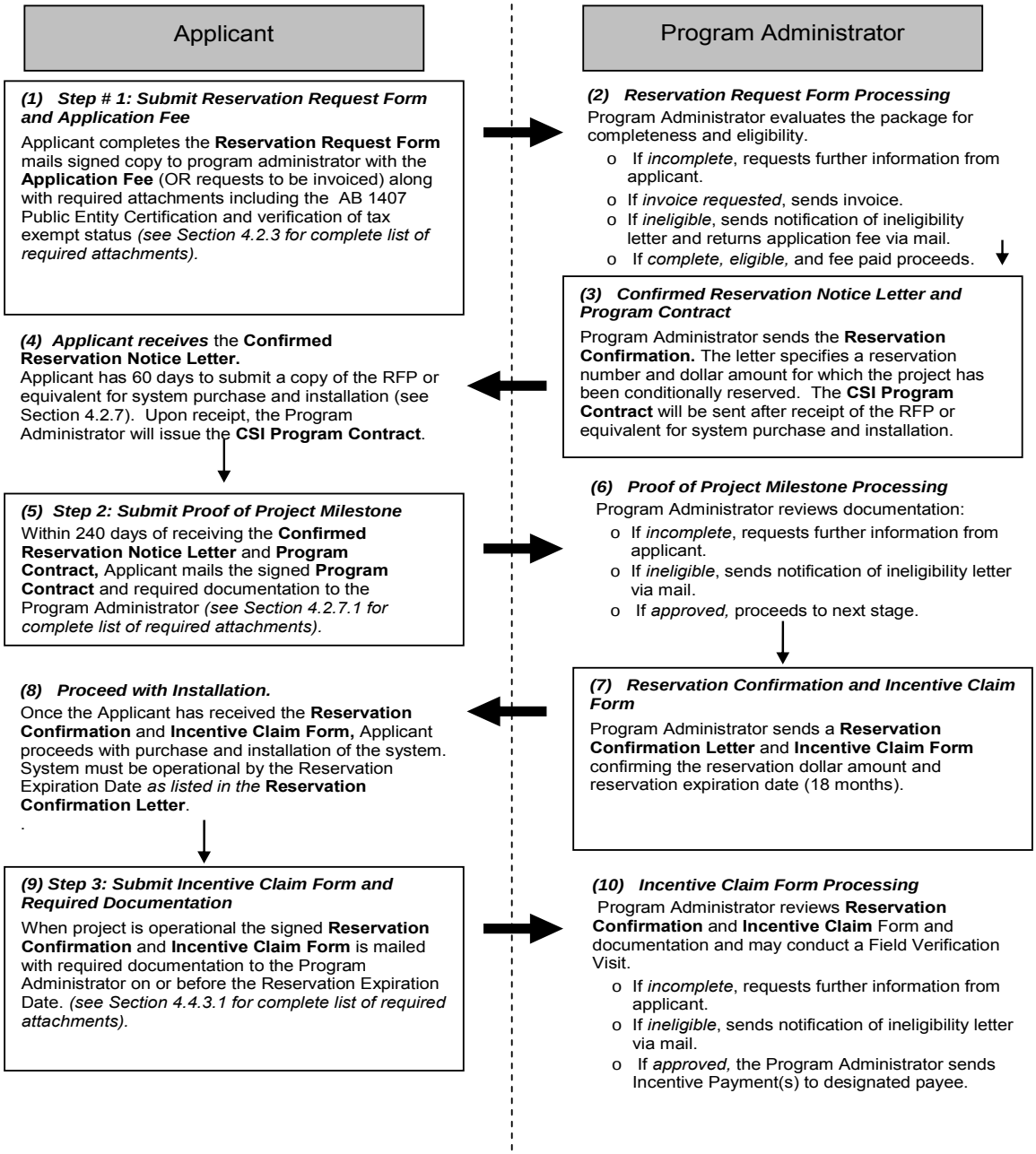
Figure 2
Commercial and Industrial (≥ 10 kW) Application Process Flow



4.2.2 Application Process Flow Chart for Government, Non-Profit, and Public Entities (≥10 kW)

Figure 3 documents the application process for Government, Non-Profit, and Public Entities.

Figure 3
Government, Non-Profit, and Public Entities (≥ 10 kW) Application Process Flow Chart



4.2.3 Three-Step Process for Non-Residential Applicants (≥ 10 kW)

There are three primary steps for Non-Residential Applicants with systems larger than or equal to 10 kW as follows:

1. Complete and submit the Reservation Application Package (on line or available at the Program Administrator's website) and Application fee. See Section 4.2.4 for required documentation.
2. Complete and submit the Proof of Project Milestone Package (on line or available at the Program Administrator's website). See Section 4.7.2 for required documentation.
3. Complete and submit an Incentive Claim Form Package (on line or available at the Program Administrator's website). See Section 4.7.3 for required documentation.

Table 10 details the application forms and documentation requirements for the three-step application process.

Please note that Non-Residential projects (≥10kW) may opt into the two-step process if they would like to, but are still subject to the eligibility requirements based on their system size and type. See section 4.1.1 for required timelines and paperwork.

The Applicant can expedite the three-step process by providing the requisite information to the program administrators in two steps. Non-residential projects (≥10 kW) are still subject to the eligibility requirements based on their system size and type, including the submission of any required application fees. See section 4.2.3 for required timelines and paperwork.

Table 10
Three-Step Application Process – Forms and Documentation Requirements

Step 1: Reservation Request
Completed Reservation Request Form and Program Contract with Original Signature
Proof of Electric Utility Service for Site
System Description Worksheet
Electrical System Sizing Documentation (new/expanded load only)
Application Fee (See Section 4.2.5)
Certification of tax-exempt status and AB1407 compliance (Gov't and Nonprofit only)
Documentation of an Energy Efficiency Audit (if you have not met Title 24 or other exemptions)
Printout of EPBB Tool Calculation (www.csi-epbb.com) (for non-PV a copy of the SOF chart marking the correct data point)
Step 2: Proof of Project Milestone
Completed Proof of Project Milestone Checklist
Copy of executed contract for system purchase and installation
Copy of executed alternative System Ownership agreement (if System Owner is different than Host Customer)
Revised EPBB Calculation Printout (if applicable) (for non-PV a copy of the SOF chart marking the correct data point)
Copy of RFP or solicitation (Government, Non-profit, and Public Entities only)
Step 3: Incentive Form Package
Complete Incentive Claim Form with Original Signatures
Copy of Executed PMRS Contract or PMRS Cost Cap Exemption Documentation
(PBI Only) Copy of Executed PDP Contract
Revised EPBB Calculation Printout (if applicable) (for non-PV a copy of the SOF chart marking the correct data point)
Final Project Cost Breakdown Worksheet
Final Project Cost Affidavit

4.2.4 Step # 1: Request to Reserve Funding

This subsection applies to all Non-Residential Applicants with solar systems larger than or equal to 10 kW, regardless of whether the Applicant is a private or public entity. To reserve a specified incentive amount, Applicants must submit the Reservation Request Form, Application Fee, and all required documentation attachments. The Reservation Request Form and instructions can be downloaded from the local Program Administrator's website.

The Reservation Request Form may be downloaded from the Program Administrators' websites or www.GoSolarCalifornia.ca.gov. The System Owner and Host Customer must always sign the Reservation Request Application. In addition, all Applicants applying for incentives must provide the following:

1. Completed Reservation Request Form and Program Contract with Original Signature
2. Proof of Electric Utility Service for Site

3. System Description Worksheet
4. Electrical System Sizing Documentation (new/expanded load only)
5. Application Fee (See Section 4.2.5)
6. Certification of tax-exempt status and AB1407 compliance (Gov't and Nonprofit only)
7. Documentation of an Energy Efficiency Audit (if you have not met Title 24 or other exemptions)
8. Printout of EPBB Tool Calculation (www.csi-epbb.com) (for non-PV a copy of the SOF chart marking the correct data point)

For more information on the above referenced forms and documents, go to Section 4.7.

4.2.5 Application Fee Process

In addition to the Reservation Request Form and Required Attachments, Applicants will also be required to submit an application fee. Applicants with projects that are residential, or less than 10 kW, need not pay an application fee.

The application fee is a standardized amount based on the following system size (CEC-AC) criteria:

kW ≥		kW <		FEE
10	-	50	=	$1,250
50	-	100	=	$2,500
100	-	250	=	$5,000
250	-	500	=	$10,000
500	-	1,000		$20,000

- Applicants may submit the application fee with the Reservation Request Application with original signatures. If the application fee is not received with the Reservation Request Application, the Program Administrators will invoice the Host Customer (utility customer of record) after review of the Reservation Request Application package.
- The Host Customer will have 30 days to submit payment for the application fee in order to activate the Reservation Request. The payment must reference the project (by invoice number, facility address, and/or application number).
- Program Administrators will accept payments from either the Applicant or a third party on behalf of the Host Customer for a particular project; however, a returned application fee shall only be paid to the Host Customer.
- Program Administrators will only accept application fees in the form of a check. Cash, credit cards, money orders, promissory notes, etc. will not be accepted.
- Application fees will be linked to reservation numbers, not to the project sites; therefore, the project must be completed under the same reservation number as the one linked to the application fee.

- Upon verification of the installed CSI project and initial incentive payment, the application fee will be returned in full to the Host Customer.
- No interest shall be paid on application fees.

4.2.5.1 Failure to Submit Application Fee

- Returned checks will result in the Program Administrator rejecting the Reservation Request Application.
- Failure to submit payment within 30 days will result in the cancellation of the Reservation Request Application.

4.2.5.2 Return of Application Fee

- If upon eligibility screening the project does not qualify for the CSI Program, the application fee will be returned in full to the Host Customer.
- If a project that has received an Incentive Claim Form from the Program Administrator is withdrawn due to extenuating circumstances beyond the Applicant's control, the application fee may be returned pending discussion and agreement of the Program Administrators. This will be determined on a case-by-case basis.

4.2.5.3 Forfeit of Application Fee

- Once a confirmed reservation is granted and the project is cancelled or withdrawn by the Applicant and/or Host Customer, the application fee will be forfeited.
- Once a confirmed reservation is granted and the Program Administrator rejects the project for failing to meet adequate proof of project milestone or reservation expiration date requirements, the application fee will be forfeited.
- If a project reservation is allowed to lapse and the project is later built under a new reservation, the application fee for the previous reservation will be forfeited.
- If a confirmed reservation is granted and the incentive level has been reduced (due to Commission directive, moving to the next step , etc.), the Applicant and Host Customer will be notified and given 20 calendar days to submit in writing a request to withdraw their reservation request without losing their application fee. Upon receipt of a request to withdraw, the application fee shall be returned to the Host Customer. If the Applicant fails to withdraw the reservation request within 20 calendar days, the application will be processed at the new, lower incentive level. If the application is not withdrawn within the 20-day period, the Applicant will forfeit the application fee if it subsequently withdraws or fails to pursue its project.
- All forfeited application fees will be re-allocated to the Program Administrator's incentive budget.

4.2.5.4 Effect of Change of System Change on Application Fee

- Application fees will be retained until the completion of the proposed CSI project and will not be adjusted downward due to changes in system size or incentive amount.

4.2.6 Approval of Reservation Request

Once received, the Program Administrator will review the application package for completeness and determine eligibility. Applications will also be screened to ensure that the project has not applied for incentives through other Program Administrators or other state- or government-sponsored incentive programs.

4.2.6.1 Incomplete Reservation Requests

Incentive funds are not reserved until the Program Administrator receives all information and documentation required for the Reservation Request Form Package, the application fee and the project is approved.

If an application is found to require clarification, the Program Administrator will request the information necessary to process that application further. Applicants have 20 calendar days to respond to the requested clarification with the necessary information. If after 20 calendar days, the Applicant has not submitted the requested information the applications will be canceled. Application packages that are resubmitted after such a cancellation will be treated as a new application (i.e., all required documents must be resubmitted) and processed in sequence along with other new applications.

4.2.6.2 Approval of Reservation Request

Once a Reservation Request Form package is determined to be complete and eligible, the Program Administrator will reserve a specific dollar amount for a specified system size. The Program Administrator will send a Confirmed Reservation notice to the Applicant.

The Reservation notice documents that a specific incentive amount has been reserved for a project. The notice will list, at a minimum, the approved incentive amount and the date that the Proof of Project Milestone package must be submitted. The Reservation notice also will list the required information that Applicants must submit by the Proof of Project Milestone.

Once the application documentation has successfully fulfilled the Proof of Project Milestone documentation, the Program Administrator will issue a Confirmed Reservation with a Reservation Expiration Date of 12 months for commercial retrofit projects, 18 months for commercial new construction projects, and 18 months for Governmental, Non-Profit, and Public Entities from the date of the initial Confirmed Reservation notice.

Refer to Section 4.2.7 for more information on the Proof of Project Milestone requirements.

4.2.6.3 Reservation Period

The initial reservation is valid only until the Proof of Project Milestone Date. The Proof of Project Milestone Date will be 60 calendar days after the date of the Reservation notice for commercial projects. Within noted calendar days of the date the Reservation notice, the Applicant must submit to their Program Administrator the Proof of Project Milestone package. Once the Applicant has sufficiently demonstrated that the project is advancing, the Program Administrator will issue a Confirmed Reservation. The Applicant will have 12 months to complete the project from the date that the Reservation notice is issued for retrofit projects and 18 months for new construction projects.

4.2.6.4 Reservation Period for Government, Non-Profit and Public Entity Projects

The initial reservation is only valid for until the Proof of Project Milestone date. Within 60 days after the Reservation notice, Government, Non-Profit and public entities must turn in the Proof of Project Milestone checklist and a copy of the RFP or other solicitation for the installation of the project. Then, Government, Non-Profit, and Public Entities will have an additional 180 days to provide the entire Proof of Project Milestone package. Once the Applicant has sufficiently demonstrated that the project is advancing, the Program Administrator will issue a Confirmed Reservation. The Applicant will have 18 months to complete the project from the date that the Reservation notice is issued.

4.2.7 Step # 2: Submit Proof of Project Milestone Package

Within 60 calendar days (240 days for Governmental entities) of the date on the Reservation notice, the Proof of Project Milestone package with all supporting documentation must be submitted to demonstrate to the Program Administrator that the project is progressing and that there is a sustained commitment to complete the project within the allowed timeline. The specific requirements by sector are as follows:

- Non-Residential projects greater than or equal to 10 kW and projects that are receiving a PBI payment within 60 days of the Confirmed Reservation notice must submit a Proof of Project Milestone package, including all required documentation.
- Government, Non-profit, and Public Entities, within 60 calendar days of the date of the Confirmed Reservation notice, must submit a copy of the issued request for proposal (RFP or equivalent) for purchase or installation of the solar system. Within 240 calendar days of the date of the Confirmed Reservation notice, they must satisfy all proof of project milestone criteria, including all required documentation.

Once the Applicant has successfully met Proof of Project Milestone requirements, the Program Administrator will issue a Confirmed Reservation with a Reservation Expiration Date of 12 months from the date of the initial Reservation notice for commercial retrofit projects, 18 months

for commercial new construction projects, and 18 months from the date of the initial Reservation notice for Governmental, Non-Profit, and Public Entities.

4.2.7.1 Required Attachments to Demonstrate Project Milestone

The following documentation must be submitted on or before the Proof of Project Milestone date indicated in the Confirmed Reservation notice.

1. Completed Proof of Project Milestone Checklist
2. Copy of executed contract for System Purchase and Installation
3. Copy of Executed Alternative System Ownership Agreement (if System Owner is different than Host Customer)
4. Revised EPBB Calculation Printout (if applicable) (for non-PV a copy of the SOF chart marking the correct data point).
5. Copy of RFP or Solicitation (Government, Non-Profit, and Public Entities only)

For more information on the above-referenced forms, go to Section 4.7.

4.2.7.2 Incomplete Proof of Project Milestone

If submitted Proof of Project Milestone documentation is received by the Proof of Project Milestone Date but requires clarification, the Program Administrator will request the information necessary to process that application further. Applicants have 20 calendar days to respond with the necessary information. If, after 20 calendar days, the Applicant has not submitted the requested information, the applications will be canceled.

4.2.7.3 Proof of Project Milestone Extensions

In general, no extensions to the Proof of Project Milestone date are permitted.

4.2.7.4 Submitting Proof of Project Milestone

Once the Proof of Project Milestone package is complete and all the required attachments are secured, Applicants must submit their application package to the Program Administrator for review. To ensure confirmation of receipt, it is recommended that documentation is to be delivered to the appropriate Program Administrator by certified or overnight mail. No faxes or hand deliveries will be accepted.

4.2.7.5 Approval of Proof of Project Milestone

Once Applicants have successfully met the Proof of Project Milestones requirements, the Program Administrator will issue a Confirmed Reservation. Upon project completion and prior to the Reservation Expiration Date, Applicants must submit a completed Incentive Claim Form along with all of the necessary documentation to request an incentive payment.

For more information on how to submit an Incentive Claim, refer to Section 4.4.3.

4.2.8 Step # 3: Submit Incentive Claim Form Package

The online tool can be used to assist at the Incentive Claim Form stage even if it had not been used for the original Reservation Request Application Package.

Refer to Section 4.7.3 for more information about the requirements associated with submitting the Incentive Claim Form package.

4.3 MASH Projects

This section describes the application process for all Multifamily Affordable Solar Housing projects.

Track 1 provides fixed, up front, capacity based incentives for qualifying solar energy systems, using the EPBB methodology. Incentives under Track 1 depend on whether the system offsets common area usage of the property (1A) or tenant area usage (1B). A property may receive both Track 1A and 1B incentives for the same project if the project will offset both common area and tenant load. Track 1A and Track 1B incentives will be paid based on how the system provides electricity. For example, if a 100 kilowatt (kW) solar installation offsets both common area and tenant load, and 60% of the electricity output of the system is dedicated to common area load and 40% of the electricity output is dedicated to tenant load, the applicant will receive Track 1A incentives for 60 kW, and Track 1B incentives for 40 kW.

Track 2 allows applicants to compete with other applicants for higher incentives if they can demonstrate the installation will provide a quantifiable, “direct tenant benefit” which is defined as any operating cost savings from solar, including energy efficiency investments or upgrades, shared with tenants through a recurring payment or financial credit.

4.3.1 Track 1A and 1B

There are three primary steps for MASH Track 1A and 1B Applicants as follows:

1. Complete and submit an Application and Reservation Application Package

2. Complete and submit the Proof of Project Milestone Package

3. Complete and submit the Incentive Claim Form

The Reservation, Proof of Milestone and Incentive Claim forms are all available online or at the Program Administrator’s website.

Please note that similar to GM CSI, MASH projects may opt into the two-step process if they would like to, but are still subject to the eligibility requirements based on their system size and type. See section 4.3 for required timelines and paperwork.

Figure 4 outlines the application process for all MASH Track 1 projects

Figure 4
MASH Track 1 Application Process Flow Chart

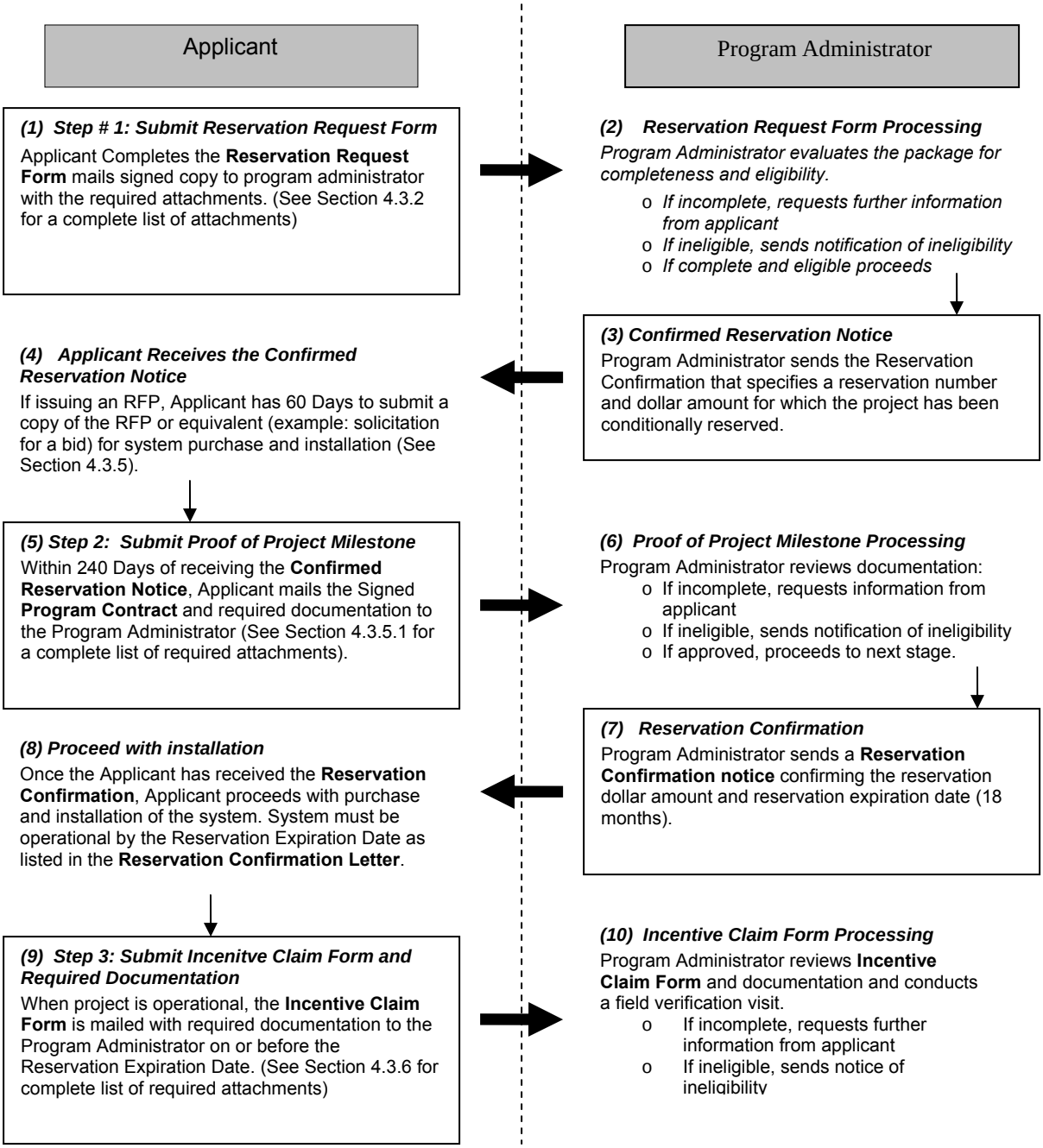


Table 11
MASH Track 1A/1B Three-Step Application Process –
Forms and Documentation Requirements

Step 1: Reservation Request
Completed Reservation Request Form and Program Contract with Original Signature on CSI Program Contract
Proof of Electric Utility Service for Site
Electrical System Sizing Documentation
Documentation of CPUC Code 2852 eligibility
Documentation of an Energy Efficiency Audit (or Title 24 documentation, LIEE documentation or other exemptions)
Printout of EPBB Tool Calculation (www.csi-epbb.com)
Copy of Executed Agreement of Solar System Purchase and Installation
Copy of Executed Alternative System Ownership Agreement (If System Owner is Different from Host Customer)
Step 2: Proof of Project Milestone
Completed Proof of Project Milestone Checklist
Copy of executed contract for system purchase and installation
Copy of executed alternative System Ownership agreement (if System Owner is different than Host Customer)
Revised EPBB Calculation Printout (if applicable)
Copy of RFP or solicitation (if applicable)
Step 3: Incentive Form Package
Complete Incentive Claim Form with Original Signatures
Copy of Executed PMRS Contract or PMRS Cost Cap Exemption Documentation
Revised EPBB Calculation Printout (if applicable)
Final Project Cost Breakdown Worksheet
Final Project Cost Affidavit
Documentation of Tenant/Common Load allocation

4.3.2 Step # 1: Submit Reservation Request Application Package

The Reservation Request Application Package is submitted in the first step of the application process.

The Reservation Request Form must have original signatures of Applicant and Host Customer and should be submitted with the following documentation:

1. Completed Reservation Request Form and Program Contract with Original Signature.
2. Proof of Electric Utility Service for Site
3. Electrical System Sizing Documentation (new/expanded load only) for projects > 5 kW

4. Documentation of CPUC Code 2852 eligibility
5. Documentation of an Energy Efficiency Audit (if you have not met Title 24 or other exemptions)
6. Printout of EPBB Tool Calculation (www.csi-epbb.com)

Refer to Section 4.8 for more information on the above-referenced forms and documents.

Detailed instructions are included with the Reservation Request Form. The Reservation Request Form may be downloaded from the Program Administrators' websites or www.GoSolarCalifornia.ca.gov.

The Host Customer and System Owner must sign the Reservation Request Form.

4.3.3 Incomplete Reservation Requests

If an application is found to require clarification, the Program Administrator will request additional information. Applicants have 20 calendar days to respond to the clarification request with the necessary information. If after 20 calendar days the Applicant has not submitted the requested information, the application will be canceled. Resubmitted application packages will be treated as new applications (i.e., all required documents must be resubmitted) and processed in sequence along with other new applications.

Incentive funds are not reserved until the Program Administrator receives all information and documentation required for the Reservation Request and the project is approved.

4.3.4 Approval of Reservation Request

Once a Track 1A/1B Reservation Request Form package is determined to be complete and eligible, the Program Administrator will reserve a specific dollar amount for a specified system size. The Program Administrator will send a Confirmed Reservation notice to the Applicant.

The Confirmed Reservation notice documents that a specific incentive amount has been reserved for a project. The notice will list, at a minimum, the approved incentive amount and the date that the Proof of Project Milestone package must be submitted. The Confirmed Reservation notice also will list the required information that Applicants must submit by the Proof of Project Milestone.

Refer to Section 4.2.5 for more information on the Proof of Project Milestone requirements.

4.3.4.1 Reservation Period

Incentives can be reserved for up to 18 months for MASH Track 1A and 1B projects.[25]

[25] See Section 4.3 for MASH Track 2 reservation period

4.3.5 Step # 2: Submit Proof of Project Milestone Package

The initial reservation is valid only until the Proof of Project Milestone Date. Within 240 calendar days of the date on the Confirmed Reservation notice, the Proof of Project Milestone package with all supporting documentation must be submitted to demonstrate to the Program Administrator that the project is progressing and that there is a sustained commitment to complete the project within the allowed timeline. The specific requirements are as follows:

1. If issuing an RFP, the applicant must submit a copy of the issued RFP (or equivalent) for purchase or installation of the solar system within 60 calendar days of the date of the Confirmed Reservation notice.
2. Within 240 calendar days of the date of the Confirmed Reservation notice, they must satisfy all proof of project milestone criteria, including all required documentation.

4.3.5.1 Required Attachments to Demonstrate Project Milestone

The following documentation must be submitted on or before the Proof of Project Milestone date indicated in the Confirmed Reservation notice.

1. Completed Proof of Project Milestone Checklist
2. Copy of executed contract for System Purchase and Installation
3. Copy of Executed Alternative System Ownership Agreement (if System Owner is different than Host Customer)
4. Revised EPBB Calculation Printout (if applicable)
5. Copy of RFP or Solicitation (if applicable)

For more information on the above-referenced forms, go to Section 4.8

4.3.5.2 Incomplete Proof of Project Milestone

If submitted Proof of Project Milestone documentation is received by the Proof of Project Milestone Date but requires clarification, the Program Administrator will request the information necessary to process that application further. Applicants have 20 calendar days to respond with the necessary information. If, after 20 calendar days, the Applicant has not submitted the requested information, the applications will be canceled.

4.3.5.3 Proof of Project Milestone Extensions

No extensions to the Proof of Project Milestone date are permitted.

4.3.5.4 Submitting Proof of Project Milestone

Once the Proof of Project Milestone package is complete and all the required attachments are secured, Applicants must submit their application package to the Program Administrator for

review. To ensure confirmation of receipt, it is recommended that documentation is to be delivered to the appropriate Program Administrator by certified or overnight mail. No faxes or hand deliveries will be accepted.

4.3.5.5 Approval of Proof of Project Milestone

Once Applicants have successfully met the Proof of Project Milestones requirements, the Program Administrator will issue a notification. This form will list the specific reservation dollar amount and the Reservation Expiration Date. Upon project completion and prior to the Reservation Expiration Date, Applicants must submit a completed Incentive Claim Form along with all of the necessary documentation to request an incentive payment.

4.3.6 Step # 3: Submit Incentive Claim Form Package

Refer to Section 4.8.3 for more information about the requirements associated with submitting the Incentive Claim Form package. After the solar system is purchased, installed, and put into operation, the Applicant should submit the Incentive Claim Form and the required supporting documentation.

The Incentive Claim Form Package must have original signatures of Applicant and Host Customer and should be submitted with the following documentation:

1. Incentive Claim Form with Original Signatures
2. Copy of Executed PMRS Contract or PMRS Cost Cap Exemption Documentation
3. (PBI Only) Copy of Executed PDP Contract
4. Revised EPBB Calculation Printout (If applicable)
5. Final Project Cost Breakdown Worksheet
6. Final Project Cost Affidavit

Although the Applicant is not required to submit Proof of Authorization to Interconnect, the Program Administrators will verify interconnection prior to any incentive payment.

4.4 Changes to Reservations

4.4.1 Extending the Reservation Expiration Date

A request to extend the Reservation Expiration Date is limited to a maximum of 180 calendar days of additional time. Any request must include a written explanation of why the extension is required and how much additional time is needed. Approval of a request for a change in

Reservation Expiration Date will not change or modify any other reservation condition. Failure to submit the Incentive Claim Form package by the original or extended Reservation Expiration Date will result in a cancellation of the application. The Applicant should submit a time extension in writing to the Program Administrators. In describing the reason for the time extension request, the Applicant should provide information on the following to aid the Program Administrators in their decision to grant an extension:

1. Circumstances were beyond the control of the reservation holder that prevented the system from being installed as described in the reservation request. Describe the need and reasons for the request.
2. If there was a problem in the permitting process and it was the cause of delay, provide documentation, such as any correspondence with the building department, to support this explanation.
3. Cost documentation must demonstrate that the system purchaser has incurred at least 50 percent of the reserved system's total purchase price. However, in cases where this amount exceeds the purchaser's contribution then the purchaser may still retain 10 percent of the total system cost and meet this cost documentation requirement. Attach copies of paid invoices, checks or other verifying documentation with the extension request.
4. Documentation of any equipment installed at the site.

In order for any project to receive an extension, the Applicant must show documentation of a purchase order or commitment from a PV panel manufacturer to supply the necessary equipment.

The Program Administrator reserves the right to perform a Site inspection to verify the status of the project installation prior to granting the request for extension. If required, the Program Administrator shall notify the Applicant and schedule the Site visit within 10 days of notification.

4.4.2 Transfer of Reservation from one Site to Another

Applicants should contact their Program Administrator as soon as they realize a reservation transfer is necessary. A request to transfer a CSI reservation from one site to another within a single utility service territory may be considered in accordance with the following provisions:

1. For applications received before December 18, 2008, projects must be in either their first 12 months (for residential / commercial) or 18 months (for government & non-profit) of project implementation time ***or*** in their first six month extension in order to be eligible for reservation transfer. Projects that have been cancelled or have withdrawn are ineligible for a retroactive reservation transfer.
2. For applications received on or after December 18, 2008, projects must seek a reservation transfer within 180 days of their initial reservation. Projects seeking a transfer after 180 days have passed are not eligible for a reservation transfer.
3. In order to transfer a reservation, applicants must demonstrate to their Program Administrator that they have spent a non-negligible amount of money on project development at the first site reserved, and must provide documentation proving that this first site is not viable for solar project development.

4. Applicants must provide documentation and demonstrate to their Program Administrator that the second site, to which the application will be moved, is viable for solar project development.
5. A reservation may only be transferred once.
6. Reservations can only be transferred to another site within the same Program Administrator service territory.
7. Transferred reservations that increase overall capacity following the transfer are eligible to receive CSI incentives for additional capacity only at the current incentive levels in that service territory and subject to other Handbook provisions on system up-sizing. The original reservation cannot be changed with respect to the amount of capacity that is eligible for CSI incentives. This means that if incentive levels decline between the time the initial reservation is reserved and when the transfer occurs, any capacity in excess of the initial reservation will be reserved at a lower incentive level, if it is eligible.
8. Once a transfer has been confirmed, the project timeline resets as per the date of the transfer and the project will be eligible for the full implementation time allowed to their project class (residential / commercial or government & non-profit) in the Handbook.
9. Once a reservation transfer has been confirmed, the application fee becomes non-refundable.

4.5 Incentive Payment Process

Once a system is completed, Applicants may request payment of the incentive amount listed on their Incentive Payment Claim Form. A project is considered completed when it is completely installed, interconnected, permitted, paid for, and capable of producing electricity in the manner and in the amounts for which it was designed.

To receive the incentive, all CSI Program requirements must be met and a complete Incentive Claim Form package is submitted prior to the Reservation Expiration Date.

The Program Administrator reserves the right to withhold final incentive payment pending review and approval of the incentive claim documentation and field inspection results if that project is determined to require a field inspection.

4.5.1 Requesting an Incentive Payment

After an eligible solar system is completed, Applicants may request payment of the incentive amount listed on their Incentive Claim Form. Payment will be disbursed once the Program Administrator verifies that the solar system is completed and meets all the eligibility requirements of the CSI.

To request an incentive payment, the Applicant completes and submits the Incentive Claim Form. Both Host Customer and System Owner must sign the Claim Form.

Please note that no incentive payment will be made until the Program Administrator has inspected and found that the system is operational and interconnected if that project is determined to require a field inspection. For further information regarding field inspections, refer to Section 4.7.

The completed Incentive Claim Form must be submitted to the Program Administrator on or before the Reservation Expiration Date, together with all required attachments described below.

4.5.2 Incentive Payment Claim Form Package

The Applicant must submit the Incentive Claim Form package, complete with all required attachments, to the Program Administrator prior to the Reservation Expiration Date. The Host Customer and System Owner must read, sign, and date the Incentive Payment Claim Form. This form must be returned to the Program Administrator by mail, as original signatures are required to process a payment.

4.5.2.1 Required Documents for Incentive Claim Form Package

In addition to the completed Incentive Claim Form, Applicants must submit the following documents when requesting an incentive payment:

1. Incentive Claim Form with Original Signatures
2. Copy of Executed PMRS Contract or Cost Cap Exemption Documentation
3. Revised EPBB Calculation Printout (if applicable) (for non-PV a copy of the SOF chart marking the correct data point)
4. (PBI Only) Copy of Executed PDP Contract
5. Final Project Cost Breakdown Worksheet
6. Final Project Cost Affidavit

For more information on the above-referenced forms, go to Section 4.8.

4.5.3 Submitting an Incentive Claim Form Package

Once the Incentive Claim Form package is complete and all the required attachments are secured, Applicants must submit their application package to the Program Administrator for review. To ensure confirmation of receipt, it is recommended that documentation be delivered to the appropriate Program Administrator by certified or overnight mail. No faxes or hand deliveries will be accepted.

Applicants are advised to keep a copy of the Incentive Claim Form package along with all required documentation for their records.

4.5.3.1 Incomplete Incentive Claim Form Packages

If an incentive claim form package is incomplete or is found to require clarification, the Program Administrator will request the information necessary to process that application further. Applicants have 20 calendar days to respond to the requested clarification with the necessary information.

If after 20 calendar days, the Applicant has not submitted the requested information, the request for payment may be denied.

If an Incentive Claim Form package is not received by the expiration date of the Incentive Claim Form, or the Incentive Claim Form package indicates that the project is otherwise ineligible, the Program Administrator will send a written notice stating the reasons why the project is ineligible and the project will be rejected. If this is the case, the Applicant or Host Customer may reapply for a incentive reservation but will be subject to the eligibility requirements, incentive levels, and funding available at that time of reapplication.

4.5.4 Incentive Check Payment and Terms

Upon final approval of the incentive claim form documentation and completed field verification visit, the Program Administrator will issue the incentive in approximately 30 days for EPBB incentive payments. For PBI payments, the Program Administrator will issue the first incentive payment approximately 30 days from the date the first scheduled performance output meter read is received from the PDP. Payment will be made to the Host Customer or a third party (as designated), as indicated on the Incentive Claim Form, and will be mailed to the address provided. As the reservation holder, the Host Customer may assign payment to a third party in the Incentive Claim Form.

The payee must submit their tax ID number and tax status to the Program Administrator.

4.5.4.1 Expected Performance Based Buydown (EPBB) Incentive Payment Terms

Most residential systems will receive an EPBB incentive. The EPBB incentive will be a one-time lump sum payment to help reduce the cost of installing a residential PV system. Upon final approval of the incentive claim form package and completed field inspection visit, if applicable, the Program Administrator will issue the incentive in approximately 30 days.

The EPBB payment shall be calculated according to Section 3.2 and noted on the Incentive Claim Form, provided no adjustments to the system size or estimated output are warranted after system inspection.

Please review Section 4.6 for system size changes affecting the incentive amount.

The lump sum EPBB incentive payment issued constitutes final and complete payment.

4.5.4.2 Performance Based Incentive Payment Terms

In 2007, incentives for systems equal to or greater than 100 kW, or systems less than 100 kW who elect to opt in, will receive the performance based incentive (PBI) payments. As of January 1, 2008, PBI is required for systems 50 kW or larger and 30 kW or larger on January 1, 2010. PBI will be paid based on:

A. The monthly gross kWh produced by the system for electric generation systems
B. The monthly net kWh-equivalent displaced by the Non-PV electric displacing system

PBI payments will be made monthly and paid out over a 5-year period. The monthly PBI payment shall be calculated as follows:

Solar Electric Generating - Monthly PBI Incentive Payment = Reserved Incentive Rate x Measured gross kWh Output[26]

Solar Electric Displacing - Monthly PBI Incentive Payment = Reserved Incentive Rate x measured net kWh-equivalent displacement.

Upon final approval of the incentive claim form documentation and completed field verification visit, if applicable, the Program Administrator will issue the first PBI incentive payment approximately 30 days after receipt of the first scheduled meter read from the project PDP. PBI payments will continue to be paid following the receipt of performance data reports submitted by the PDP on a monthly basis for the next 60 months (5 years).

Additionally, the PAs will disburse payment(s) based on a retroactive data report(s) from the project PDP contingent upon the following criteria:

A. All pertinent ICF documentation was submitted correctly by the Reservation Expiration Date; and

B. First field inspection was passed with no compliance issues.

Should a customer fail the first field inspection, the start of the data report period for PBI payments will be retroactive to first PBI Payment Cycle following the approved field inspection date only if:

A. All pertinent ICF documentation was submitted correctly by the Reservation Expiration Date.

Should a customer fail to submit all pertinent ICF documentation (any documentation pertaining to the installed system or Performance Data Provider) by the Reservation Expiration Date, PBI payments will not be retroactive, but rather, the start of the data report period for customer will be the first PBI Payment Cycle following Final Approval of the customer's project by the PA. Documentation failures pertain to non-trivial system information and original signatures. Documentation failures do not include trivial mistakes that do not require submitting revised or additional information. Determination of documentation failures are at PA discretion. Any documentation revisions or submittals after the initial submission will count as a documentation failure. Please note, retroactive payments will not exceed 180-days in time.

Payments will be made to the Applicant, Host Customer, or a third party as designated on the Incentive Claim Form. At the discretion of Program Administrators, payments may either be mailed to the address provided, wire transferred, or paid via credits on the utility bill.

If a monthly payment is determined to be incorrect due to a faulty meter read, the correction will be made in the next available payment period.

26 Because the CSI Program and statutes only allow for customers to receive incentives up to the first MW, PBI payments for energy output on systems larger than 1 MW will be prorated based on the ratio of 1 MW to the entire size of the site. See Section 3.3 for further detail.

If a Host Customer moves during the 5-year period, they must notify the Program Administrator, who may make subsequent adjustments to the CSI Program.

The 60th monthly PBI incentive payment constitutes final and complete payment.

4.6 System Changes Affecting Incentive Amount

The Program Administrator will expect a system to be installed as described in the Reservation Request Form. However, it is recognized that changes may occur during installation and that changes may be necessary in some circumstances.

If the installed system is smaller in output than specified in the Reservation Request Form or subsequent updates, the incentive amount will be calculated using the installed system size. If the installed system is larger than that originally in the Reservation Request Form or subsequent updates, the incentive will be recalculated based upon the installed system size, with the incremental addition to the system receiving the current level of incentive. If the size of the increase moves the system from the EPBB structure to the PBI structure, the entire system will receive the PBI based upon the current incentive level.

If the increase in size occurs after the expiration date of the Confirmed Reservation, the incremental addition will be considered a new project and must submit a Reservation Request with its required documentation.

If the entire available budget for a Program Administrator is reserved for other projects and there is no available funding, the Program Administrator cannot increase the reserved incentive amount.

Please review Section 3.2 for information on the application process should the calculator change.

4.7 Field Inspection

4.7.1 Field Inspections

Upon receipt of a complete Incentive Claim Form package, the Applicant's project, depending on system size and incentive structure, may be selected for a field inspection visit to verify that the system is installed as represented in the application, is operational, is interconnected and conforms to the eligibility criteria of the CSI Program. Program Administrators will conduct field inspection visits on a statistically reasonable random sample for EPBB systems that are less than 30 kW. All EPBB systems that are greater than 30 kW and all MASH systems will be required to receive a field inspection. And all PBI systems, may be randomly selected for field verification visits.

If randomly selected or required, the field inspection visit will be conducted concurrent with review and approval of the incentive payment. Incentive payments will be contingent on the field inspection visit and may be adjusted depending on the results of the field inspection.

It is highly recommended, but not required, that the applicant attend the inspection.

- If neither the applicant nor the host is going to be present during the inspection, the inspector must obtain permission to perform the inspection in writing or by e-mail.
- If neither the host nor the applicant is present for the inspection, the inspector will not conduct the inspection unless permission was previously obtained in writing or via e-mail allowing the inspector to conduct the inspection without the host or the applicant present.

If the Applicant, Host Customer, System Owner or Installer does not agree with the inspection results, they may request another inspection at no cost.

4.7.2 Trained Inspectors

Field inspections shall be performed by trained personnel certified to perform CSI Program system inspections. The Program Administrators have developed and submitted a consistent statewide site inspectors training plan to the CPUC Energy Division.

4.7.3 Failed Field Inspection

If the field inspection determines that the installed system varies from the documentation, it may result in a failed field inspection. If a system fails a field inspection, the Program Administrator will notify the Applicant, Host Customer, and System Owner with the reasons for the field inspection failure.

Please refer to Section 2.9.1 for more information regarding situations that constitute a failure.

4.8 Application Forms and Documentation

The following section discusses each of the forms and documentation requirements listed in the subsections above. Refer to the subsection describing the process for your application type to determine which of the following documents are required for your situation.

4.8.1 Reservation Request Package and Required Documentation

4.8.1.1 Reservation Request Application Form with Original Signature

To reserve a specified incentive amount, a Reservation Request Form must be submitted with all required documentation attached. All forms are available from the Program Administrators' website. The seller, installer, and any other third party providing service related to a system installation should be identified on the application form, together with a description of the generation site, equipment information and project incentive calculation. Reservation Request Forms for projects that are residential or less than 10 kW will include the CSI Contract.

4.8.1.2 Proof of Electric Utility Service for the Site

Eligibility requirements restrict participation in the CSI Program to customers who are located in PG&E, SCE, or SDG&E service territories and physically connected to the electric utility

transmission and distribution system. All applications must include a copy of a recent electric utility bill that shows the service address of the installation Site, the name of the Host Customer, and electric energy usage for the Site. Only the page of the utility bill that shows service account name, contact information, and service account number should be submitted to ensure that this information is provided. The entire utility bill is not required. For those with online billing, a printout of the account history from the utility's online service will be sufficient, so long as it includes the required information. The utility bill information should be no older than 6 months from the date of application. For new construction, the Applicant must provide confirmation documentation from the serving utility. For the MASH program, a bill for the common area account is sufficient.

4.8.1.3 Electrical System Sizing Documentation (New or expanded load only)

Except for systems of 5kW or less which need no sizing documentation (see Section 2.2.7), to confirm that participating distributed generation systems will not exceed the capacity of the Host Customer's previous 12-month historical usage, all Applicants for projects at new construction must submit a copy of the data and calculations used to determine electrical system size. Please refer to Section 2.2.5 for more details.

4.8.1.4 Documentation of an Energy Efficiency Audit (for non-exempted applicants)

See Section 2.3 for more information about energy efficiency audits.

4.8.1.5 Printout of EPBB Tool Calculation

The EPBB Tool calculates the CSI EPBB design factor in order to determine the CSI system size. Printouts of EPBB Tool Calculation can be obtained from www.csi-epbb.com.

4.8.1.6 Proof of Low income Status (MASH only)

All MASH applicants must demonstrate that the Site meets CPUC Code 2852 low income eligibility requirements.

4.8.1.7 Additional Requirements for Residential and Small Non-Residential Projects (< 10 kW)

4.8.1.7.1 Copy of Executed Agreement of Solar System Purchase and Installation

For all residential (any size) as well as small Non-Residential (<10 kW) applications, the Applicant must submit a copy of an executed agreement to purchase and install the solar system at the time of submitting the Reservation Request Application Form.

4.8.1.7.2 Copy of Executed Alternative System Ownership Agreement (If System Owner is Different from Host Customer)

For residential and small Non-residential (<10 kW) applications, if the system owner is not the host customer, applicant must submit a copy of Executed Alternative System Ownership agreement with the Reservation Request Form.

4.8.1.8 Additional Requirements for Non-residential projects ≥ 10 kW

4.8.1.8.1 System Description Worksheet

Non-Residential projects equal to or greater than 10 kW are required to complete and submit a System Description Worksheet.

4.8.1.8.2 Application Fee

The application fee is a standardized amount based on the following system size (CEC-AC) criteria:

kW ≥		kW <		FEE
10	-	50	=	$1,250
50	-	100	=	$2,500
100	-	250	=	$5,000
250	-	500	=	$10,000
500	-	1,000		$20,000

4.8.1.9 Additional Requirements for Government and Non-profit projects

4.8.1.9.1 Certification of tax-exempt status and AB1407 compliance

Any Government and Non-Profit entities must include a certification under penalty of perjury from their chief financial officer or equivalent that they are a Government or Non-Profit entity and that the system is not receiving, and will not in the future receive, federal tax benefits through financial arrangements (i.e., the System Owner if a third-party, which will be receiving tax benefits from the system). This certification must be renewed annually if receiving PBI payments.

Additionally, any public entity applying for CSI Program incentives must certify that it has voided any existing law, under its authority, that prohibits or restricts the installation or use of a solar energy system in accordance with the requirements set forth in AB 1407.

4.8.2 Proof of Project Milestone Package (for Projects on a Three-Step Process)

4.8.2.1 Completed Proof of Project Milestone Checklist

All Proof of Project Milestone submittals must be accompanied by a completed and signed checklist.

4.8.2.2 Copy of Executed Contract for System Purchase and Installation

Applicants must submit a copy of executed contract for purchase and installation of the system, and/or alternative System Ownership agreement. Agreements must be legally binding and clearly spell out the scope of work, terms, price, solar system components to be installed. Agreements must be signed by appropriate parties (supplier/installer, Host Customer, Applicant and/or System Owner).

In the case of alternate System Ownership arrangements, the System Owner must provide a copy of their agreement(s) to purchase and install a system.

The Applicant must provide copies of executed purchase and/or installation agreements with the Reservation Request, and the information must be internally consistent and must be consistent with the Reservation Form. Agreements for the purchase of a system or system equipment must be in writing and must include, at a minimum, the following information:

- The quantity, make and model number (as shown on the Energy Commission lists of eligible equipment) for the PV modules, inverters, and system performance meters
- The total purchase price of the system before applying the incentive
- Language indicating the purchaser's commitment to buy the system
- Printed names and signatures of the purchaser and equipment seller's authorized representative.

Installation contracts must comply with the Contractors State License Board (CSLB) requirements. Please refer to the CSLB website for more information on CSLB guidelines at www.cslb.ca.gov.

Entities without a valid A, B, C-10 or C-46 contractor's license may not offer installation services or charge for installation in any agreement under the CSI Program.

In addition, these contracts must contain the following information:

- Name, address and contractor's license number of the company performing the system installation
- Site address for the system installation
- Description of the work to be performed
- Total agreed price to install the system
- Payment terms (payment dates and dollar amounts)
- Printed names and signatures of the purchaser and the company's authorized representative.

The above requirements are sufficient evidence of an agreement to purchase and install a system for cases where a contractor sells and installs the system.

4.8.2.3 Printout of EPBB Tool Calculation (If applicable)

When applicable, all Applicants are required to complete and submit a revised EPBB tool calculation printout if a system or project changes have resulted in a change to the incentive amount.

4.8.2.4 Copy of RFP or solicitation (Government, Non-profit, and Public Entities only)

Within 60 days after the Confirmed Reservation notice, Government, Non-Profit, and Public Entities must submit a copy of the RFP, notice to Invite Bids, or similar solicitation issued for the installation, lease, and/or purchase of the system proposed for the project. The RFP must include sufficient documentation details including the scope of work, schedule, terms, budget, and system components to be installed.

For Government, Non-Profit, and Public Entities not issuing an RFP for the project, all Proof of Project Milestone documentation listed in Section 4.8.2 must be submitted within Proof of Project Milestone Date.

4.8.3 Incentive Claim Form Package

4.8.3.1 Complete Incentive Claim Form with Original Signatures

A completed Incentive Claim Form must be submitted. It must be read, completed, and signed by both the Host Customer and System Owner (if different). The installer's name, telephone number and contractor license number must be included with the completed Incentive Claim Form. It must be confirmed on-site and requires original signatures from the CSI approved listed Seller/Installer confirming the as-built quantity and model numbers of inverters, meters, and modules, as well as tilt, orientation, shading, etc. as required for final calculation of the EPBB rebate. Only applications with original signatures on a single form will be accepted. Any changes in the system upon completion of the project must include supporting documentation and a recalculated incentive.

Note that solar electric displacing systems do not require interconnection.

For questions on the interconnection process, see Section 5.1.

4.8.3.2 Printout of EPBB Tool Calculation (If applicable)

When applicable, all Applicants are required to complete and submit a revised EPBB Tool calculation printout if a system or project changes have resulted in a change to the incentive amount.

4.8.3.3 Copy of Executed PMRS Contract or Cost Cap Exemption Documentation

All systems required to have a PMRS must provide a copy of the executed contract for a PMRS provider, a letter from the PMRS provider stating the customer has purchased their service, or

an invoice from the installer clearly showing the PMRS provider information. Whichever document is submitted must clearly identify the PMRS provider information, including the name of the PMRS provider, the product or service purchased and the term of agreement, along with the address of the associated solar system site.

EPBB systems must either submit a copy of the executed PMRS contract as described above or the Cost Cap Exemption Documentation.

The Cost Cap Exemption Documentation consists of any of the following items that demonstrate PMRS costs exceed the cost cap:

1) A quote from an eligible PMRS provider indicating the PMRS provider's cost for providing the basic PMRS described in Appendix B, or

2) a quote detailing the equipment, installation, maintenance, and five-year service costs of any communications equipment and service required for the provision of the PMRS (if such equipment and service does not already exist at the customer premise), or

3) an invoice or quote detailing the associated metering system costs (if separate from inverter and only if necessary for the provision of the PMRS), or

4) a letter on the contractor letterhead showing any additional costs, including labor, materials, overhead and installer mark-up, to install and maintain the PMRS.

See Section 11. Appendix B: Metering Requirements for additional information on PMRS.

4.8.3.4 Copy of Executed PDP Contract

All PBI systems are required to have a PDP and therefore must provide a copy of the executed contract for a PDP, a letter from the PDP stating the customer has purchased their service, or an invoice from the installer clearly showing the PDP information. Whichever document is submitted must clearly identify the PDP information, including the name of the PDP, the product or service purchased and the term of agreement, along with the address of the associated solar system site. A separate contract is not required if the same company is providing both the PMRS and PDP services as long as the contract specifies they are providing services that satisfy both requirements.

See Section 11. Appendix B: Metering Requirements for additional information on PDP.

4.8.3.5 Final Project Cost Breakdown Worksheet

A final project cost breakdown worksheet must be submitted substantiating the claimed eligible project cost. The Program Administrator reserves the right to withhold final incentive payment pending review and approval of project cost and receipt of supporting documentation. For a list of total eligible project costs, see Appendix A. The Program Administrator reserves the right to periodically audit Applicant's and Host Customer's records, see Appendix C (Section 12).

4.8.3.6 Final Project Cost Affidavit

An affidavit signed by the System Owner or purchaser of the system (if other than the System Owner) must be submitted substantiating that the claimed eligible project cost is correct and has been paid in full.

4.8.3.7 Documentation of load allocation (MASH only, if applying for Track 1B)

MASH applicants must demonstrate that the load allocation of the solar system matches the applied for Track 1A/1B incentives.

5. Other Installation Requirements and Continuing Site Access Requirements

5.1 Connection to the Utility Distribution System

All solar electric generating systems receiving incentives under the California Solar Initiative (CSI) program must be connected to the local electric utility's distribution system. The interconnection, operation, and metering requirements for solar systems shall be in accordance with the local electric utility rules for customer generating facility interconnections. To connect a solar system to the utility distribution system, Host Customers, and/or System Owners will be required to execute certain documents such as, but not limited to, an Application to Interconnect a Generating Facility and a Generating Facility Interconnection Agreement or Net Energy Metering Agreement with the local electric utility.

Applicants, Host Customers, and System Owners are solely responsible to submit interconnection applications to the appropriate electric utility interconnection department as soon as the information to do so is available to prevent any delays in system parallel operation.

Incentive payments will not be made until the Program Administrator confirms valid interconnection.

5.1.1 How to Apply For Interconnection of CSI Projects

For more information on electric grid interconnections, please contact your local utility (investor-owned utilities are listed below). It is the sole responsibility of the CSI Program System Owner and Host Customer to seek and obtain approval to interconnect the solar electric system to a utility's electric distribution system. System Owners and Host Customers participating in the CSI Program should immediately contact the utility to seek guidance on how to apply for interconnection. Contact information is listed below.

Pacific Gas & Electric (PG&E)

Website: www.pge.com/gen
Email: gen@pge.com
Phone: (415) 972-5676 (PG&E Generation Interconnection Hotline)

San Diego Gas & Electric (SDG&E)

Website: www.sdge.com/business/self_generation.shtml

Contact information for photovoltaics and wind systems:

Net Metering Team
San Diego Gas & Electric
PO Box 129831, CP52F
San Diego, CA 92123-9749
Phone: (858) 636-5585
Email: netmetering@semprautilities.com

Ken Parks
San Diego Gas & Electric
PO Box 129831, CP52F
San Diego, CA 92123-9749
Phone: (858) 636-5581
Email: kparks@semprautilities.com

Southern California Edison (SCE)

NEM Program Administrator
Southern California Edison
2244 Walnut Grove Avenue
GO1 Quad 4D
Rosemead, California 91770
Phone: (626) 302-9680
E-mail solarnem@sce.com

6. Additional Information

6.1 Circumstances Requiring Additional Documentation

6.1.1 Owner or Self-Installed System

In situations where the System Owner installs the system, the Applicant must provide the following information during the first or second stage of the application process:

- An equipment purchase agreement as described above, or
- In cases where there is not a signed agreement to purchase equipment the purchaser may provide invoices or receipts showing that at least 10 percent of the system equipment purchase price (generating equipment and inverters) has been paid to the seller(s).[27]

6.1.2 Contractor-Installed System with Separate Seller and Installer

In situations where the owner is purchasing the system from one company and hiring a separate company (licensed contractor) for installation, the owner must obtain proof of his or her commitment to purchase and install the system in separate documents as follows:

- An equipment purchase agreement as described above, or
- In cases where there is not a signed purchase agreement the owner may provide invoices or receipts showing that at least 10 percent of the system equipment purchase price (generating equipment and inverters) has been paid to the seller(s), and
- An installation contract from the second company as described above.

27 An example of this situation is where the purchaser buys new equipment via the Internet or mail order.

7. Measurement and Evaluation Requirements

To be eligible for CSI incentives, all Applicants, Host Customers, and System Owners must agree to comply with the terms and requirements of the measurement and evaluation program. This includes providing access to the Program Administrators and/or third-parties contracted by the California Public Utilities Commission and/or Program Administrator access to the site and any available data and information collected on the system.

8. Definitions and Glossary

This section provides a list of acronyms used and definitions of key concepts in this Program handbook.

8.1 Acronyms

AB (as in AB 1407): Assembly Bill

AC: Alternating Current

AMI: Advanced Metering Infrastructure

BIPV: Building Integrated Photovoltaic

BTU: British Thermal Units

CCSE: California Center for Sustainable Energy

CEC: California Energy Commission

CEC-AC: California Energy Commission Alternating Current, refers to inverter efficiency rating

CPUC: California Public Utilities Commission

CSI: California Solar Initiative

CSLB: Contractors State License Board

DC: Direct Current

ERP: Emerging Renewables Program

EPBB: Expected Performance-Based Buydown

ESCO: Energy Service Company

IDR: Interval Data Recorder

IOU: Investor-Owned Utility

KW: Kilowatt

KWH: Kilowatt-hour

LIEE: Low Income Energy Efficiency

MASH: Multifamily Affordable Solar Housing

M&E: Measurement and Evaluation

M&V: Measurement and Verification

MW: Megawatt

NABCEP: North American Board of Certified Energy Practitioners

NRTL: Nationally Recognized Testing Laboratory

NSHP: New Solar Homes Partnership

PBI: Performance-Based Incentives

PDP: Performance Data Provider

PG&E: Pacific Gas and Electric Company

PIER: Public Interest Energy Research

PMRS: Performance Monitoring and Reporting Service

PTC: PVUSA Test Conditions

PV: Photovoltaic

PY: Program Year

RFP: Request for Proposal

SB (as in SB 1): Senate Bill

SCE: Southern California Edison Company

SDG&E: San Diego Gas & Electric Company

SFLI: Single Family Low Income

SGIP: Self Generation Incentive Program

SOF: Surface Orientation Factor

STC: Standard Test Conditions

UL (as in UL 1703): Underwriters Laboratories, Inc.

8.2 Definitions

AB 1407:
Assembly Bill 1407, codified as California Civil Code section 714, was signed by Governor Davis on September 3, 2003. Among other things, this legislation voids and makes unenforceable any existing covenant, restriction, or condition contained in any deed, contract, security instrument, or other instrument affecting real property, as specified, that prohibits or restricts the installation or use of a solar energy system, excepting provisions that impose reasonable restrictions on solar energy systems. This statute also mandates that whenever approval is required for the installation or use of a solar energy system, that such approval be processed in the same manner as approval of an architectural modification, and not be willfully avoided or delayed. Any Public Entity (see definition) may not receive funds from a state-sponsored grant or loan program, including the CSI, for solar energy if it fails to comply with these requirements. A Public Entity must certify that it is meeting these requirements when applying for these grants or loans. Please see California Civil Code section 714 for full statutory requirements and further detail.

Affidavit:
An affidavit is a written statement in writing, sworn to before a notary public or other approved officer. In the CSI Program, the Final Project Cost Breakdown and Affidavit includes the final Project cost breakdown worksheet, along with a signed affidavit substantiating the claimed eligible Project cost.

Alternating Current (AC):
Electric current that reverses direction, usually many times per second. Opposite of direct current (DC). Most electrical generators produce alternating current. Under the CSI Program, PV electric output calculations must always be made using the CEC-AC rating standards which include inverter DC to AC conversion losses.

Applicant:
The entity, either the Host Customer, System Owner, or third party designated by the Host Customer, that is responsible for the development and submission of the CSI application materials and the main point of communication between the CSI Program Administrator for a specific CSI Application.

Application Fee:
An Application Fee is required once the Reservation Request has been submitted for all Non-Residential projects greater than or equal to 10 kW. Where applicable, the Application Fee is a standardized amount based on system size criteria and is refundable, in general, when the Project is completed and the incentive is paid, anytime before the application receives a Confirmed Reservation, or after that time, so long as the project is withdrawn due to extenuating circumstances beyond the Host Customer's control. Application fees are also refunded anytime before the application receives a Conditional Reservation, or after that time, so long as the project is withdrawn due to extenuating circumstances beyond the Host Customer's control.

Azimuth:
Azimuth is the horizontal angular distance between the vertical plane containing a point in the sky and true south. All references to azimuth within the CSI Program, unless expressly stated otherwise, refer to true, not magnetic, azimuth. For calculating an EPBB incentive, all proposed PV systems with a true azimuth orientation between 180 degrees and 270 degrees, facing south, southwest and west, will be compared to a reference system with the same orientation as the proposed system.

Backup Generators:
Backup generators operate as short-term temporary replacement for electrical power during periods of utility power outages. In addition to emergency operation they ordinarily operate for testing and maintenance. Backup generators do not produce enough power to be sold or otherwise supplied to the grid or provide power to loads that are simultaneously serviced by a utility electric grid. Backup generators only service customer loads that are isolated from the grid either by design or by manual or automatic transfer switch.

British Thermal Units (BTU)
The amount of heat required to raise the temperature of 1 pound of water 1 degree Fahrenheit.

Building Integrated Photovoltaic (BIPV):
Building integrated PV systems are solar electric systems in which the PV panels constitute part of the building's roof or facade, replacing conventional building materials. For example, solar shingles may replace conventional asphalt shingles, providing roof protection while producing electricity.

Calendar Days:
All dates and schedules in the CSI are measured in calendar days, which include all days of the week.

California Center for Sustainable Energy (CCSE):
A Non-Profit 501(c)3 corporation that implements the CSI Program on behalf of SDG&E; formerly known as the San Diego Regional Energy Office.

California Energy Commission (CEC):
California's primary energy policy and planning agency. Created in 1974 and headquartered in Sacramento, the Commission has responsibility for activities that include forecasting future energy needs, promoting energy efficiency through appliance and building standards, and supporting renewable energy technologies. On August 21, 2006, the Governor signed Senate Bill (SB 1) which directs the CPUC and the CEC to implement the CSI Program consistent with specific requirements and budget limits set forth in the legislation.

California Public Utilities Commission (CPUC):
The CPUC regulates a number of industries including the electric utility industry that impact public well-being. Among other activities, the CPUC establishes service standards and safety rules and authorizes rate changes. The CPUC, in conjunction Senate Bill 1 (SB 1), has authorized the California Solar Initiative (CSI). In CPUC Decision (D.) 06-01-024, the California Public Utilities Commission (CPUC) established the CSI Program. In D.06-08-028, the CPUC established implementation details for the CSI Program.

California Solar Initiative (CSI):
The California Solar Initiative program pays incentives to solar photovoltaic (PV) projects in the three California IOU service territories. This Program Handbook is designed to describe the requirements for receiving funding under the CSI. The program was authorized by the California Public Utilities Commission (CPUC) and Senate Bill 1 (SB 1). Responsibility for administration of the CSI Program is shared by Pacific Gas and Electric Company, Southern California Edison Company, and the California Center for Sustainable Energy (CCSE, formerly known as San Diego Regional Energy Office) for SDG&E customers.

Capacity Factor:
The ratio of the electrical energy produced by the generating system during a specific period, to the electrical energy the generating system could have produced if it had operated at full capacity rating during the same period.

Capacity Rating:
The capacity rating is a load that a power generation unit, such as a photovoltaic system, is rated by the manufacturer to be able to meet or supply. The Program Administrator will verify system capacity rating to confirm the final incentive amount.

CEC-AC Rating:
The CSI Program Administrators will use the California Energy Commission's CEC-AC method to measure nominal output power of photovoltaic cells or modules to determine the system's rating in order to calculate the appropriate incentive level. The CEC-AC rating standards are based upon 1,000 Watt/m^2 solar irradiance, 20 degree Celsius ambient temperature, and 1 meter/second wind speed. The CEC-AC Watt rating is lower than the Standard Test Conditions (STC).

Commercial:
Commercial entities are defined as non-manufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores, and for-profit health, social, and educational institutions. For the purpose of CSI, commercial sectors include agricultural and industrial customers.

Contractor:
A person or business entity who contracts to erect buildings, or portions of buildings, or systems within buildings. Under the CSI Program, all contractors must be appropriately licensed California contractors in accordance with rules and regulations adopted by the State of California Contractors State Licensing Board.

Contractors State License Board (CSLB):
Installation contracts for photovoltaic systems installed under the CSI Program must comply with the Contractors State License Board (CSLB) requirements. Please refer to the CSLB website for more information on CSLB guidelines at: www.cslb.ca.gov.

CSI Program Forum:
The CSI Program Forum was established in CPUC D.06-08-028 to provide a public venue for interested parties to identify and discuss ongoing issues related to CSI administration and implementation. The forum will be used to provide input on any needed updates to this Program Handbook and future more substantive program modifications that may be considered. For more information on the CSI Program Forum, refer to Section 1.5.

Curtailable Rate Schedule:
Also referred to as an interruptible rate schedule, a curtailable rate schedule allows the transmission provider to interrupt all or part of a transmission service under specified terms due to constraints that reduce the capability of the transmission network to provide that service. Under the CSI Program, generation which serves any portion of a customer's load that is committed to curtailable rate schedules, programs or any other such state agency-sponsored demand-response programs is not eligible for incentives.

Demand-Response:
Demand response refers to the reduction of customer energy usage at times of peak usage. Demand response programs may include dynamic pricing/tariffs, price-responsive demand bidding, contractually obligated and voluntary curtailment, and direct load control/cycling. Under the CSI Program any generation serving a portion of customer load that is committed to demand-response programs or on curtailable rate schedules is not eligible for incentives.

Design Factor:
The Design Factor is a ratio comparing a proposed system's expected generation output with that of a baseline system. The Design Factor is used in calculating the EPBB incentive (it is multiplied by the system rating and the incentive rate to determine EPBB incentives). A Design Factor is also used by Program Administrators to allocate applications against their MW in step (Section 2.2.7).

Direct Current (DC):
Direct current (DC or "continuous current") is the continuous flow of electricity through a conductor such as a wire from high to low potential. In direct current, the electric charges flow always in the same direction, which distinguishes it from alternating current (AC). Under the CSI Program, photovoltaic electric output calculations must always be made using the CEC-AC rating standards which include inverter DC to AC conversion losses.

Electric Utility:
The Host Customer's local electric transmission and distribution service provider for their Site.

Electrical Distribution Grid:
A network of power stations transmission circuits, and substations conducting electricity. Under the CSI Program, eligible renewable energy systems must be permanently interconnected and

operating parallel to the electrical distribution grid of the utility serving the customer's electrical load.

Emerging Renewables Program (ERP):
The ERP is an Energy Commission program offering cash rebates on eligible grid-connected renewable energy electric-generating systems.

Energy Service Company (ESCO):
A business entity that designs, builds, develops, owns, operates or any combination thereof self-generation Projects for the sake of providing energy or energy services to a Host Customer.

Energy Service Provider (ESP):
An entity that provides electric power and ancillary services (including but not limited to aggregators, brokers, and marketers, but excluding utilities) to an end use customer. Also referred to as an Electric Service Provider.

Expected Performance Based Buydown (EPBB):
The EPBB incentive methodology pays an up-front incentive to participants installing systems less than 100 kW in size that is based on a system's expected future performance. EPBB incentives combine the performance benefits of PBI with the administrative simplicity of a one-time incentive paid at the time of project installation. The EPBB Incentive will be calculated by multiplying the incentive rate by the system rating by the design factor.

Firm Service Level:
Power supplies that are guaranteed to be delivered under terms defined by contract. For electric utility customers who are on an interruptible or curtailable rate, only generation that serves the portion of their electric load that is designated as firm service is eligible for CSI incentives. Under the CSI Program, Customers must agree to maintain the firm service level at or above capacity of the proposed generating system for the duration of the required applicable warranty period. Customers may submit a letter requesting an exemption to the firm service rule if they plan to terminate or reduce a portion of their available load.

Fraud:
A knowing misrepresentation of the truth or concealment of a material fact to induce another to act to his or her injury.

Government:
A Government entity is any federal, state, or local government agency. Federal government entities include the Air Force, Army, Navy, Marines, Postal Service, General Services Administration, and all other Federal agencies or departments. State government entities include the University of California, California State University, Department of Corrections, Department of General Services, the combination of the Department of Developmental Services and CalTrans, the combination of the California Youth Authority and the Department of Mental Health, and all other state agencies and departments. Local government entities include cities, counties, school districts, and water districts.

Host Customer:
An individual or entity that meets all of the following criteria: 1) has legal rights to occupy the

Site, 2) receives retail level electric service from PG&E, SCE, or SDG&E, 3) is the utility customer of record at the Site (GM CSI only) or owns the site, 4) property owner or persons/entity responsible for the building at the location where the generating equipment will be located (MASH only), 5) is connected to the electric grid, and 6) is the recipient of the net electricity generated from the solar equipment (GM CSI only).

Hybrid System:
A self-generation system that combines more than one type of distributed generation technology and is located behind a single Electric Utility service meter.

Incentive Adjustment Mechanism:
A mechanism for solar incentives to automatically decline each year based upon MW reserved over the 10 years of the CSI. The adjustment mechanism reduces the statewide incentive level when specified MW levels, or "triggers," of solar installations are achieved. See Section 3.1.

Interconnection Agreement:
A legal document authorizing the flow of electricity between the facilities of two electric systems. Under the CSI Program, eligible renewable energy systems must be permanently interconnected and operating in parallel to the electrical distribution grid of the utility serving the customer's electrical load. Portable systems are not eligible. Proof of interconnection and parallel operation is required prior to receiving an incentive payment.

Interruptible Rate Schedule:
The right of a utility to interrupt all or part of electric service due to system or generation constraints. May also be called a Curtailable Rate Schedule. Under the CSI Program, generation which serves any portion of customer load that is committed to such rate schedules or any other state agency-sponsored curtailable or demand-response program is not eligible for incentives.

Interval Data Recorder (IDR):
IDR is a metering device capable of recording minimum data required. Minimum data requirements include (a) hourly data required for the Direct Access settlement process; and (b) data required to bill the utility's distribution tariffs including 15-minute demand data--also referred to as Hourly Metering.

Inverter:
An electric conversion device that converts direct current (DC) electricity into alternating current (AC) electricity.

Inverter Efficiency:
The AC power output of the inverter divided by the DC power input.

Investor Owned Utility (IOU):
For purposes of the CSI, this refers to Pacific Gas & Electric Company, San Diego Gas & Electric Company, and Southern California Edison Company.

Kilowatt (kW):
A unit of electrical power equal to 1,000 watts, which constitutes the basic unit of electrical demand. The watt is a metric measurement of power (not energy) and is the rate (not the duration over which) electricity is used. 1,000 kW is equal to 1 megawatt (MW). Throughout this Program Handbook, the use of kW refers to the CEC-AC wattage ratings of kW alternating current inverter output.

Kilowatt Hour (kWh):
The use of 1,000 watts of electricity for one full hour. Unlike kW, kWh is a measure of energy, not power, and is the unit on which the price of electrical energy is based. Electricity rates are most commonly expressed in cents per kilowatt hour.

Lessor:
A person or entity who rents property to another under a lease. Under the CSI Program, in the case of a third-party owned system (or leased system, for example), the lessor is classified as the System Owner.

Load:
Either the device or appliance which consumes electric power, or the amount of electric power drawn at a specific time from an electrical system, or the total power drawn from the system. Peak load is the amount of power drawn at the time of highest demand.

Low Income:
Meets the definition of low income housing in Public Utility Code 2852 and has an occupancy permit for at least two years prior to applying for incentives through the MASH program.

Maximum Site Electric Load:
The peak (maximum) kW demand at the Site, regardless if served by the existing generator, the local utility or a combination of the two.

Measurement and Evaluation (M&E):
A process or protocol to evaluate the performance of an energy system. As a condition of receiving incentive payments under the CSI Program, System Owners and Host Customers agree to participate in Measurement and Evaluation (M&E) activities as required by the CPUC. M&E activities will be performed by the Program Administrator or the Program Administrator's independent third-party consultant and include but are not limited to, periodic telephone interviews, on-site visits, development of a M&E Monitoring Plan, access for installation of metering equipment, collection and transfer of data from installed system monitoring equipment, whether installed by Host Customer, System Owner, a third party, or the Program Administrator.

Measurement and Verification (M&V):
A process or protocol to confirm the actual energy savings realized from a project once the project is implemented and operating.

Megawatt (MW):
Unit of electrical power equal to one million watts; also equals 1,000 kW.

Meter:
A device used to measure and record the amount of electricity used or generated by a consumer. The CSI Program requires accurate solar production meters for all solar projects that receive incentives. Systems receiving an EPBB incentive require a meter accurate to within ± 5%, while systems receiving PBI payments require a more precise meter accurate to within ± 2%.

Metering System:
A metering system should include all distinct components necessary to measure the energy produced by a solar generating system. This must include equipment that allows the system to monitor and record 15-minute interval data either internally or externally through additional equipment such as a data logger. The system must include a 2% accurate meter either socket based or panel style allowing for a visual or remote display.

Modules:
Under the CSI Program, a module is the smallest complete environmentally protected assembly of interconnected photovoltaic cells. Modules are typically rated between 50 and 200 W.

Nationally Recognized Testing Laboratory (NRTL):
The Occupational Safety and Health Administration's (OSHA) Directorate of Science, Technology, and Medicine operates a program that certifies private sector organizations as NRTLs, which subsequently judges that specific equipment and materials ("products") meet consensus-based standards of safety for use in the U.S. workplace. Under the CSI Program, PV Modules must be certified to UL 1703 by a Nationally Recognized Testing Laboratory (NRTL). Inverters must be certified to UL 1741 by a NRTL.

Net Energy Metering Agreement:
An agreement with the local utility which allows customers to reduce their electric bill by exchanging surplus electricity generated by certain renewable energy systems such as the PV systems the CSI subsidizes. Under net metering, the electric meter runs backwards as the customer-generator feeds extra electricity back to the utility. The CSI Program permits net energy metering agreements.

New Construction:
New construction is defined as the construction of new buildings. Residential new construction systems are not eligible for the CSI Program, and should apply to the California Energy Commission's New Solar Homes Partnership Program. A residential building is considered "new" if the entire building structure is subject to current Title 24 building efficiency standards and does not yet have a Permit of Occupancy from the relevant Building Department.

New Solar Homes Partnership (NSHP):
A California Energy Commission program offered as of January 1, 2007 that works with home builders and the building industry to accelerate the growth of PV in residential new construction.

Non Profit:
A Non-Profit institution is an entity not conducted or maintained for the purpose of making a profit, and is registered as a 501(c)3 corporation. No part of the net earnings of such entity accrues or may lawfully accrue to the benefit of any private shareholder or individual.

North American Board of Certified Energy Practitioners (NABCEP):
A professional association developing a voluntary national certification program for solar practitioners. Although not required by the CSI Program, installation contractors are encouraged to become certified by the NABCEP.

Pacific Gas & Electric Company (PG&E):
An investor owned utility (IOU). The utility that provides natural gas and electricity to most of Northern California.

Parallel Operation:
The simultaneous operation of a self-generator with power delivered or received by the electrical utility while interconnected to the grid. Parallel Operation includes only those PV systems that are interconnected with the Electric Utility distribution system for more than 60 cycles.

Payee:
The person, or company, to whom the incentive check is made payable.

Performance Based Incentives (PBI):
The CSI Program will pay Performance Based Incentives (PBI) in monthly payments based on recorded kilowatt hours (kWh) of solar power produced over a five-year period. Solar projects receiving PBI incentives will be paid a flat per kWh payment monthly for PV system output that is serving on Site load. The monthly PBI incentive payment is calculated by multiplying the incentive rate by the measure kWh output.

Performance Data Provider:
Service provider that monitors and reports the energy production data from the solar system to the Program Administrator to serve as the basis for PBI payments.

Photovoltaic (PV):
A technology that uses a semiconductor to convert light directly into electricity.

Power Purchase Agreements:
An agreement for the sale of electricity from one party to another, where the electricity is generated and consumed on the Host Customer Site. Agreements that entail the export and sale of electricity from the Host Customer Site do not constitute on-site use of the generated electricity and therefore are ineligible for the CSI.

Program Administrator (PA):
For purposes of the CSI Program, PG&E, SCE & CCSE (which administers the program on behalf of SDG&E).

Program Year (PY):
January 1 through December 31.

Proof of Project Milestone Date:
The Proof of Project Milestone Date is the date when required information to demonstrate that a Project seeking CSI incentives is moving forward is due.

Project:
For purposes of the CSI, the "Project" is the installation and operation of the proposed eligible PV system, as described by the submitted Reservation Request documentation.

Public Entity:
Includes the United States, the state and any county, city, public corporation, or public district of the state, and any department, entity, agency, or authority of any thereof.[28]

Rebuild A Greener San Diego Photovoltaic Incentive Program:
San Diego area program authorized by the CPUC Resolution E-3860, created to provide incentives to homeowners rebuilding homes affected by the October 2003 wildfires. The Rebuild a Greener San Diego Photovoltaic Incentive Program accepted applications from April 1, 2004 through May 31, 2006.

Renewable:
Electricity supplied by energy sources that are naturally and continually replenished, such as wind, solar power, geothermal, small hydropower, and various forms of biomass.

Reservation Expiration Date:
The Reservation Expiration Date is the date up to when the project is active in the CSI Program.

Residential:
Residential entities are private household establishments that consume energy primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and clothes drying. The classification of an individual consumer's account, where the use is both residential and commercial, is based on principal use. A power purchase agreement on a residence is considered a residential application.

Retrofit:
A retrofit is a modification of an existing building or facility to include new systems or components.

San Diego Gas & Electric Company (SDG&E):
One of California's four investor-owned utilities (IOU's). SDG&E provides natural gas and electricity to San Diego County and southern Orange County in southern California. It is owned by Sempra Energy. The CSI Program is available to customers of PG&E, SCE and SDG&E.

Self Generation Incentive Program (SGIP):
The SGIP, created pursuant to California Assembly Bill 970, provided financial incentives for business and residential customers who install up to 5.0 MW of "clean" distributed generation equipment onsite. The current program runs through December 31, 2007. The SGIP was extended in modified form for certain technologies through AB 1685.

28 Source: CALIFORNIA CODES - PUBLIC CONTRACT CODE, SECTION 21611

Seller:
Any person or business entity that transfers property or property rights by sale in commerce. To participate in the CSI Program, companies who sell system equipment must be certified by the CEC or some approved third party.

Senate Bill 1 (SB 1):
Chapter 132, Statutes of 2006 (SB1, Murray) establishes the goals of installing 3,000 MW of solar generation capacity in the state of California, establishing a self-sufficient solar industry, and placing photovoltaic systems on 50 percent of new California homes within 13 years. The bill was signed into law on August 21, 2006, and it became effective on January 1, 2007. SB 1 requires the CPUC, in implementing the California Solar Initiative (CSI) to adopt performance-based subsidies (e.g. subsidies that pay based on the amount of electricity produced) by January 1, 2008 where 100% of incentives are based on performance for all PV systems 100 kW and larger, and 50% of incentives are based on performance for systems 30 kW and larger. Performance-based subsidies are encouraged, but not required, for smaller systems. Moreover, SB 1 authorizes the CPUC to award $101 million in subsidies for electric-displacing solar thermal systems and authorizes the CPUC to award $50 million for solar research and development. The bill requires municipal utilities to establish solar energy programs in support of the 3,000 MW goal and raises the net metering cap from 0.5 percent to 2.5 percent.

Site:
The Host Customer's premises, consisting of all the real property and apparatus employed in a single enterprise on an integral parcel of land undivided, excepting in the case of industrial, agricultural, oil field, resort enterprises, and public or quasi-public institutions divided by a dedicated street, highway or other public thoroughfare or railway. Automobile parking lots constituting a part of and adjacent to a single enterprise may be separated by an alley from the remainder of the premises served. Separate business enterprises or homes on single parcel of land undivided by a highway, public road, and thoroughfare or railroad would be considered for purposes of CSI as separate Sites. Each individual Site must be able to substantiate sufficient electrical load to support the proposed system size.

Solar Irradiance:
Radiant energy emitted by the sun, particularly electromagnetic energy. In the CSI Program the CEC-AC rating standards are based upon 1,000 Watt/m^2 solar irradiance, 20 degree Celsius ambient temperature, and 1 meter/second wind speed. The CEC-AC watt rating is lower than the Standard Test Conditions (STC), a watt rating used by manufacturers.

Southern California Edison Company (SCE):
An investor owned utility (IOU) that provides electricity in a 50,000-square mile service territory in Southern California.

Standard Test Conditions (STC):
A watt rating used by manufacturers of photovoltaic cells or modules. The CEC-AC watt rating used in the CSI is lower than the Standard Test Conditions.

Surface Orientation Factor (SOF):

The ratio of the annual incident solar radiation on a surface for a specific tilt and orientation (MJ/m2/year) divided by the annual incident solar radiation on a surface for a south-facing surface with optimal tilt (MJ/m2/year).

System Installer:
The System Installer is responsible for installing for the Host Customer the photovoltaic system that will be eligible to receive CSI Program incentives. A qualified solar system installer should be able to evaluate factors that will affect photovoltaic system performance, such as the orientation (tilt and direction) of the system, wire length and size, shading, module output mismatch, inverter efficiency, module cleanliness, and other factors.

System Owner:
The owner of the PV system at the time the incentive is paid. For example, in the case when a vendor sells a turnkey system to a Host Customer, the Host Customer is the System Owner. In the case of a leased system, the lessor is the System Owner.

System Size:
Generally, under the CSI, system size is defined as the capacity of a given photovoltaic system based upon CEC-AC rating standards. Under the CSI Program, the incentive is determined based on the expected production of electricity by the system, which may not exceed the actual energy consumed during the previous 12 months at the Site (see Section 2.2.5). However, for purposes of determining the capacity a given project contributes to a given step in the incentive schedule, system size is defined as the system size rating times a design factor (see Section 2.2.7).

Time of Use Rates:
Electricity prices that vary depending on the time periods in which the energy is consumed. In a time-of-use rate structure, higher prices are charged during utility peak-load times. Such rates can provide an incentive for consumers to curb power use during peak time.

UL Listed:
Tested and listed by the Underwriters Laboratories, Inc. In the CSI Program, PV modules must be certified to UL 1703 by a Nationally Recognized Testing Laboratory (NRTL). Inverters must be certified to UL 1741 by a NRTL.

Vendor:
A seller of property, goods, or services. According to the CSI Program, in cases when a vendor sells a PV system to a Host Customer, the Host Customer is the System Owner.

Warranty:
A promise, either written or implied, that the material and workmanship of a product are without defect or will meet a specified level of performance over a specified period of time. In the CSI Program, inverters and modules must each carry a 10 year warranty, and meters a one-year warranty. Meters that are integrated in the inverter must carry a 10-year warranty. The warranty may be provided in combination by the manufacturer and installer.

9. Additional Program Requirements

As a condition of participation in the CSI Program, the Host Customer and System Owner must acknowledge and agree to the following terms and conditions, which supplement and are in addition to the program requirements described throughout this Handbook and the Contract attached to the Reservation Request Form.

Eligibility: The CSI Program is funded by California investor-owned utility customers and administered by the Program Administrator for customers within its service territory, under the auspices of the California Public Utilities Commission (CPUC). Eligible participants in the CSI Program must be current electric distribution customers of Program Administrator at the facility ("Project Site") where the solar system (the "Project") will be installed.

Incentives: If the Project is installed as described on the Reservation Request Form and all Program and Contract terms and conditions are complied with, including timely submission of all documents described in the CSI Program Handbook, the Program Administrator will pay an incentive to the entity designated as the incentive recipient. The Program Administrator reserves the right to modify or cancel the incentive if the actual installation of the solar system differs from the proposed installation, if the solar energy system fails inspection, if the solar system is not installed by the date shown on the Reservation Confirmation and Incentive Claim Form, and/or if the documents submitted fail to meet the requirements of the CSI Program Handbook.

Authority to Install System: The Host Customer and System Owner represent that they have the authority to install the generating system at the Project Site, or have obtained the permission of the legal owner of the Project Site, to install the generating system. System Owner and Host Customer shall, at their own expense, obtain and maintain all licenses and permits needed to perform work on the Project.

CSI Program Database: The Host Customer and System Owner shall agree to allow all information provided as part of the reservation claim process to be entered into a statewide database that will permit tracking of application for this and other incentive programs. Access to this database will be limited to Program Administrators and the California Energy Commission.

Disclosure of Other Incentives: The Host Customer and System Owner understand that other program rebates, grants, forgiven loans, financial incentives, post-installation agreements, Renewable Energy Credits (aka RECs, Green Credits, etc.), and performance payments are "other incentives" and must be disclosed as soon as those agreements or payments are made.

Withdrawal: The Host Customer and System Owner agree that either of them may withdraw from the Project for any reason by providing written notice of such withdrawal to Program Administrator. In the event the Host Customer or System Owner so withdraws, this Agreement will be cancelled and the Host Customer alone will retain sole rights to the incentive reservation and corresponding incentive reservation number assigned to this Reservation Request Form. To preserve such incentive reservation and corresponding reservation number, Host Customer must submit a new Reservation Request Form at the same time written notification of withdrawal from the Project is provided to Program Administrator. Host Customer understands that if all available funds are reserved for other Projects, the Host Customer cannot increase the originally reserved incentive amount. Host Customer also understands that submitting a new

Reservation Request Form will not move or alter the Proof of Project Advancement Milestone Date provided by Program Administrator, if any. Host Customer further understands that if Host Customer fails to re-submit a Reservation Request Form at the time of Project withdrawal, this Application will be terminated in its entirety by Program Administrator and any previously reserved incentive funding will be released. In that instance, Host Customer must apply for a new incentive reservation should Host Customer still wish to participate in the Program.

No Endorsement by Program Administrator: Host Customer and System Owner understand that the Program Administrator's review of the project described herein (Project) and authorization for CSI funding shall not be construed as confirming or endorsing the qualifications of the Applicant or any person(s) involved with the Project, including but not limited to the Project installer(s), designer(s), or manufacturer(s); endorsing the Project design; or as warranting the economic value, safety, durability or reliability of the Project. The Host Customer is solely responsible for the Project, including selection of any designer(s), manufacturer(s), contractor(s), or installer(s). Host Customer and System Owner understand that they, and any third parties involved with the Project, are independent contractors and are not authorized to make any representations on behalf of the Program Administrator. Host Customer and System Owner shall not use Program Administrator's corporate name, trademark, trade name, logo, identity, or affiliation for any reason, without prior written consent of the Program Administrator.

Audit Rights: The Program Administrator reserves the right to verify project costs were incurred as indicated in the documents submitted, as set forth in detail in the CSI Program Handbook.

Dispute Resolution: The parties to this Contract shall attempt in good faith to resolve any dispute arising out of or relating to this Contract promptly by negotiations between a vice president of Program Administrator or his or her designated representative and an executive of similar authority from System Owner and/or Host Customer. Either party must give the other party or parties written notice of any dispute. Within thirty (30) calendar days after delivery of the notice, the executives shall meet at a mutually acceptable time and place, and shall attempt to resolve the dispute. If the matter has not been resolved within thirty (30) calendar days of the first meeting, any party may pursue other remedies, including mediation. All negotiations and any mediation conducted pursuant to this clause are confidential and shall be treated as compromise and settlement negotiations, to which Section 1152.5 of the California Evidence Code shall apply, and Section 1152.5 is incorporated herein by reference. Notwithstanding the foregoing provisions, a party may seek a preliminary injunction or other provisional judicial remedy if in its judgment such action is necessary to avoid irreparable damage or to preserve the status quo. Each party is required to continue to perform its obligations under this Contract pending final resolution of any dispute arising out of or relating to this Contract.

Assignment: System Owner and Host Customer consent to Program Administrator's right to assign of all of Program Administrator's rights, duties and obligations under this Contract to the CPUC and/or its designee. Any such assignment shall relieve Program Administrator of all rights, duties and obligations arising under this Contract. Neither System Owner nor Host Customer shall assign its rights or delegate its duties without the prior written consent of Program Administrator or its assignee, if any, except in connection with the sale or merger of a substantial portion of its assets. Any such assignment or delegation without the prior written consent of Program Administrator or its assignee, if any, shall be null and void. Consent to

assignment shall not be unreasonably withheld or delayed. System Owner and Host Customer must provide assurance of the success of a Project if assigned by providing any additional information requested by Program Administrator.

No Third Party Beneficiaries: This Contract is not intended to confer any rights or remedies upon any other persons other than the undersigned Parties hereto.

10. Appendix A: Description of Total Eligible Project Costs

The California Solar Initiative program collects information on solar system project costs solely for reporting purposes. The following costs may be included in total eligible project cost:

1. Solar equipment capital costs, including tracking systems and other ancillary equipment associated with the solar system.
2. Engineering and design costs for solar systems.
3. Construction and installation costs. For projects in which the generation equipment is part of a larger project, only the construction and installation costs directly associated with the installation of the energy generating equipment are eligible.
4. Engineering feasibility study costs
5. Interconnection costs, if applicable, including:
    a. Electric grid interconnection application fees
    b. Metering costs associated with interconnection
6. Building permitting costs
7. Warranty and/or maintenance contract costs associated with eligible project cost equipment
8. Sales tax and use tax
9. On-site system measurement, monitoring and data acquisition equipment.
10. Customers may claim certain mounting surface costs as eligible project costs. Costs may include mounting surfaces for the photovoltaic module/solar collector and/or the materials that provide the primary support for the modules. Only the percentage of mounting surface directly under the photovoltaic module/solar collector is eligible.
11. Cost of capital included in the system price by the vendor, contractor or subcontractor (the entity that sells the system) is eligible if paid by the System Owner.

12. Additional costs associated with Track 2 MASH solar projects where the expense is directly related to a factor that was influential in awarding an incentive rate above the Track 1 rate.

11. Appendix B: Metering Requirements

The following Appendix contains detailed information with respect to the minimum metering and monitoring requirements for participation in the CSI Program. These minimum requirements were developed to increase owner knowledge of system performance, foster adequate system maintenance, and thereby ensure ratepayer incentives result in expected levels of solar generation.

CSI Program participants are required to install the following metering related components based on the size of their system and type of program participation (i.e. EPBB or PBI), according to Table 12:

Table 12
Metering Summary[1]

Incentive Structure	System Size	Minimum Meter Accuracy	PMRS[2] Required	PDP Required	Cost Cap[3]
EPBB	< 30 kW	± 5%	Yes	No	1%
EPBB	30 kW and greater	± 5%	Yes	No	0.5%
PBI	All	± 2%	Yes	Yes	No Cost Cap

Notes:
1) All metering systems are paid for at the System Owner's expense including some form of communications, performance monitoring and reporting capability.
2) PMRS stands for Performance Monitoring and Reporting Service
3) PDP stands for Performance Data Provider
4) For systems receiving an EPBB incentive, the total cost of the metering, communication and PMRS for the first five years following final project approval shall be less than 1% of total PV system eligible project costs (exclusive of metering, communication and PRMS costs) for systems up to 30kW and less than 0.5% for larger systems. If the owner of a system receiving an EPBB incentive can demonstrate to the Program Administrator that the costs for these services exceed the caps, they may request an exemption from the communication and PMRS requirements. The System Owner requesting such an exemption must, at a minimum, install a meter with an accuracy of ± 5% of actual system output that meets all applicable parts of Section 11.1 and which includes functionality that allows the System Owner or Host Customer to observe the system performance locally. However, there are no exemptions allowed for systems paid under a PBI structure.

As with other required solar system components, all installed meters and Performance Monitoring and Reporting Services (PMRS) providers must be listed with the Energy Commission. Lists of qualifying meters and PMRS providers can be found on the California Energy Commission's website at www.consumerenergycenter.org/erprebate/equipment.html.

All Performance Data Providers (PDP) must be listed as approved with the PA they will be providing data to. The instructions for qualifying as a PDP as well as the lists of qualifying PDPs can be found on each PAs CSI website.

Apart from the requirements identified herein, the PAs are not liable for the performance or nonperformance of a PDP that may result in a delay of or incorrect amount of a PBI payment. The Program Handbook defines the criteria required for PMRS providers and PDPs to participate in the program only.

All System Owners are responsible for the choice and installation of the metering hardware as well as the selection of a PMRS provider and/or the PDP. The System Owner is also responsible for resolving any issues relative to PBI performance data. The System Owner may be invoiced if more than two inspections are required due to any non-performance of the metering system.

It is the System Owners' responsibility to pursue reimbursement for any non-compliance issues stemming from the PDP. Each PDP is responsible for the data management and transfer of the data to the PA only, unless otherwise specified in the System Owner-PDP contract.

Detailed information on these summarized requirements follows.

11.1 Minimum Meter Requirements

All systems must be installed with a meter or metering system so that the System Owner and Program Administrator can determine the amount of energy produced by the system and the System Owner may support proper system operation and maintenance. The meter must be listed with the Energy Commission and must meet the minimum meter requirements of this section.

The California Energy Commission's list of qualifying meters can be found at: www.consumerenergycenter.org/erprebate/equipment.html.

11.1.1 Meter Type

For all systems receiving PBI payments, the installed meter(s) must be a separate Interval Data Recording (IDR) meter(s), or a complete system that is functionally equivalent to an IDR meter recording data no less frequently than every 15 minutes. Installed meter(s) for systems receiving an EPBB incentive do not need to be separate IDR meters and may be internal to the inverter(s). Program Administrators may have additional meter functionality requirements for systems receiving PBI payments, as the Program Administrators will use these meters to process PBI payments and system compatibility may be required. For example, meters and service panels must meet all local building codes and utility codes. The meter serial number must be visible after installation. Each Program Administrator will maintain a publicly-available list of any additional functionality requirements. Please consult your Program Administrator to determine whether any additional requirements apply.

11.1.2 Meter Accuracy

All systems receiving an EPBB incentive must install a solar energy production meter accurate to within ± 5% of actual system output and systems receiving PBI payments must install a solar production meter accurate to within ± 2% of actual system output.

Non-PV electric displacing thermal system Btu meter(s) must be accurate to +/- 5%.

11.1.3 Meter Measurement

Electric meters must measure the gross energy generated (kWh) as well as instantaneous power (kW).

11.1.4 Meter Testing Standards

± 2% meters must be tested according to all applicable ANSI C-12 testing protocols. Testing protocols for ± 5% meters are being developed for the CSI Program and will be incorporated into future revisions of this Program Handbook.

11.1.5 Meter Certification

The accuracy rating of ±2% meters must be certified by an independent testing body (i.e., a NRTL such as UL or TUV).

Certification standards for ± 5% meters are being developed for the CSI Program and will be incorporated into future revisions of this Program Handbook. Until these standards have been developed, the accuracy rating of all ± 5% meters must be certified by the manufacturer of the ±5% meter or an independent testing body (i.e., a NRTL such as UL or TUV).

All test results or NRTL documentation supporting the certification must be maintained on file for inspection by the Commission or Energy Commission. The System Owner must provide a copy of the original meter testing certificate to the Program Administrator if requested.

11.1.6 Meter Communication / Data Transfer Protocols

As described in Table 12, for systems receiving an EPBB incentive whose costs fall below the cost caps and for all systems receiving PBI payments, protocols for the minimum required Solar Performance / Output Data must enable any PMRS and/or PDP provider to communicate with the meter to obtain the minimum required Solar Performance / Output Data from the meter. The data transfer protocol provided to the Program Administrator must satisfy servicing the Program Administrator requirements.

11.1.7 Meter Data Access

All meters must provide the PMRS and/or PDP provider with the ability to access and retrieve the minimum required Solar Performance / Output Data from the meter using the Meter Communication / Data Transfer Protocols. In the event that the system is not required to have a PMRS Provider as shown in the Table 12, the System Owner must have a means to retrieve the minimum required Solar Performance/Output Data from the meter.

11.1.8 Meter Display

All meters must provide a display showing the meter's measured net generated energy output and measured instantaneous power. This display must be easy to view and understand. This display must be physically located either on the meter, inverter, or on a remote device.

11.1.9 Meter Memory and Storage

All meters must have the ability to retain collected data in the event of a power outage. Meters that are reporting data remotely must have sufficient memory to retain 60 days of data if their standard reporting schedule is monthly and 7 days of data if their standard reporting schedule is daily. Meters that do not remotely report their data must retain 60 days of data. In all cases meters must be able to retain lifetime production.

11.1.10 Thermal Meters

For liquid solar heating and cooling systems, it is practical to use a commercial BTU meter[29]. The BTU meter specifications shall be as follows –

- Provides totalizing outputs in BTUs per period.
- Capable of remote communications.
- Monthly totalizing accuracy of ≤ 5%[30].
- Flow meter and temperature sensor accuracy is NIST traceable.

11.2 Minimum Communication Requirements

All systems must be installed with some form of communication capability that will provide meaningful feedback to System Owners and Program Administrators. In accordance with Table 16, the systems should have remote communicating capability whereby performance data can be collected, accessed remotely, and uploaded for processing by a PMRS and/or PDP. For systems receiving an EPBB incentive that are unable to meet the cost cap, the meter display must be accessible to the System Owner, and the Program Administrator must be provided means to retrieve data to collect performance data.

11.3 Minimum Performance Monitoring & Reporting Capability Requirements

In order to enable System Owners to properly maintain and evaluate the performance of their systems and to allow Program Administrators to monitor the performance of systems receiving CSI incentives, the System Owner must contract with a PMRS provider and/or PDP (PBI only) in order to monitor and report on the following minimum data points and all monitoring, data collection, data retention, and reporting must be performed as specified in the corresponding

[29] Hot air solar systems will need to be paid incentives based on the EPBB method described below. Metering the thermal output of solar hot air systems, within reasonable accuracy and cost, is difficult.

[30] At least one Btu meter supplier has provided information showing that 5% accuracy is achievable. See Appendix E for an example Btu meter accuracy calculation.

sub-sections below. For EPBB incentive recipients, a PMRS is defined as, at a minimum, a service that monitors and reports the energy production data from the solar system to the System Owner.

For PBI incentive recipients, a PDP is defined as, at a minimum, as a service provider that monitors and reports the energy production data from the solar system to the Program Administrator to serve as the basis for PBI payments. The data flow between the solar energy system and the Program Administrator must, at a minimum, meet the PDP requirements. (Appendix H – CSI PBI Data Transfer Rules). PBI incentive payments are calculated and paid based on the gross electricity produced or, in the case of Non-PV solar thermal displacing technologies (see Section 3.3.1), the net electricity equivalent displaced as reported by performance data transferred to the Program Administrator from the respective project PDP. See Table 16 for more information and exemptions.

The PMRS provider must be listed with the Energy Commission and must meet the minimum requirements of this section.

The California Energy Commission's list of qualifying PMRS providers can be found at http://www.gosolarcalifornia.ca.gov/equipment/monitors+rsp.html

All Performance Data Providers (PDP) must be listed as well as approved with the individual PA they will be providing data to. The instructions for qualifying as a PDP as well as the lists of qualifying PDPs can be found on each PAs CSI website.

11.3.1 Required Solar Performance / Output Data

The PMRS and PDP must monitor, record, and report on 15 minute average AC kW and gross energy (kWh) generated by the PV system.

11.3.2 Minimum Report Delivery Requirements

The PMRS and PDP must provide for the electronic delivery of reports. Performance data reports for the purposes of PBI payment must be delivered to the individual PA using the process described in Appendix H.

11.3.3 Time Granularity of Acquired Data

The PMRS and PDP must log all Required Solar Performance / Output Data points no less frequently than once every 15 minutes.

11.3.4 Frequency of Data Collection

The PMRS must remotely acquire and process all data points no less frequently than once per day.

11.3.5 Minimum Reporting Requirements

The PMRS must provide the following reports based on acquired, processed, and analyzed data:

- Data as collected and summarized by hour, day, month, and year.
- System alerts that indicate a non-functioning or poorly functioning system.

11.3.6 Frequency of Data Reporting

The PMRS must at all times provide System Owners with on-demand access to all reports required by Section 11.3.5. Time sensitive reports (i.e. System Alerts) shall be made available within 24 hours of the PMRS receiving the recorded data points which, when analyzed, indicated a problem with the system.

PDPs are required to report performance data monthly to each PA in order to satisfy the PBI payment processing as per their agreement with the System Owner.

11.3.7 Data Retention Policy

The PMRS must retain and provide the System Owner and Program Administrator with remote access to 15 minute average data for a minimum of five years from the date of production for systems receiving PBI payments and two years from the date of production for systems receiving an EPBB program incentive.

11.3.8 Performance Data Provider Requirements

As per D.08-01-030, the element of PMRS that entails the data flow between the solar energy system and the Program Administrator that serves as the basis for PBI must, as a minimum, meet the CSI PBI data transfer rules (Appendix H).

11.4 Eligibility of Performance Monitoring & Reporting Service Providers

In order to be eligible to provide Performance Monitoring and Reporting Services, providers must be registered and listed with the CEC. The list of eligible PMRS providers is located at http://www.gosolarcalifornia.ca.gov/equipment/monitors+rsp.html.

11.5 Eligible Recipients of Information

Subject to the stated Data Privacy restrictions appearing in Section 11.5.3, the PMRS provider must at a minimum provide each group listed below with access to data as defined.

11.5.1 System Owner

The PMRS shall at a minimum provide System Owners and/or Host Customers (if different) with access to all Required Solar Performance / Output Data.

11.5.2 Program Administrators

The PMRS shall at a minimum provide Program Administrators with all data listed in Section 11.3 for all systems.

11.5.3 Data Privacy

Protecting the privacy of System Owners and Host Customer is of the highest order. As such, data shall be collected, processed, and reported to the System Owner and the Program Administrator in accordance with this Appendix. The PMRS may provide data to third parties, including Installers and Host Customers (if different than the System Owners), provided the System Owner has consented in writing to the release of such performance data.

11.6 Advanced Metering Infrastructure (AMI) Coordination

To the extent AMI coordination is an important component of PBI or EBPP program administration, the Commission will re-evaluate the requirements of this section at that time.

11.7 Overall Cost Constraint

Recipients of CSI funding are not precluded or penalized from purchasing or installing a metering system and subsequent PMRS that exceeds the minimum requirements or any cost caps described in this Appendix. The selection of a PMRS provider is made at the recipient's choice and expense.

11.7.1 EPBB

For systems receiving an EPBB incentive, the total cost of the metering, communication and PMRS for the first five years following final project approval shall be less than 1% of total PV system eligible project costs (exclusive of metering, communication and PRMS costs) for systems up to 30kW and less than 0.5% for larger systems. If the owner of a system receiving an EPBB incentive can demonstrate to the Program Administrator that the costs for these services exceed the caps, they may request an exemption from the communication and PMRS requirements. The System Owners requesting such an exemption must, at a minimum, install a meter with an accuracy of ± 5% of actual system output that meets all applicable parts of Section 11.1 and which includes functionality that allows the System Owner or Host Customer to observe the system performance locally.

11.7.2 PBI

All recipients of CSI funding under the PBI structure, regardless of system size, are required to contract with a performance data provider for 5 years of service that meets all of the applicable minimum standards defined in Appendix H.

12. Appendix C: Supplemental Forms

12.1 Current Program Contract Terms

CONTRACT TERMS AS INCLUDED IN THE RESERVATION REQUEST FORM:

Agreement by Host Customer and System Owner:

The Host Customer and System Owner wish to install the solar energy system described on the Reservation Request Form and receive the benefits of the California Solar Initiative (CSI) Program. In consideration of Host Customer's and System Owner's participation in the CSI Program and the promises set forth below, Host Customer and System Owner agree to the following:

CSI Program Handbook Requirements: By execution of this document, System Owner and Host Customer each certifies that 1) they have received and read a copy of the CSI Handbook; 2) the Project meets all Program eligibility requirements; and 3) that the System Owner and Host Customer agree to abide by the rules and requirements set forth in the CSI Program Handbook. Such CSI Program Handbook requirements are incorporated herein by reference as though set forth in full in this contract.

Indemnification: To the greatest extent permitted by applicable law, Host Customer and System Owner agree to indemnify, defend, and hold harmless the Program Administrator, its affiliates, subsidiaries, current and future parent companies, officers, managers, directors, agents, and employees from all claims, demands, losses, damages, costs, expenses, and liability (legal, contractual, or otherwise), which arise from or are in any way connected with any:
(1) injury to or death of persons, including but not limited to employees of the Program Administrator, Host Customer, System Owner, or any third party; (2) injury to property or other interests of the Program Administrator, Host Customer, System Owner, or any third party; (3) violation of local, state, or federal common law, statute, or regulation, including but not limited to environmental laws or regulations; (4) strict liability imposed by any law or regulation; or (5) generation system performance shortfall; so long as such injury, violation, strict liability, or shortfall (as set forth in (1) - (5) above) arises from or is in any way connected with the Project, including Host Customer's, System Owner's, or any third party's performance or failure to perform with respect to the Project, however caused, regardless of any strict liability or negligence of the Program Administrator, their officers, managers, or employees, excepting only such loss, damage, or liability that is caused by the willful misconduct of Program Administrator, its officers, managers, or employees.

Limitation of Liability: Program Administrator shall not be liable to System Owner, Host Customer or to any of their respective contractors or subcontractors for any special, incidental, indirect or consequential damages whatsoever, including, without limitation, loss of profits or commitments, whether in contract, warranty, indemnity, tort (including negligence), strict liability or otherwise arising from Program Administrator's performance or nonperformance of its obligations under this Contract.

Term & Termination: The Term of this Contract shall begin on the date that the last Party signs it, and shall continue for ten years, unless terminated earlier pursuant to the operation of this Contract, or unless modified by order of the California Public Utilities Commission or by written agreement of the Parties.

The Contract may be terminated by Program Administrator in the event (a) System Owner or Host Customer fails to perform a material obligation under this Contract and System Owner or Host Customer fails to cure such default within 20 days of receipt of written notice from Program Administrator, or (b) any statement, representation or warranty made by System Owner or Host Customer in connection with the Program or this Contract is false, misleading or inaccurate on the date as of which it is made.

The termination of this Contract shall not operate to discharge any liability which has been incurred by either Party prior to the effective date of such termination.

Venue: This Contract shall be interpreted and enforced according to the laws of the State of California. Sole jurisdiction and venue shall be with the courts in _____ County, California.

Integration and Modification: This Contract and the CSI Program Handbook constitute the entire Contract and understanding between the Parties as to its subject matter. It supersedes all prior or contemporaneous contracts, commitments, representations, writings, and discussions between System Owner, Host Customer, and Program Administrator concerning the Project, whether oral or written, and has been induced by no representations, statements or contracts other than those expressed herein.

NO AMENDMENT, MODIFICATION OR CHANGE TO THIS CONTRACT SHALL BE BINDING OR EFFECTIVE UNLESS EXPRESSLY SET FORTH IN WRITING AND SIGNED BY PROGRAM ADMINISTRATOR'S REPRESENTATIVE AUTHORIZED TO SIGN THE CONTRACT.

The Host Customer and System Owner are committed to completing this Project, and by signing below, are stating their intent to contract with any individual(s) necessary for completion of the Project. The Host Customer is the reservation holder and reserves the right to submit new project specifications, including a new Applicant designation, upon withdrawal from the Project and cancellation of this Agreement. The undersigned declare under penalty of perjury under the laws of the State of California that 1) the information provided in the Reservation Request Form is true and correct, 2) the above-described generating system is new and intended to offset part or all of the Host Customer's electrical needs at the site of installation.

Host Customer	System Owner (if not Host Customer)
Signature: _____	Signature: _____
Name Printed: _____	Name Printed: _____
Title: _____	Title: _____
Date: _____	Date: _____

Program Adminstrator

Signature: _____

Name Printed: _____

Title: _____

Date: _____

Certification by Applicant: Where an APPLICANT has been separately identified on the Reservation Request Form, the Applicant must certify that the information provided on the Reservation Request Form is true, accurate, and complete. The Applicant is not a Party to the contract, but certifies under penalty of perjury that the information provided on the Reservation Request Form and the CSI Incentive Calculation Worksheet is true, accurate, and complete.

Applicant

Signature: _____

Name Printed: _____

Title: _____

Date: _____

13. Appendix D: California IOU SPC Tables (ref 2007 SPC Procedures Manual, Appendix C. January 31, 2007)

Table C1 – ELECTRICALLY OPERTED UNITARY AIR CONDITIONERS AND CONDENSING UNITS – MINIMUM EFFICIENCY REQUIREMENTS (TABLE 112-A)

Equipment Type	Size Category	Efficiency [a]	Test Procedure
Air Conditioners, Air Cooled	≥ 65,000 Btu/h and < 135,000 Btu/h	10.3 EER[b]	ARI 340/360
	≥ 135,000 Btu/h and < 240,000 Btu/h	9.7 EER[b]	ARI 340/360
	≥ 240,000 Btu/h and < 760,000 Btu/h	9.5 EER[b] and 9.7 IPLV[b]	
	≥ 760,000 Btu/h	9.2 EER[b] and 9.4 IPLV[b]	
Air Conditioners, Water and Evaporatively Cooled	> 240,000 Btu/h	11.0 EER[b] and 10.3 IPLV[b]	ARI 340/360
Condensing Units, Air Cooled	≥ 135,000 Btu/h	10.1 EER and 11.2 IPLV	ARI 365
Condensing Units, Water or Evaporatively Cooled	≥ 135,000 Btu/h	13.1 EER and 13.1 IPLV	
[a] IPLVs are only applicable to equipment with capacity modulation.			
[b] Deduct 0.2 from the required EERs and IPLVs for units with a heating section other than electric resistance heat.			

Table C2 – UNITARY AND APPLIED HEAT PUMPS, MINIMUM EFFICIENCY REQUIREMENTS (TABLE 112-B)

Equipment Type	Size Category	Subcategory or Rating Condition	Efficiency [a]	Test Procedure
Air Cooled (Cooling Mode)	≥ 65,000 Btu/h and < 135,000 Btu/h	Split System and Single Package	10.1 EER[b]	ARI 340/360
	≥ 135,000 Btu/h and <240,000 Btu/h	Split System and Single Package	9.3 EER[b]	ARI 340/360
	≥ 240,000 Btu/h	Split System and Single Package	9.0 EER[b] 9.2 IPLV[b]	
Air Cooled (Heating Mode)	≥ 65,000 Btu/h and < 135,000 Btu/h (Cooling Capacity)	47°F db/43°F wb Outdoor Air	3.2 COP	ARI 210/240
	≥ 135,000 Btu/h (Cooling Capacity)	47°F db/43°F wb Outdoor Air	3.1 COP	ARI 340/360
[a] IPLVs and Part load rating conditions are applicable only to equipment with capacity modulation.				
[b] Deduct 0.2 from the required EERs and IPLVs for units with a heating section other than electric resistance heat.				

Table C-4 – WATER CHILLING PACKAGES – MINIMUM EFFICIENCY REQUIREMENTS (TABLE 112-D)

Equipment Type	Size Category	Efficiency	Test Procedure
Air Cooled, With Condenser, Electrically Operated	< 150 Tons	2.80 COP 3.05 IPLV	ARI 550/590
	≥ 150 Tons		
Air Cooled, Without Condenser, Electrically Operated	All Capacities	3.10 COP 3.45 IPLV	
Water Cooled, Electrically Operated, Positive Displacement (Reciprocating)	All Capacities	4.20 COP 5.05 IPLV	ARI 550/590
Water Cooled, Electrically Operated, Positive Displacement (Rotary Screw and Scroll)	< 150 Tons	4.45 COP 5.20 IPLV	ARI 550/590
	≥ 150 Tons and < 300 Tons	4.90 COP 5.60 IPLV	
	≥ 300 Tons	5.50 COP 6.15 IPLV	
Water Cooled, Electrically Operated, Centrifugal	< 150 Tons	5.00 COP 5.25 IPLV	ARI 550/590
	≥ 150 Tons and < 300 Tons	5.55 COP 5.90 IPLV	
	≥ 300 Tons	6.10 COP 6.40 IPLV	
Air Cooled Absorption Single Effect	All Capacities	0.60 COP	ARI 560
Water Cooled Absorption Single Effect	All Capacities	0.70 COP	
Absorption Double Effect, Indirect-Fired	All Capacities	1.00 COP 1.05 IPLV	
Absorption Double Effect, Direct-Fired	All Capacities	1.00 COP 1.00 IPLV	
Water Cooled Gas Engine Driven Chiller	All Capacities	1.2 COP 2.0 IPLV	ANSI Z21.40.4

Table C-5 – PACKAGED TERMINAL AIR CONDITIONERS AND PACKAGED TERMINAL HEAT PUMPS – MINIMUM EFFICIENCY REQUIREMENTS (TABLE 112-E)

Equipment Type	Size Category (Input)	Subcategory or Rating Condition	Efficiency [a]	Test Procedure
PTAC (Cooling Mode) New Construction	All Capacities	95°F db Outdoor Air	12.5 - (0.213 x Cap/1000)* EER	ARI 310/380
PTAC (Cooling Mode) Replacements[b]	All Capacities	95°F db Outdoor Air	10.9 - (0.213 x Cap/1000)* EER	
PTHP (Cooling Mode) New Construction	All Capacities	95°F db Outdoor Air	12.3 - (0.213 x Cap/1000)* EER	
PTHP (Cooling Mode) Replacements[b]	All Capacities	95°F db Outdoor Air	10.8 - (0.213 x Cap/1000)* EER	
PTHP (Heating Mode) New Construction	All Capacities		3.2 - (0.026 x Cap/1000)* COP	
PTHP (Heating Mode) Replacements[b]	All Capacities		2.9 - (0.026 x Cap/1000)* COP	

[a] Cap means the rated cooling capacity of the product in Btu/h. If the unit's capacity is less than 7000 Btu/h, use 7000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

[b] Replacement units must be factory labeled as follows: "MANUFACTURED FOR REPLACEMENT APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS." Replacement efficiencies apply only to units with existing sleeves less than 16 inches high and less than 42 inches wide.

14. Appendix E – Commercial Btu Meter Accuracy Requirements

BTU meters measure energy flow from a hot source to a cold sink by measuring differential temperature and flow of the working fluid. Commercially available hydronic BTU meters can be found to have the following, National Institute of Standards and Technology (NIST) traceable, accuracy specifications[31]-

Differential temperature error (ºF) = ±0.15 ºF

Differential temperature error (%) = {(0.15 + 10) /10} . 1 = 1.5%

Flow error (GPM) = 0.4 GPM

Flow error (%) = 1.0%

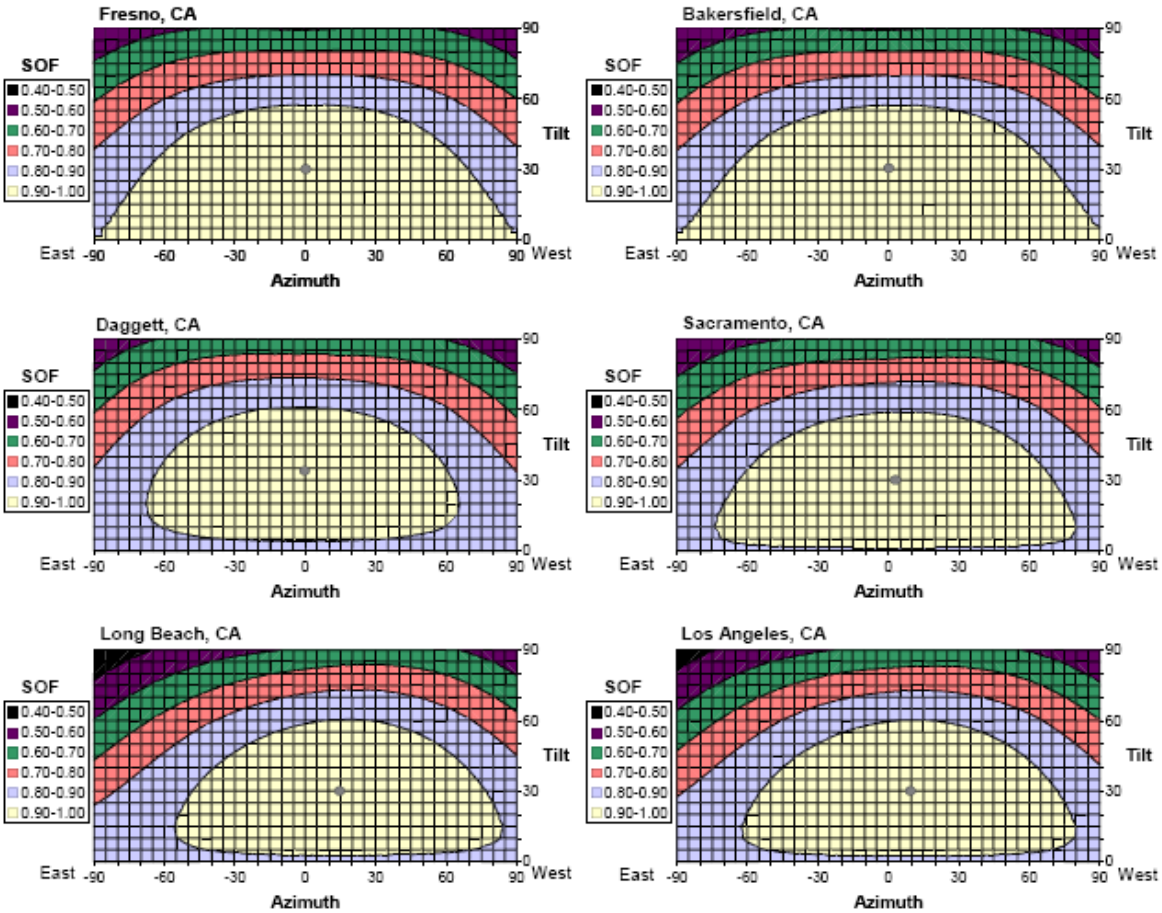
Computational error (%) = 0.05% (digitizing error)

The combined BTU accuracy is calculate using the square root sum of the squares (SRSS) method

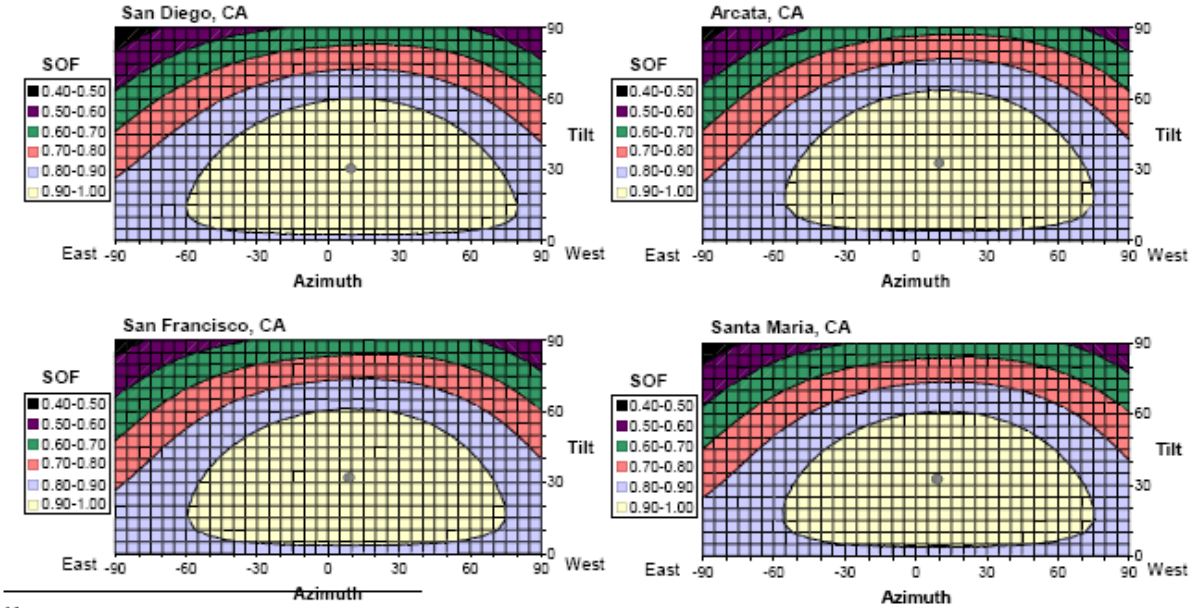
Average energy error (%) = {(1.5%)2 + (1.0%)2 + (0.05%)2}1/2 = 1.80%

[31]Compare and Contrast BTU Measurement Using Building Control Systems Versus ONICON BTU Meters., VOLUME 3.1, June 4, 2003

15. Appendix F – Surface Orientation Factors for California Locations[32] [33]



[32] Surface Orientation Factor plots provided courtesy of Craig Christensen, Principal Engineer, National Renewable Energy Laboratory.
[33] SOF plots for coastal California locations show the optimal azimuth to be somewhat west of south (presumably due to morning fog in those locations). It is important to remember that this is a temporal effect (foggy skies in the morning when the sun is to the east, clear skies in the afternoon when the sun is to the west).


San Diego, CA
Arcata, CA
San Francisco, CA
Santa Maria, CA
SOF
0.40-0.50
0.50-0.60
0.60-0.70
0.70-0.80
0.80-0.90
0.90-1.00
Tilt
Azimuth
East
West
-90
-60
-30
0
30
60
90

16. Appendix G – Example PTC Rating for Glazed Solar Collector

SRCC Collector Efficiency Equation

$\eta = A_o + B_o (P)/I + C_o (P)^2/I$

Where,

I = Solar Irradiance

(P) = (Ti – Ta)

Ti = Inlet Temperature

Ta = Ambient Temperature

Values for (P)

CATEGORY	APPLICATION
A -5°C (-9°F)	Certain types of solar assisted heat pumps. Swimming pool heating.
B 5°C (9°F)	Liquid collectors with certain types of solar assisted heat pumps. Swimming pool heating. Space heating - air systems.
C 20°C (36°F)	Service hot water systems. Space heating - air systems.
D 50°C (90°F)	Service hot water systems. Space heating - liquid systems. Air conditioning.
E 80°C (144°F)	Space heating - liquid systems. Air conditioning. Industrial process heat.

SOLAR COLLECTOR CERTIFICATION AND RATING

SRCC OG-100

CERTIFIED SOLAR COLLECTOR

SUPPLIER: Sensible Technologies, Inc.

MODEL:

COLLECTOR TYPE:

CERTIFICATION #:

COLLECTOR THERMAL PERFORMANCE RATING

COLLECTOR SPECIFICATIONS

COLLECTOR MATERIALS

PRESSURE DROP

TECHNICAL INFORMATION

REMARKS:

Six Solar Thermal Systems STS 410BC Glazed Flat-Plat collectors used to provide space heating displacing a < 65,000 Btu/hr central air source heat pump for space heating purposes.

$\eta = 0.512 = 0.702 + (-.5785)\ (90°F) / (317.40\ Btu/hr/ft^2) + (-0.0010)\ (90°F)^2 / (317.40\ Btu/hr/ft^2)$

$1{,}000\ W/m^2 = 317.40\ Btu/hr/ft^2$

$T_{PTC} = 11.677\ kW_t = 317.40\ Btu/hr/ft^2 \times 0.512 \times 6\ panels \times 40.86\ ft^2/panel / 3{,}412$

$CEC\text{-}AC = (T_{PTC} / P_R) - E_{AUX}$

Note that $E_{AUX} = 0$, because collector pump is solar driven.

$CEC\text{-}AC = 5.174\ kW = [11.677 / (7.7 / 3.412)] - 0)$

Table C-2
Standards for Single Phase Air-Cooled Air Conditioners with Cooling Capacity Less than 65,000 Btu per Hour and Single Phase Air-Source Heat Pumps with Cooling Capacity Less than 65,000 Btu per Hour, Not Subject to EPAct

Appliance	*Minimum Efficiency*			
	Effective January 1, 1995		*Effective January 23, 2006*	
	Minimum SEER	*Minimum HSPF*	*Minimum SEER*	*Minimum HSPF*
Split system air conditioners	10.0	—	13.0	—
Split system heat pumps	10.0	6.8	13.0	7.7
Single package air conditioners	9.7	—	13.0	—
Single package heat pumps	9.7	6.6	13.0	7.7
Space constrained air conditioners – split system	10.0	—	reserved	—
Space constrained heat pumps – split system	10.0	6.6	reserved	reserved
Space constrained air conditioners – single package	9.7	—	reserved	—
Space constrained heat pumps – single package	9.7	6.6	reserved	reserved

2006 Appliance Efficiency Regulations

17. Appendix H -- CSI PBI Data Transfer Rules

INSTRUCTIONS FOR QUALIFYING AS A PERFORMANCE DATA PROVIDER FOR THE CALIFORNIA SOLAR INITIATIVE PROGRAM

The purpose of this document is to outline the required process and qualifications to be approved as a Performance Data Provider (PDP) for the California Solar Initiative incentive program. This document also details the data reporting requirements (format, delivery method) and schedule for Performance Based Incentive data reports. The PDP requirement is mutually exclusive of the requirements identified in the CSI Handbook for the Performance Monitoring and Reporting Services. However, the PMRS provider may provide both PMRS and PDP services. All PDPs must meet the requirements established herein in addition to the requirements set forth in the CSI Program Handbook.

BACKGROUND AND REQUIREMENTS

Utility customers participating in the California Solar Initiative (CSI) program are required to install performance meters to determine the gross energy generated by their generation equipment. For customers enrolled under the CSI Performance Based Incentive (PBI) program, data from these meters will be used to calculate their monthly incentive payment. This data may be read and communicated to the Program Administrator (PA)[34] by a third-party Performance Data Provider (PDP). Customers may also elect to contract this service through their local utility company. This document provides information and instructions for non-utility providers wishing to qualify to provide PDP services.

The following are the PDP's primary responsibilities:

- Manage meter reading/data retrieval schedule
- Read and retrieve performance meter data
- Post data on appropriate Program Administrator server on a consistent and reliable schedule, per individual Program Administrator requirements.
- Validate performance data prior to providing to the PA using the approved validation rules outlined in this document
- Calculate monthly production of solar generating system for incentive payment
- Format data using EDI 867 or other approved protocol
- Troubleshoot and resolve communications issues
- Store data in accordance with program requirements

[34] PG&E and SCE are the Program Administrators for the California Solar Initiative program for customers in their respective service territories. The California Center for Sustainable Energy is the Program Administrator for the SDG&E service territory.

- Make historical performance data available to Program Administrators as requested
- Provide technical support to Program Administrators as well as customer support
- Communicate meter/device changes to the Program Administrator
- Provide disaster recovery and data backup services as requested by respective Program Administrator
- Manage data on PDP server
- Ensure confidentiality of customer information and performance data
- Possess technical expertise and capability
- Comply with all State and Federal laws

Bond Requirement

Consistent with the general market practices and requirements for installers participating in the CSI Program[35], the PAs are establishing a bond requirement for PDPs. The bond requirement will help to ensure that the PDPs adhere to all applicable provisions governing the CSI Program and the PDP Protocols. Should an end-use customer suffer damages as a result of the PDP's actions, the bond will provide a source of compensation.

As such, in addition to the written application to the PA seeking PDP status, the PDP must arrange for and maintain a bond in favor of the State of California in the amount of $25,000. Any claim by a customer against a PDP should follow the requirements of the specific bonding agency. If a successful claim is made against the bond and reduces the bond, then the PDP must submit a copy of the hearing decision within thirty (30) days of the decision and must also replenish the bond within sixty (60) days.

If the PDP secures a bond, a copy of the bond must be submitted with the written application. The bond must insure to the benefit of anyone who may be damaged as a result of the PDP's actions or inactions related to its services. If a customer files a complaint for damages against the PDP in civil court and makes a claim against the bond, the PDP must provide a copy of the complaint to the PA within thirty (30) calendar days of being served by registered or certified mail.

PDP TASK REQUIREMENTS

Data Format

[35]The CSI Program insurance requirement is twofold. All participating CSI Program contractors must be licensed by the Contractors State License Board, and one of the requirements to be licensed includes bonding. Installers are also required to have insurance/ bonding by utility interconnection departments.

Data must conform to the specific program requirements (for CSI requirements, see Section 11 of the CSI Handbook). The PBI Data Report must include 15-minute (as defined in Section 11.2.3 *Time Granularity of Acquired Data,* CSI Program Handbook) and the monthly cumulative production meter read. All PBI Data Reports must be formatted using the ANSI X.12 Electronic Data Interchange 867 protocol (EDI 867) unless otherwise specified. Sample EDI 867 Implementation Guides and Tutorials are available from each of the Program Administrators. The EDI 867 requirement will go into effect 6 months from the day the PDP Protocols are ratified. After this effective date, all PDP Providers must, at minimum, be in the process of EDI 867 data transfer tests with one or more Program Administrators.

Data Reporting, Security and Confidentiality

The PDP is responsible to ensure timely, consistent and accurate reporting of performance data. Data must be located in a secure facility, on a secure server and have firewall and equivalent protection. The PDP must protect the confidentiality of the customer information and performance data in accordance with all program guidelines (for CSI requirements, see Section 11 of the CSI Handbook). The data must be transferred to each PA using a secure FTP server and each PDP must contact the appropriate PA to obtain the secure FTP address. The PDP must follow all applicable state and federal privacy and data security laws. **The Program Administrator is not responsible for, and will not pay any customer incentives based on missing, estimated or invalid performance data.**

Data Validation

The PDP must validate all data prior to posting it to the PAs secure FTP server. The following data validation rules shall apply:

- Time Check of Meter Reading Device/System (all)
- Meter Identification Check (all)
- Time Check of Meter (all)
- Pulse Overflow Check (if applicable to metering system)
- Test Mode Check (if applicable to metering system)
- Sum Check

Descriptions of these validation rules are included in Attachment A.

Payment Validation, Data Audits, and Measurement and Evaluation Program

The Program Administrator may, at their discretion, perform validations on incentive payments prior to issuing payments to customers participating in this program. The validations will compare actual monthly incentive payments with expected payments based on design specifications and expected performance data submitted with the customers' approved incentive reservation documentation. If payments fall outside expected ranges for the month, the incentive payment will be withheld until the Program Administrator determines to its satisfaction the reason for the discrepancy.

The PDP will work with the customer to resolve any discrepancies identified by the Program Administrator, which may include testing and/or recalibrating the meter/devices if deemed necessary. The Program Administrators are not responsible for the costs associated with investigating and resolving any such discrepancies (i.e. testing, meter replacement hardware, installation labor). However, if the Program Administrator requests an investigation which finds that the metering system is accurate, the Program Administrator will pay all reasonable and necessary costs for the investigation.

The Program Administrator will also perform random audits of PDP data to ensure accuracy and compliance with the requirements outlined in this document, or as part of the CSI Measurement and Evaluation Program in accordance with Section 7 of the CSI handbook. Any PDP found to be in violation of any of these requirements will be subject to the penalties outlined later in this document. The Program Administrator, via the servicing local utility or its designated contractor may, at its discretion, inspect and test the performance meter or install separate metering in order to check meter accuracy, verify system performance, or confirm the veracity of monitoring and reporting services.

Any additional metering installed by or at the request of the Program Administrator will be paid for by the Program Administrator. However, in the event metering is installed during the course of an audit or investigation initiated by the Program Administrator where cheating or tampering is suspected and confirmed, the System Owner will be charged for these costs.

Data Retention

Raw and PDP validated interval and cumulative monthly data must be retained in accordance with appropriate program requirements (see Section 11. of the CSI Handbook for CSI program requirements). The PDP must be prepared to post historical interval data at the Program Administrator's request. The Program Administrator audit will include raw interval data which is to be maintained by the PDP for comparison with validated interval data transmitted to the Program Administrator. The PDP is also responsible for providing backup and disaster recovery services for 100% of the data (in accordance with the CSI data retention policy outlined in Section 11 of the CSI Program Handbook)

Technical and Customer Support

The PDP must provide a technical support number to the Program Administrator for use during normal business hours (8am to 5pm Pacific time, Monday through Friday, except holidays) to help resolve any data availability, format or corruption issues, communication problems, server access problems, or other technical issues. Within those normal business hours, the PDP must respond to Program Administrator requests within two business days with a status report and plan for correcting the issues. The PDP must also provide a customer support number to respond to customer inquiries within two business days from the initial customer contact. Program Administrators will have the discretion to set deadlines for the resolution of data transfer problems/issues.

PDP Performance Exemptions

The PDP is responsible for meeting the above noted program requirements and for consistently posting performance data in accordance with the Program Administrator's scheduling and data posting requirements. At its discretion, the Program Administrator may grant reasonable allowances for occasional issues or technical problems, as well as for large catastrophic events such as earthquakes.

In the event of such catastrophic event resulting in an energy production interruption; OR in the event of metering or communications equipment failure where the production data is irretrievable by the PDP at no fault of the customer AND it can be determined that the customer's generating equipment was still operating and interconnected with the utility grid, the Program Administrator may extend the PBI incentive payment period beyond the established timeframes otherwise specified by the incentive program Handbook. The PBI incentive payment extension period will be equivalent to the same period the system energy production data is unavailable. In situations where a communications issue results in missing data but the data is retrieved at a later date, the Program Administrator will accept the retrieved data and process payment for the recovered data with the next payment period and no extensions of the PBI incentive payment period will be necessary. To submit a Data Report relative to missing data, the PDP will resubmit the respective Data Report, thereby replacing the previous incomplete report with a complete month of data.

PDP Non-Performance

The Program Administrator will not issue incentive payments to customers based on estimated data from the PDP, nor will the Program Administrator estimate incentive payments under any circumstances. It is the PDP's responsibility to ensure timely (+ 5 days after the end of the specified reporting period) and accurate posting of validated performance data so customer incentive payments can be made.

The following conditions may result in penalties, suspension of activity, or revocation of PDP approval from the Program Administrator:

- Data not posted by specified date (10% of accounts serviced by PDP over a one month period are late).
- No data received for incentive period (per customer: no data posted 2 times consecutively OR 3 times in 6 months; and/or per PDP: no data posted for 10% of accounts serviced by PDP). Submittal of corrected data or previously missing monthly data must be received in cycle sequence.
- Data not validated in accordance with program requirements over the course of the CSI Program. (1 time)
- Estimated data posted instead of actual data. (1 time)
- Meter change information not reported within 30 days of the meter change. (3 times within 6 months)

- If an audit or investigation shows a discrepancy of -/+ 5% between the PDP reported data and Program Administrator check meter production data for one data report period. This discrepancy will trigger an audit schedule set by the Program Administrator for the PDP.

The PDP will be given reasonable opportunity to correct problems identified by the Program Administrator. The Program Administrator will work with the PDP to correct any such problems and avoid unnecessary delays in issuing incentive payments to customers, to the extent feasible. However, if the PDP fails to resolve any issues to the Program Administrator's satisfaction within 60 days which result in delays in incentive payments to customers, the following penalties may apply:

- If the problem is with a single or less than 20% of customer accounts served by the PDP, the Program Administrator will suspend PDP activity with just those affected customers. The affected customers will be notified that the PDP has been unable to resolve the specified issue within an acceptable timeframe and they will be given a 30 day grace period to select and engage with another PDP. The original PDP will be required to transfer all historical data to the newly selected PDP. No incentive payments will be made until the customer provides a contract or similar document proving they are engaged with another PDP, but the customer's incentive payment period will be extended beyond the established period allowed under the applicable program rules to compensate for this interruption in payments. If the customer fails to engage with and provide proof that they have contracted with a new PDP within the allowable grace period, the time between the grace period expiration date and the date the Program Administrator receive such proof will be deducted from the established payment period.
- If the problem is of a more serious nature as determined by the Program Administrator and continues over 60 days, or it affects more than 20% of customers served by the PDP, the PDP's approval will be revoked and all customers will be notified that they must select another PDP. As above, no incentive payments will be made until the customer selects another PDP, but the customers' incentive payment period will be extended beyond the established payment period. The PDP will be eligible to reapply after six months upon demonstrating that they have successfully resolved all problems to the Program Administrator's satisfaction.
- If an audit or investigation shows a discrepancy between the PDP reported data and data obtained by the Program Administrator for a specific customer that is greater than +/-5% and within the last three months of the PBI payment cycle, the PDP will be responsible for reimbursing the customer or Program Administrator for any such difference if it is determined that the difference is due to PDP error. The PDP will also be put on an audit schedule by the Program Administrator. If a third audit uncovers any discrepancy due to PDP error, the PDP's approval will be revoked and the customer given an

opportunity to select another PDP as described above. Audits may be conducted as stated in the CSI Handbook Section 3.4.3.

Unless the PDP's actions results in revocation, upon receipt of a notice from the PA with respect to the PDP's failure to provide the performance, the PDP must, as soon as reasonably practicable: (1) perform a root-cause analysis to identify the cause of such a failure; (2) provide the PA with a report detailing the cause of, and procedure for correcting such failure within 3 days of completion of such root-cause analysis; (3) implement such procedure after obtaining the respective PA approval of such procedure.

Criteria for a PDP Appeals Process

Should the PDP disagree with a PA decision regarding a penalty, the PDP has the right to appeal to the CSI Working Group for further consideration.

APPLICATION PROCESS

Application & Documentation

The PDP applicant completes the attached "Application for PDP Services" and provides all documentation in the attached checklist. Note that the PDP applicant must submit separate applications to and successfully complete the data transfer test described later in this document for each utility or Program Administrator.

In PG&E's service territory, the PDP applicant forwards the completed application and required documentation to:

Application & Documentation

The PDP applicant completes the attached "Application for PDP Services" and provides all documentation in the attached checklist. Note that the PDP applicant must submit separate applications to and successfully complete the data transfer test described later in this document for each utility or Program Administrator.

In PG&E's service territory, the PDP applicant forwards the completed application and required documentation to:

Mail to:	Program Manager, California Solar Initiative Pacific Gas & Electric Co. P.O. Box 770000 San Francisco, CA 94177-0001
For questions, contact:	Program Manager, California Solar Initiative Phone: (415) 973-3480 Fax: (415) 973-2510 Email: SolarPBI@pge.com Web: www.pge.com/csi

In SCE's service territory, the PDP applicant forwards the completed application and required documentation to:

Mail to:	Program Manager, California Solar Initiative Southern California Edison 6042A Irwindale Ave Irwindale, CA 91702
For questions, contact:	Program Manager, California Solar Initiative Phone: (866)-584-7436 Fax: (626) 633-3402 Email: pbi@sce.com Web: www.sce.com/rebatesandsavings/CaliforniaSolarInitiative/

In San Diego Gas & Electric's service territory, the PDP applicant forwards the completed application and required documentation to:

Mail to:	California Center for Sustainable Energy Attn: CSI Program Manager 8690 Balboa Avenue Suite 100 San Diego, CA 92123
For questions, contact:	California Solar Initiative Program Manager Phone: (858) 244-1177 Fax: (858) 244-1178

Email: csi@energycenter.org
Web: www.energycenter.org

The Program Administrator will review the submitted documentation, determine if the PDP applicant meets the program requirements and notify the PDP applicant via email. The Program Administrator will review the application and respond to the PDP applicant within 10 business days.

Data Transfer Test

Once the Program Administrator has reviewed and accepted the prospective PDP's application, they will contact the PDP applicant to schedule a data transfer test.

Program Administrators will provide PDP applicants with test data sets that the prospective PDP must download, validate, and format before submitting the Data Report back to the Program Administrator via secure FTP. The PDP applicant is also responsible for downloading the Program Administrator's EDI 867 Implementation Guide and Tutorials from its website. The PDP must contact their respective Program Administrator for specific instructions regarding this testing process.

The Program Administrator will check the test file to ensure it complies with the guidelines and notify the PDP applicant within 5 business days. Once the PDP is notified it has passed the test, the PDP is considered qualified. If the PDP applicant fails the test, they will be given 2 weeks to resolve any technical or data format issues. If a PDP applicant fails their Data Transfer Test with any individual CSI PA more than 3 times, they will not be eligible to add any additional customers in that PAs service territory until such PDP applicant passes the Data Transfer Test.

PDP Approval Initial Audit Period

Upon PA approval of the required PDP application documentation, and successful completion of the PDP data test procedures, the PDP will be qualified to provide PBI data to the Program Administrator for incentive payment. However, the PA's will audit the raw production data from each PDP's first data report for their first three customers for compliance with these PDP requirements. The PA will notify the PDP of noncompliance and will work to assist the PDP with resolving the issues.

Application to Provide PDP Services

This application and the attached documents are to be used by applicants for approval as a Performance Data Provider (PDP). Please refer to the checklist to ensure your application includes all applicable documentation.

Company Name: _____
Primary Contact: _____
Address: _____Address 2: _____
City: _____ State: _____ ZIP: _____
Phone: (_____) ____-_____ Fax: (_____) ____-_____
Email: _____

Technical Support Contact
Contact Name: _____
Phone: (_____) ____-_____ Email: _____

Customer Support Contact
Contact Name: _____
Phone: (_____) ____-_____ Email: _____

PDP APPLICATION CHECKLIST

Background
- o Company background (years in business, number of employees, general description, executive team, etc.)
- o Meter data reading and reporting experience and capabilities, capacity, technology overview, IT capabilities, etc.
- o Proof of sufficient bond or insurance coverage

Procedures
- o Meter reading and data retrieval procedures
- o Data communication (frequency, scalability, types, troubleshooting, etc.)
- o Process for retrieving missed reads
- o Data validation procedures
- o Technical Support (hours of operations, staff levels, procedures, etc.)
- o Customer Support (hours of operations, staff levels, etc.)

IT Systems and Processes
- o Data posting (data translation, formatting, firewall access, etc.)
- o Data retention plan
- o Backup and recovery plans
- o Hardware and software scalability plans
- o Data confidentiality and security procedures

By signing this document, the applicant agrees to comply with all program requirements including those described in the CSI Handbook (signature must be someone with legal

authority at the PDP). Additionally, applicant agrees to keep confidential all data received from the PA for testing. Information in this document will remain confidential.

Signature: _____ Date: _____
Printed Name: _____Title:_____

ATTACHMENT A

CSI Data Validation Rules

Check	Purpose
Time Check of Meter Reading Device/system	Check for time drift of meter reading device/system outside standard
Meter ID Check	Check for the following: • Meter ID reported correctly • Meter has not been changed out • Data is being reported for correct meter
Time Check of Meter	Check for time drift of meter clock outside standard
Pulse Overflow Check	Check for the following: • Improper scaling factor in meter • Improperly sized transformer • Hardware problem
Test Mode Check	Check that data collected when meter was in test mode represents test production rather than actual production
Sum Check	Check for the following in combination meter/recorder installations: • Crossed channels between meter & recorder • Pulse relay problems Check for the following in all installations: • Invalid PT & CT ratios • Invalid meter constants

ATTACHMENT B

REQUEST FOR TEMPORARY WAIVER OF EDI 867 REQUIREMENTS
UNDER INTERIM CSI PBI DATA TRANSFER RULES

Prior to formal approval of the PDP Guidelines, PDP applicants may request a temporary waiver of the EDI 867 data transfer protocol and interim 15-minute interval data reporting requirements. It is expected that the PDP applicant will use this time to develop the capability to meet these requirements.

PDP applicants who are unable to meet the full EDI 867 data transfer protocol requirement by the date specified in the final version of the PDP Guidebook will have their PDP qualification revoked.

PDP applicants requesting a temporary waiver of the EDI 867 data transfer protocol and/or interim 15-minute interval data reporting requirements must use the attached spreadsheet template. Interim CSI PBI Data Transfer Rules are also attached.

_____ hereby requests a temporary waiver from the following requirements:

- ❑ EDI 867
- ❑ 15-Minute Interval Data Reporting

We understand that this request is only for a temporary waiver and we agree to comply with all program requirements, including the 15-minute interval data and EDI 867 data transfer protocol requirements, the date to be specified in a final version of the PDP Guidebook or sooner.

PDP NAME: _____

CONTACT PERSON: _____

AUTHORIZED SIGNATURE: _____DATE: _____

Implementation Guide - Transaction Set 867 - Version 006 (CSI Specification)
28th April 2008
ST•867•000000984ª The ST is the start of the 867 Transaction Set with a control number of 000000984

BPT•00•2007-04-21-09.01.08.795475•20000421•C1••••1948•1ª The BPT marks the Beginning Segment for Product Transfer and Resale where 00 is an Original data transmitted, C1 Indicates interval data value and 1 indicates cycle shift number (1 – 1st to 1st of next month, 2 – 16th to 16th of next month)
N1•55••1•006908818••41ª Identifies the Performance Data Provider (PDP) as a uniquely assigned number that is provided by SCE
REF•10•SCE-CSI-36949ª Identifies the CSI Project ID
REF•BT•23ª Indicates Cycle number (Report number for SCCE)
REF•59•2007-04-21-09.01.08.795434ª Identifies the prior unique transaction BPT02 number **2007-04-21-09.01.08.795434** to be corrected. Only used when BPT01=CO
PTD•PM•••OZ•ELª Identifies the type of product transfer to be physical meter information, and the product reference Identification indicates Electric Service
DTM•150••••DT•200801010000ª January 01, 2008 is the Service Period Start Date. All dates are expressed in Greenwich Mean Time (GMT).
DTM•151••••DT•200802010000ª February 01, 2008 is the Service Period End Date. All dates are expressed in Greenwich Mean Time (GMT).
REF•JH•Aª Indicates Energy is generated by the end use Customer (Addition)
REF•6W•1ª Indicates channel ID (1 for SCE)
REF•MG•O717K-001388ª The Meter Number is O717K-001388
REF•MT•KH015ª The Meter Data Type is Monthly Kilowatt Hour and 15 indicates 15 minutes interval data
QTY•32•24709ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010015ª January 01, 2008 12:15 am is the Interval end time Date.
QTY•32•2345ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010030ª January 01, 2008 12:30 am is the Interval end time Date.
QTY•32•3734ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010045ª January 01, 2008 12:45 am is the Interval end time Date.
QTY•32•1232ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010100ª January 01, 2008 01:00 am is the

Interval end time Date.
QTY•32•1535ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010115ª January 01, 2008 01:15 am is the
Interval end time Date.
QTY•32•1535ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010130ª January 01, 2008 01:30 am is the
Interval end time Date.
QTY•32•1535ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010145ª January 01, 2008 01:45 am is the
Interval end time Date.
QTY•32•1535ª The KWH data for each 15 minutes interval
DTM•151••••DT•200801010200ª January 01, 2008 02:00 am is the
Interval end time Date.
QTY•32•1235ª The KWH data for each 15 minutes interval
PDF Created with deskPDF PDF Writer - Trial :: http://www.docudesk.com

DTM•151••••DT•200801010215ª January 01, 2008 02:15 am is the
Interval end time Date.
••
••
••
••
QTY•32•1235ª The KWH data for each 15 minutes interval
DTM•151••••DT•200802010000ª February 01, 2008 is the Interval end
time Date.
****
SE•209•000000984ª Total Number of Segments is 209, Control
Number is 000000984
PDF Created

867 Product Transfer and Resale Report

Functional Group ID=PT

Introduction:

This Draft Standard for Trial Use contains the format and establishes the data contents of the Product Transfer and
Resale Report Transaction Set (867) for use within the context of an Electronic Data Interchange (EDI) environment. The transaction set can be used to: (1) report information about product that has been transferred from one location to another; (2) report sales of product from one or more locations to an end customer; or (3) report sales of a product from one or more locations to an end customer, and demand beyond actual sales (lost orders). Report may be issued by either buyer or seller.

Heading:

Pos. Seg. Req. Loop Notes and
No. ID Name Des. Max.Use Repeat Comments
Must Use 010 ST Transaction Set Header M 1
Must Use 020 BPT Beginning Segment for Product Transfer and
Resale
M 1
LOOP ID - N1 5
Must Use 080 N1 Name O 1
Must Use 120 REF Reference Identification O 12

Detail:

Pos. Seg. Req. Loop Notes and
No. ID Name Des. Max.Use Repeat Comments
LOOP ID - PTD >1
Must Use 010 PTD Product Transfer and Resale Detail M 1
Must Use 020 DTM Date/Time Reference O 10
Must Use 030 REF Reference Identification O 20
LOOP ID - QTY >1
Must Use 110 QTY Quantity O 1
210 DTM Date/Time Reference O 10

Summary:

Pos. Seg. Req. Loop Notes and
No. ID Name Des. Max.Use Repeat Comments
Must Use 030 SE Transaction Set Trailer M 1

Segment: ST Transaction Set Header

Position: 010
Loop:
Level: Heading:
Usage: Mandatory
Max Use: 1
Purpose: To indicate the start of a transaction set and to assign a control number
Syntax Notes:
Semantic Notes: 1 The transaction set identifier (ST01) used by the translation routines of the interchange partners to select the appropriate transaction set definition (e.g., 810 selects the Invoice Transaction Set).
Comments:
Data Element Summary
Ref. Data

Des. Element Name Attributes
ST01 143 Transaction Set Identifier Code M ID 3/3
Code uniquely identifying a Transaction Set
867 Product Transfer and Resale Report
ST02 329 Transaction Set Control Number M AN 4/9
Identifying control number that must be unique within the transaction set
functional group assigned by the originator for a transaction set

Segment: BPT Beginning Segment for Product Transfer and Resale
Position: 020
Loop:
Level: Heading:
Usage: Mandatory
Max Use: 1
Purpose: To indicate the beginning of the Product Transfer and Resale Report Transaction Set
and transmit identifying data
Syntax Notes:
Semantic Notes: 1 BPT02 identifies the transfer/resale number.
2 BPT03 identifies the transfer/resale date.
3 BPT08 identifies the transfer/resale time.
4 BPT09 is used when it is necessary to reference a Previous Report Number.
Comments: BPT01 = 07 is used if previously furnished information is being provided in a new file.
In this case, or if data points have been corrected, only the corrected meters' data need
to be provided, even if multiple meters were originally sent If a previously transmitted
file is simply being reposted for download from a server, the original designation of
BPT01 = 00 or CO does not need to be changed.
Data Element Summary
Ref. Data
Des. Element Name Attributes
Must Use **BPT01 353 Transaction Set Purpose Code M ID 2/2**
Code identifying purpose of transaction set
00 Original
Conveys original readings for the account being reported.
52 Response to Historical Inquiry
Response to a request for historical meter reading.
CO Corrected
Indicates that the readings previously reported for the
account are being corrected.
Must Use **BPT02 127 Reference Identification O AN 1/30**
Reference information as defined for a particular Transaction Set or as
specified by the Reference Identification Qualifier
A unique transaction identification number, assigned by the originator.
Must Use **BPT03 373 Date M DT 8/8**
Date when the PDP record is created by the application (CCYYMMDD)
Must Use **BPT04 755 Report Type Code O ID 2/2**
Code indicating the title or contents of a document, report or supporting item
C1 Cost Data Summary
Interval values
Must Use **BPT08 337 Time O TM 4/8**
Time when the PDP record is created by the application (HHMM)

Must Use **BPT09 127 Reference Identification O AN 1/30**
Reference information as defined for a particular Transaction Set or as specified by the Reference Identification Qualifier.
Will represent Cycle shift number (1 or 2)

Segment: N1 Name

Position: 080
Loop: N1
Level: Heading:
Usage: Optional (Must Use)
Max Use: 1
Purpose: To identify a party by type of organization, name, and code
Syntax Notes: 1 At least one of N102 or N103 is required.
2 If either N103 or N104 is present, then the other is required.
Semantic Notes:
Comments: 1 This segment, used alone, provides the most efficient method of providing organizational identification. To obtain this efficiency the "ID Code" (N104) must provide a key to the table maintained by the transaction processing party.
2 Three N1 segments will be used in California, with N101 = 55, 8S, and SJ, unless the values of N104 corresponding to N101 = 8S or SJ would duplicate the value corresponding to N101 = 55. The end-use customer's account numbers for the meter data management agent (N101 = 55), utility (N101 = 8S), and the energy service provider (N101 = SJ) must be placed in REF segments following these N1 segments, with REF01 = 10, 12, and 11, respectively.
3 When N101 = 55 (Meter Data Management Agent), N106 = 41 (Submitter). When N101 = 8S (Utility) and SJ (Energy Service Provider), N106 = 40 (Receiver).
Data Element Summary
Ref. Data
Des. Element Name Attributes
Must Use **N101 98 Entity Identifier Code M ID 2/3**
Code identifying an organizational entity, a physical location, property or an individual
>> 55 Used to identify the party that manages meter data on behalf of another. Often referred to as the Performance Data Provider (PDP).
Must Use **N103 66 Identification Code Qualifier X ID 1/2**
Code designating the system/method of code structure used for Identification Code (67)
1 SCE Assigned PDP identification code
Must Use **N104 67 Identification Code X AN 2/80**
PDP identification number assigned by SCE
Must Use **N106 98 Entity Identification Code O ID 2/3**
Code identifying an organizational entity, a physical location, property or an individual
41 Submitter
Entity transmitting transaction set

Segment: REF Reference Identification

Position: 120
Loop: N1

Level: Heading:
Usage: Optional (Must Use)
Max Use: 12
Purpose: To specify identifying information
Syntax Notes: 1 At least one of REF02 or REF03 is required.
Semantic Notes:
Comments: See Comments related to the N1 segment.
Data Element Summary
Ref. Data
Des. Element Name Attributes
Must Use **REF01 128 Reference Identification Qualifier M ID 2/3**
Code qualifying the Reference Identification
10 Account manager Code (This will be used as CSI
Project ID)
BT Reference Identifier
Indicates Cycle number/Report Number
59 Prior Incorrect Batch Number
Only used when BPT01= CO
REF02 127 Reference Identification X AN 1/30
Reference information as defined for a particular Transaction Set or as
specified by the Reference Identification Qualifier
Reference the value of BPT02 for file already transmitted but intended for
correction

Segment: PTD Product Transfer and Resale Detail

Position: 010
Loop: PTD
Level: Detail:
Usage: Mandatory
Max Use: 1
Purpose: To indicate the start of detail information relating to the transfer/resale of a product and provide identifying data
Syntax Notes: 1 If either PTD04 or PTD05 is present, then the other is required.
Semantic Notes:
Comments: 1 The PTD loop conveys consumption information for one meter or register, and for one commodity for metered service, over a number of metering intervals. Accounts which have multiple meters or registers require multiple PTD loops; the total consumption from multiple meters may be summarized in another PTD loop, qualified by SU, at the option of the Meter Data Management Agent. Accounts which have multiple services (e.g., both electric and gas) or multiple metered commodities require separate PTD loops for each service or commodity. For unmetered service, multiple commodities may be reported in a single PTD loop.
Data Element Summary
Ref. Data
Des. Element Name Attributes
Must Use **PTD01 521 Product Transfer Type Code M ID 2/2**
Code identifying the type of product transfer
PM Physical Meter Information, including data from a
meter, totalizer, or recorder.
Must Use **PTD04 128 Reference Identification Qualifier X ID 2/3**

Code qualifying the Reference Identification provided in PTD05.
OZ Product Number
Must Use **PTD05 127 Reference Identification X AN 1/30**
Reference information as defined for a particular Transaction Set or as specified by the Reference Information Qualifier.
EL Electric Service

Segment: DTM Date/Time Reference

Position: 020
Loop: PTD
Level: Detail:
Usage: Optional
Max Use: 10
Purpose: To specify pertinent dates and times
Syntax Notes: 1 At least one of DTM02 DTM03 or DTM06 is required.
2 If either DTM05 or DTM06 is present, then the other is required.
Semantic Notes:
Comments:
Notes:
Data Element Summary
Ref. Data
Des. Element Name Attributes
Must Use **DTM01 374 Date/Time Qualifier M ID 3/3**
Code specifying type of date or time, or both date and time
150 Service Period Start
151 Service Period End
MRR Meter Reading
Date of special meter read
Must Use **DTM05 1250 Date Time Period Format Qualifier X ID 2/3**
Code indicating the date format, time format, or date and time format
DT Date and Time Expressed in Format
CCYYMMDDHHMM
Must Use **DTM06 1251 Date Time Period X AN 1/35**
Expression of a date, a time, or range of dates, times or dates and times

Segment: REF Reference Identification

Position: 030
Loop: PTD
Level: Detail:
Usage: Optional
Max Use: 20
Purpose: To specify identifying information
Syntax Notes: 1 At least one of REF02 or REF03 is required.
Comments: 1 A segment containing REF01 = LU is required if PTD01 = PM
2 Segment containing REF01 = MG and MT is required unless the service delivery point is unmetered, in which case a segment containing REF01 = SC is required.
3 For interval data, the metering interval corresponding to REF01 = MT must be the same for all PTD loops.
Data Element Summary

Ref. Data
Des. Element Name Attributes
Must Use **REF01 128 Reference Identification Qualifier M ID 2/3**
Code qualifying the Reference Identification
6W Sequence Number
Identifies channel number (identifier) when there is
more than one channel on a meter measuring the same
quantity (e.g., two kWh channels).
>> JH Tag
Meter Role. Valid values for REF02 are:
A = Additive (this consumption contributes to the total
for the account),
I = Ignore (this consumption does not contribute to the
total for the account - do nothing),
S = Subtractive (this consumption must be subtracted
from the total for the account).
MG Meter Number
MT Meter Data Type (see examples in REF02)
REF02 127 Reference Identification X AN 1/30
Reference information as defined for a particular Transaction Set or as
specified by the Reference Identification Qualifier
When REF01 is MT, the meter type is expressed as a 5-character field that
identifies the type of consumption measured by this meter and the interval
between measurements. The first two characters are the type of consumption,
expressed in the units of measure from Data Element 355, as follows:
1N Count
Indicates meter pulses
70 Volt
BY British Thermal Unit (BTU)
CF Cubic Feet
EA Each
HH Hundred Cubic Feet
K1 Kilowatt Demand
Represents potential power load measured at
predetermined intervals
K2 Kilovolt Amperes Reactive Demand
Reactive power that must be supplied for specific types
of customer's equipment; billable when kilowatt
demand usage meets or exceeds a defined parameter
K3 Kilovolt Amperes Reactive Hour
Represents actual electricity equivalent to kilowatt
hours; billable when usage meets or exceeds defined
parameters
PDF Created with deskPDF PDF Writer - Trial :: http://www.docudesk.com
CA 867 (006) 99 April. 28, 2008
K4 Kilovolt Amperes
Measure of electrical power
KH Kilowatt Hour
TD Therms
TZ Thousand Cubic Feet

The 3-character metering interval is expressed as one of the following values:
Nnn = number of minutes from 001 to 999, DAY = daily, or MON = monthly.
For example, KHMON represents KWH per month, K1MON represents maxmum kW demand during the month, and KH015 represents kWh per 15 minutes interval.
When REF01 is LU, REF02 is not used.

Segment: QTY Quantity

Position: 110
Loop: QTY
Level: Detail:
Usage: Optional (Must Use)
Max Use: 1
Purpose: To specify quantity information
Syntax Notes: 1 At least one of QTY02 or QTY04 is required.
2 Only one of QTY02 or QTY04 may be present.
Semantic Notes: 1 QTY04 is used when the quantity is non-numeric.
Comments: 1 Each QTY/MEA/DTM loop conveys consumption information about one metering interval. QTY02 reports billable quantities, including demands, while MEA05 and MEA06 report meter readings that are used to determine the billable quantities.
2 If MEA03 contains a multiplier, QTY02 equals the product of the multiplier and the meter readings reported in MEA05 and MEA06. Until it is resolved by UIG whether a MEA segment containing a multiplier (MEA02 = MU) can also contain meter reads, it is recommended that the multiplier should be placed in a separate MEA segment within the QTY loop.
3 QTY03 is not required if the unit of measurement has been defined by the REF02 value corresponding to REF01 = MT.
Data Element Summary
Ref. Data
Des. Element Name Attributes
Must Use **QTY01 673 Quantity Qualifier M ID 2/2**
32 Quantity Sold
Normal data transmission (not estimated, adjusted, or anomalous)
Must Use **QTY02 380 Quantity X R 1/15**
The value specifying interval read in KH

Segment: DTM Date/Time Reference

Position: 210
Loop: QTY
Level: Detail:
Usage: Optional
Max Use: 10
Purpose: To specify pertinent dates and times
Syntax Notes: 1 At least one of DTM02 DTM03 or DTM06 is required.
2 If either DTM05 or DTM06 is present, then the other is required.
Semantic Notes:
Comments:
Notes: This segment may be sent to establish the date and time of the reported values, if the applicable data are available and desired by the recipient. For interval data, the ending

time of each interval should be reported if the sender or receiver requires these datas
Data Element Summary
Ref. Data
Des. Element Name Attributes
DTM01 374 Date/Time Qualifier M ID 3/3
Code specifying type of date or time, or both date and time
151 Service Period End
DTM05 1250 Date Time Period Format Qualifier X ID 2/3
Code indicating the date format, time format, or date and time format
DT Date and Time Expressed in Format
CCYYMMDDHHMM
DTM06 1251 Date Time Period X AN 1/35
Expression of a date, a time, or range of dates, times or dates and times

Segment: SE Transaction Set Trailer
Position: 030
Loop:
Level: Summary:
Usage: Mandatory
Max Use: 1
Purpose: To indicate the end of the transaction set and provide the count of the transmitted segments (including the beginning (ST) and ending (SE) segments)
Syntax Notes:
Semantic Notes:
Comments: 1 SE is the last segment of each transaction set.
Data Element Summary
Ref. Data
Des. Element Name Attributes
SE01 96 Number of Included Segments M N0 1/10
Total number of segments included in a transaction set including ST and SE segments
SE02 329 Transaction Set Control Number M AN 4/9
Identifying control number that must be unique within the transaction set functional group assigned by the originator for a transaction set

18. Appendix I-- Other Solar Generating Technologies Application Guidelines

This application guide provides key information for other solar generation technologies that want to apply to the California Solar Initiative (CSI) for incentives. All requirements in this guide are also included in the CSI Program Handbook. All other requirements for other solar generation technologies are the same as for photovoltaic technologies.

CSI Program Eligibility and Other Solar Generation Technologies

The following eligibility requirements for other solar generation technologies are also included earlier sections of this CSI Program Handbook.

"Eligible non-PV electric generators and solar thermal technologies, include –

- *Fixed and tracking flat plate solar thermal collectors*
- *Concentrating solar thermal (trough, dish and lens).*

Solar collector technologies can be integrated with additional equipment to convert solar thermal energy to electricity or cooling.

Eligible Non-PV technologies must serve end-use loads that displace electric purchases. Eligible electric end-use loads include –

- *Electric space conditioning (heating, cooling and dehumidification)*
- *Electric industrial process heating & cooling*
- *Any electric load (for non-PV electric generators)*

Note that solar water heating for domestic use is not eligible for CSI funding[36]*.*

Non-PV equipment must be safety certified by an NRTL.

Non-PV system performance parameters must be established by SRCC for flat plate collectors or Sandia National Laboratories for concentrating solar systems." ***(CSI Program Handbok, Section 2.2.3)***

Estimating Production of Other Solar Generation Technologies

Other solar generation technologies that generate electricity must meet the requirements in the CSI Program Handbook, and also be listed as eligible by the California Energy Commission's Emerging Renewables Program. To inquire about the CSI Program process, please contact Nicolas Chaset at the California Public Utilities Commission (nlc@cpuc.ca.gov).

[36] CPUC RESOLUTION E-4162, April 24, 2008

For information about the California Energy Commission's listing process, contact Patrick Saxton at the California Energy Commission (psaxton@energy.state.ca.us). Other solar generation technologies that displace electricity must only meet the eligibility requirements set forth in the CSI Program Handbook.

Once an other solar generation technologies is deemed eligible for the CSI Program, a number of steps must be completed before an application can be submitted. All other solar generation technologies must determine their capacity rating. For other solar generation technologies that generate electricity, a capacity rating must be determined, and for other solar technologies that displace electricity, a performance ratio and capacity rating must be determined. The process for calculating these factors is included in the CSI Program Handbook in Section 2.2.6, and is listed below.

"Performance Ratio

The Performance Ratio (PR) is a conversion factor used to determine the amount of grid electricity that is displaced by the non-PV technology. The value of the Performance Ratio depends on the type of non-PV technology, the end-use equipment being displaced and, if applicable, any conversion equipment used with the non-PV equipment to serve the end-use load (e.g., absorption chillers).

For non-PV electric generators, PR = 1.0.

For solar thermal cooling systems, PR is the minimum standard conversion efficiency of the displaced end-use equipment divided the by the conversion efficiency of the absorption system, if applicable.

The minimum efficiency standard for the displaced end-use electric equipment is dependent on the type and size of the conventional electric heating or cooling system being displaced. The most common equipment minimum efficiency standards can be found in the statewide Standard Performance Contract energy efficiency program or the California Appliance Efficiency Regulations.

Non-PV System Capacity Rating

For non-PV electric generators, the CEC-AC rating is the net electric output [kW] of the system at PTC[37].

For non-PV thermal systems, the CEC-AC rating is the rated thermal capacity at PTC divided by the Performance Ratio (PR). If the solar system's total ancillary electric load is 5% or more of the unadjusted CEC-AC rating, it must be subtracted from the unadjusted CEC-AC rating." ***(CSI Handbook, Section 2.2.6)***

[37] The PTC (PVUSA Test Conditions) rating is based upon 1,000 Watts/m^2 Global Normal Irradiance (GNI) and 850 Watts/m^2 Direct Normal Irradiance (DNI), 20° Celsius ambient temperature, and 1 meter/second wind speed. Note for rating flat plate collectors GNI should be used. For concentrating systems, DNI should be used.

The final step for an other solar generation technology to take is to provide the CSI Program with an annual production estimate for the system. Other solar generation technologies annual electric production or electricity displaced must be estimated using performance parameters established by SRCC or Sandia National Laboratories, and site specific typical meteorological year weather data. Acceptable models are the Solar Advisory Model (https://www.nrel.gov/analysis/sam) or TRNSYS (http://sel.me.wisc.edu/trnsys). Other modeling approaches may be considered on a case by case basis by the CSI Program Administrator. For other solar generation technologies that produce thermal energy to displace electricity, production estimates must also include an annual electric consumption estimate of the served end-use using engineering calculations or a model of the heating.

Applying for a CSI Incentive

To access the application for other solar generation technologies visit the following websites of the CSI Program Administrators.

Pacific Gas and Electric:
http://www.pge.com/myhome/saveenergymoney/solarenergy/csi/csihandbookforms/ (All Residential)
http://www.pge.com/mybusiness/energysavingsrebates/solar/csi/csihandbookforms/ (

Southern California Edison:
http://www.sce.com/NR/rdonlyres/2AE3E91D-2B33-4CBB-9AD2-32F5D4546C62/0/081009_NonPVCSIResApp.xls

California Center for Sustainable Energy:
http://www.energycenter.org/ContentPage.asp?ContentID=546&SectionID=569&SectionTarget=370

Important other solar generation technologies news:

- Currently, other solar generation technologies are only eligible for production based incentives.

- Incentives for other solar generation technologies that displace electricity are capped at $100.8 million.