

California **Solar** Initiative

California Solar Initiative (CSI) Handbook- Review latest revisions

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Goals of this Webinar:

To discuss the recent changes made to the CSI Handbook as required by the California Energy Commission

***Changes enforced starting July 1st, 2009**



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CEC Guideline Requirements

- What is it?
 - California Energy Commissions (CEC) guidelines for solar incentive programs in California
 - Known as Senate Bill 1 (SB1)
- Goals
 - High quality solar systems that promote highest energy production per ratepayer dollar
 - Optimal system performance during peak demand periods
 - Appropriate energy efficiency (EE) improvements where solar systems are installed
- Approved on May 27th, Implement starting July 1st



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Energy Efficiency Requirements: Retrofit

- Signed Energy Efficiency Disclosure Agreement
 - Owner acknowledgement of EE measures/tools/actions
 - Required for all retrofit projects
 - Submitted with Reservation Request documentation
- Benchmarking (Non-Residential)
 - Required for EPBB Existing Commercial buildings $\geq 100,000$ ft²
 - Compares energy consumption of building to an average
 - Rating given. If less than 75, retro-commissioning is required before completion
- Signed Commitment Agreement (Non-Residential)
 - Required if Benchmarking rating is less than 75
 - Commits customer to complete improvements identified in retro-commissioning assessment
 - Improvements must be completed before a project is paid



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Demonstration:

Sample Disclosure Agreement
&
Sample Commitment Agreement



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Energy Efficiency Requirements: Non-Residential New Construction

- Proof of 15% above current Title 24 Standards
 - PERF-1 Form Certificate signed by a Certified Energy Plans Examiner (CEPE)
 - Submitted with Reservation Request
- Building Site Plan
 - Submitted with Reservation Request
- Copy of New Construction Building Permit
 - Submitted with Reservation Request



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Field Inspection and Field Verification

Inspections

- First 2 Incentive Claim submitted by an Applicant are sent for inspection.
- After two successful inspections, 1 in 7 selected going forward
- Shading measurements: Major corners not to be more than 40ft apart

Field Verification

- Conducted by Contractor prior to Incentive Claim submittal
- Measure Solar Irradiance and Temperature and compare to Field Verification Output Table
- Complete and sign Field Verification Certification Form and submit with the Incentive Claim Form



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Demonstration:

Sample Field Verification Certification



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Additions to Checklist: Reservation Request

9. Checklist for Other Required Documents

Please complete this checklist. Refer to the latest version of the CSI Program Handbook for detailed instructions on eligibility and application requirements. The purpose of this checklist is to ensure applicants submit the all materials required for the Reservation Request and assist the Program Administrator to review the documentation.

- Proof of Electric Utily Service
- Completed Reservation Request Form and Program Contract with Signature
- Electrical System Sizing Documentation (new/expanded load) for projects \geq 5 kW
- Copy of Signed Energy Efficiency Disclosure Form
- Proof of Energy Efficiency documentation:
 - Energy Efficiency Audit -or- Title 24 Report within the last 3 years
- Copy of Signed Commitment Agreement (EPBB Existing Commercial buildings \geq 100,000 sq ft and Benchmarking $<$ 75. [Proof of Benchmarking Documentation Req'd.])
- Printout of EPBB Tool Calculation (www.csi-epbb.com)

Additional Required Documents for All Residential Customers and Commercial or Government/Non-Profit/ Public Entities < 10 kW:

- Copy of Executed Agreement of Solar Energy System Purchase and Installation
- Copy of Executed Alternative System Ownership Agreement (If System Owner is Different from Host Customer)

Additional Required Documents for Commercial or Government/Non-Profit/ Public Entities > 10 kW:

- Application Fee (see Section 4.2.5 of the CSI Handbook for standardized amount based on system size) **\$0**

Additional Required Documents for Non-Residential New Construction (Commercial or Government/Non-Profit/ Public Entities):

- Proof of at least 15% above Title 24 Standards (CF-1R Form Certificate Signed by a Certified Energy Plans Examiner [CEPE])
- Building Site Plan
- Copy of New Construction Building Permit



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Additions to Checklist: Incentive Claim

12. Incentive Claim Checklist and Signatures

This checklist must be completed. Please refer to the latest version of the CSI Program Handbook for detailed instructions on eligibility and application requirements. The purpose of this checklist is to assist applicants in the completion of information materials required for review of Reservation Requests and to speed processing of the applications.

- Complete Incentive Claim Form with Original Signatures
- Copy of PMRS Cost Cap Exemption Documentation (if applicable)
- Revised EPBB Calculation Printout (if applicable)
- Signed Field Verification Certification Form
- Copy of Retro-commissioning report Agreement (EPBB Existing Commercial buildings \geq 100,000 sq ft and Benchmarking $<$ 75)



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Changes to CEC Approved Module List

- New testing method for PV Modules
 - Not all modules from current list will be on this list
 - New PTC (Performance Test Conditions) Ratings
- Projects received prior to July 1st, 2009 are “Grandfathered” in to old list for Reserved Equipment
 - What if changes need to be made at the time of Incentive Claim Submittal?
 - Modifying EPBB and PowerClerk
- Projects received on or after July 1st, 2009 **MUST** use modules on the new list: **No Exceptions**



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Documents and Forms

- CSI Handbook
www.gosolarcalifornia.ca.gov/documents/csi.html
- Residential Disclosure Agreement
www.pge.com/myhome/saveenergymoney/solarenergy/csi/csihandbookforms/
- Non-Residential Disclosure and Commitment Agreement
www.pge.com/mybusiness/energysavingsrebates/solar/csi/csihandbookforms/
- Field Verification Table
www.pge.com/myhome/saveenergymoney/solarenergy/csi/csihandbookforms/

* Forms will be available on PG&E's CSI website the week of June 15th



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Resources

- Benchmarking
www.epa.gov/EEBUILDINGS/benchmarking/submit_data.html
www.pge.com/mybusiness/energysavingsrebates/analyzer/benchmarking/
- Retrocommissioning
www.pge.com/mybusiness/energysavingsrebates/analyzer/retrocommissioning/
- CEC Eligible Equipment List
www.gosolarcalifornia.org/equipment/index.html



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Future Changes to CSI

- Removal of:
 - Original Signature Requirements
 - Utility Bill
 - AB1407 (Gov't/Non-Profit only)
 - System Description Worksheet (Non-Residential >10 kW)
 - Proof of PMRS
 - Project Cost Affidavit
 - Project Cost Breakdown Worksheet
- 1-Step Application
- Extend the Non-Residential Application
- Re-Format Handbook



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PG&E Webinars

- CSI Handbook-Review Latest Revisions: June 23rd
- Powerclerk Updates: June 29th
- Path to Energy Savings-Res New Construction: June 30th
- Multifamily Affordable Solar Housing-follow up and Workforce Opportunities: July 1st

PG&E offered Solar webinars: www.pge.com/solarclasses

Archived webinar presentations: www.pge.com/solareducation



California Solar Initiative Program Non-Residential Energy Efficiency Disclosure Agreement

By installing all cost effective energy efficiency measures and having the building retro-commissioned before installing a solar energy system, the owner/operator/manager can lower the overall system size and cost.

Initial beside each line, fill in the blanks, and sign below. Submit this form and a copy of the energy audit, benchmark rating, if required, with your California Solar Initiative Reservation Request Form.

Please select your Program Administrator

SCE

 PG&E

 CCSE

_____ I am the owner/operator/manager (circle one) of the commercial building, located at: _____, CA, and I am applying for incentives for the PV system to be installed on this building.

_____ I have reviewed the building's available 12 months of energy usage from my utility company.

_____ I used the following services or tools to learn about energy efficiency measures that could be installed at my business:

For Existing Non-Residential Customer

Utility Link	Third Party Link
<input type="checkbox"/> http://www.pge.com/mybusiness/energysavingsrebates	<input type="checkbox"/> http://www.gosolarcalifornia.ca.gov
<input type="checkbox"/> http://www.sdge.com/business/esc/promo_audit.shtml	<input type="checkbox"/> http://www.cacx.org
<input type="checkbox"/> http://www.sce.com/business/rebates-savings	<input type="checkbox"/> http://www.fypower.org
<input type="checkbox"/> Other: _____	<input type="checkbox"/> http://www.energystar.gov

_____ I had an energy audit completed on the commercial building that identified cost effective energy efficiency improvements, and estimated energy savings.

_____ I have been informed of rebates and other incentives to help offset the costs of installing energy efficiency measures from my utility company. If not:

Please visit your Utility's rebate and savings web site for more information.
<http://www.pge.com/mybusiness/energysavingsrebates>
<http://www.sdge.com/business/esc/>
<http://www.sce.com/business/rebates-savings>

_____ I installed the following measures on the commercial building:

I intend to install the following measures on the commercial building:

by _____ (date)

_____ The building is greater than 100,000 square feet and receiving an EPBB incentive [Yes/No] (circle one) If you circled yes, and the benchmark rating is below 75, please read and sign the Commitment Agreement

_____ The building was benchmarked on _____ (date) and received a benchmark rating of _____ (If applicable)

Non-Residential Energy Efficiency Commitment Agreement

Please complete, and sign the following Commitment Agreement. Specify the date by which the repairs, adjustments or measure change-outs are planned to be completed. Submit a copy of the final retro-commissioning report to the Program Administrator when the retro-commissioning process is complete.

To be completed by the Building Owner/operator/Manager. Please initial each item fill in the blanks and sign below:

I certify that I am the owner/operator/manager (circle one) of the commercial building located at _____, CA, and I am applying for incentives for a PV system.

If the energy performance rating is below 75, I certify that the retro-commissioning assessment and all cost effective measures identified as likely to improve the energy performance rating will be implemented and will be completed by _____ (date). I will submit a copy of the retro-commissioning report to the Program Administrator before the incentive payment is made

Host Customer Signature _____ Title _____ Date _____

Field Verification Certification Form

Please complete checkboxes and Contractor's signature box.

- 1. Installation equipment is consistent with the submitted EPBB Printout (Certificate of Compliance).
- 2. Shading analysis has been performed, attached and accurately reported in the EPBB Printout (Certificate of Compliance).
- 3. Field verification 7 diagnostic testing protocol has been performed;
 - Modules and all other system components are bolted securely and all wiring connections have been made properly according to the system schematic, manufacturer's instructions and applicable electrical code requirements.

Multiple String Arrays

← OR →

Single String Arrays

- Polarity of all source circuits is correct.
- Open circuit voltages of source circuits have been tested and measured to be within 2% of each other (if multiple strings).
- Short circuit currents have been tested and measured to be within 5% of each other (if multiple strings).

Irradiance (W/m²)
 Temp (F)
 Inv Output (W)

Verify Inverter output against Field Verification Table (Shown Below)

CONTRACTOR SIGNATURE _____

PRINT NAME _____

DATE _____

Field Verification Output Table

(W/m ²)	T=15	T=25	T=35	T=45	T=55	T=65	T=75	T=85	T=95	T=105	T=115
300	26%	26%	25%	24%	24%	23%	22%	22%	21%	20%	20%
325	28%	28%	27%	26%	26%	25%	24%	24%	23%	22%	22%
350	31%	30%	29%	28%	28%	27%	26%	25%	25%	24%	23%
375	33%	32%	31%	31%	30%	29%	28%	27%	27%	26%	25%
400	35%	34%	33%	33%	32%	31%	30%	29%	28%	27%	27%
425	37%	36%	36%	35%	34%	33%	32%	31%	30%	29%	28%
450	40%	39%	38%	37%	36%	35%	34%	33%	32%	31%	30%
475	42%	41%	40%	39%	38%	37%	36%	35%	34%	33%	32%
500	44%	43%	42%	41%	40%	39%	38%	37%	36%	34%	33%
525	46%	45%	44%	43%	42%	41%	40%	38%	37%	36%	35%
550	48%	47%	46%	45%	44%	43%	41%	40%	39%	38%	37%
575	51%	49%	48%	47%	46%	45%	43%	42%	41%	40%	38%
600	53%	51%	50%	49%	48%	46%	45%	44%	43%	41%	40%
625	55%	54%	52%	51%	50%	48%	47%	46%	44%	43%	42%
650	57%	56%	54%	53%	52%	50%	49%	47%	46%	45%	43%
675	59%	58%	56%	55%	54%	52%	51%	49%	48%	46%	45%
700	61%	60%	58%	57%	55%	54%	52%	51%	49%	48%	46%
725	63%	62%	60%	59%	57%	56%	54%	53%	51%	50%	48%
750	65%	64%	62%	61%	59%	58%	56%	54%	53%	51%	49%
775	68%	66%	64%	63%	61%	59%	58%	56%	54%	53%	51%
800	70%	68%	66%	65%	63%	61%	59%	58%	56%	54%	53%
825	72%	70%	68%	66%	65%	63%	61%	59%	58%	56%	54%
850	74%	72%	70%	68%	66%	65%	63%	61%	59%	57%	55%
875	76%	74%	72%	70%	68%	66%	65%	63%	61%	59%	57%
900	78%	76%	74%	72%	70%	68%	66%	64%	62%	60%	58%
925	79%	78%	76%	74%	72%	70%	68%	66%	64%	62%	60%
950	81%	79%	77%	75%	73%	71%	69%	67%	65%	63%	61%
975	83%	81%	79%	77%	75%	73%	71%	69%	67%	65%	63%
1000	85%	83%	81%	79%	77%	75%	73%	70%	68%	66%	64%
1025	90%	85%	83%	81%	78%	76%	74%	72%	70%	67%	65%
1050	90%	90%	84%	82%	80%	78%	76%	73%	71%	69%	66%
1075	90%	90%	86%	84%	82%	79%	77%	75%	72%	70%	68%
1100	90%	90%	90%	86%	83%	81%	79%	76%	74%	71%	69%
1125	90%	90%	90%	90%	85%	82%	80%	78%	75%	73%	70%
1150	90%	90%	90%	90%	86%	84%	81%	79%	76%	74%	71%
1175	90%	90%	90%	90%	90%	85%	83%	80%	78%	75%	73%
1200	90%	90%	90%	90%	90%	90%	84%	82%	79%	77%	74%

For systems that have only one string connected to a single inverter or for systems using micro-inverters, the following applies:

1. Record Temperature and Irradiance as discussed in CSI Handbook [note: to be added in accordance with "Guidelines"]
2. Examine Field Verification Output (FVO) table for the percentage shown given the measured temperature and irradiance. Always round temperature up to the next block. So, 47 degrees rounds up to 55 degrees on the chart.
3. Multiply the CEC-AC (from EPBB printout) times the FVO percentage to get estimated system output.
4. Compare estimated system output with actual output. If actual system output is higher, system is operating within expectations. If estimated output is higher, perform additional diagnostics and correct any issues as the system may not be performing properly.
5. Enter the appropriate values on the Incentive Claim Form (ICF).