

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298



January 5, 2017

To: Center for Sustainable Energy (CSE)
Pacific Gas and Electric Company (PG&E)
Southern California Edison Company (SCE)

Re: California Solar Initiative General Market Measurement and Evaluation Plan Update

Delivered via email

Dear California Solar Initiative Program Administrators:

I am writing to apprise you of an update to the California Solar Initiative (CSI) General Market Measurement and Evaluation (M&E) Plan. The update, which is described in detail in the attached documents, should go into effect immediately.

In order to measure the impact of the CSI program, and evaluate such qualities as cost effectiveness, the CSI has always incorporated a M&E component. The first M&E plan was issued in an Assigned Commissioner's Ruling dated July 28, 2008. That plan was modified in Southern California Edison's Advice Letter 2567-E. While modifying the M&E budget to reflect actual expenditures and changing expectations that plan also stated the following:

The CSI PAs recommend that the Energy Division be given flexibility to review and, in consultation with the CSI PAs, to make changes to the CSI M&E plan and budget allocations to each study area as needed without requiring the CSI PAs to file an Advice Letter.

Energy Division previously exercised this authority with an updated CSI General Market M&E Plan in August 2013, and we are doing so again at this time. Having consulted extensively with the Program Administrators regarding this M&E Plan update, Energy Division is providing you with the updated CSI General Market M&E Plan in order to more accurately reflect the changes that have occurred throughout the program. Due to the early exhaustion of CSI incentive funding and resource constraints, some originally-scoped M&E efforts will not be pursued.

Energy Division Staff will still be executing the following two (2) CSI General Market M&E Studies to close out the program:

1. A CSI Final Impact Evaluation
2. A Net Energy Metering Interconnection Process Audit

As a result of the reduced scope of work, there is funding allocated to the CSI program that will go unspent. Pursuant to Commission Decision 15-01-027, the utilities may reallocate this unspent funding to the low-income CSI Programs after December 31, 2016.

Thank you for your cooperation in implementing this updated CSI General Market M&E Plan expeditiously.

Sincerely yours,

Handwritten signature of Edward Randolph in black ink.

Edward Randolph
Director, Energy Division

Attachment A

2016 Update to the General Market Portion of the California Solar Initiative Measurement and Evaluation Plan (Program Years 2016-2018)

1. Summary

This document updates the California Solar Initiative (CSI) General Market Measurement and Evaluation (M&E) plan for program years 2016-2018. CSI currently has the following budget allocations for M&E activities.

General Market	\$25.45 million
SASH	\$1.08 million
MASH	\$1.08 million
RD&D	\$0.50 million
CSI-Thermal Electric-displacing	\$1.25 million
CSI-Thermal Gas-displacing	\$5.00 million
Total CSI	\$34.36 million

This revision will change these amounts due to the following modifications to the Program:

- a) Exhaustion of CSI incentive funds in advance of the program end date; and,
- b) Resource constraints of staff administering and overseeing the program.

This 2016 CSI General Market M&E Update changes the CSI General Market M&E budget allocations for program years 2016-2018 to the following:

General Market	\$22.40 million
SASH	\$1.08 million
MASH	\$1.08 million
RD&D	\$0.50 million
CSI-Thermal Electric-displacing	\$1.25 million
CSI-Thermal Gas-displacing	\$5.00 million
Total CSI	\$31.31 million

All studies currently underway and the following two (2) future studies will be completed under the CSI M&E General Market Program:

- (1) A final CSI Impact Evaluation Report
- (2) A Net Energy Metering Interconnection Process Audit

Pursuant to Commission Decision 15-01-027, the utilities may reallocate unspent CSI General Market funding to the low-income CSI Programs after December 31, 2016.

2. Background

The proposed revisions in this document continue to maintain the goals and requirements of the M&E Plan described on page 9 of Appendix A of the Assigned Commissioner's Ruling issued on July 28, 2008 (July 2008 ACR) to:

1. *Utilize a standardized process for evaluating programs and reporting program results;*
2. *Provide credible and objective information on program impacts and performance;*
3. *Provide policy and program related information to ensure achievement of CSI program goals and support the "Periodic CSI Review Process;" and*
4. *Produce an accurate assessment of future opportunities to further the goals of SB 1 and established Commission objectives and directives.*

In Decision (D.) 10-09-046, the California Public Utilities Commission (Commission or CPUC) reduced the CSI General Market Program M&E budget from \$46.7 million to \$26.7 million with \$25.45 million allocated to non CSI-Thermal M&E activities and \$1.25 million allocated to CSI Thermal M&E activities.

In a joint Advice Letter¹ filed by the CSI Program Administrators in April 2011, the M&E plan was updated, and the CSI Program Administrators (PAs) recommended that:

...the Energy Division be given flexibility to review and, in consultation with the CSI PAs, to make changes to the CSI M&E plan and budget allocations to each study area as needed without requiring the CSI PAs to file an Advice Letter. This flexibility will allow for a more efficient planning and review process for the CSI M&E plan.

In 2013, the Energy Division provided an update to the CSI M&E Plan, known as the 2013 CSI M&E Update. The 2013 Update included the following:

- a) Revised the project and budget status of General Market M&E efforts, and
- b) Other changes including:
 - i. Public reporting funded through M&E budget.
 - ii. Public reporting included efforts to report on rooftop photovoltaic (PV) generation that did not receive CSI rebates.
 - iii. Allowed some studies to be consolidated.
 - iv. Allowed PAs to manage some contracts.

Please refer to Attachment C, "2013-07-10 CSI M&E Plan," for full details of the 2013 M&E Update.

Energy Division has consulted with CSI Program Administrators about changes to the M&E effort going forward. This document, the "2016 CSI M&E Update," describes the plan for the remaining CSI General Market M&E efforts.

3. Non-General Market M&E Plans

¹ Advice 2567-E (Southern California Edison Company U 338-E); Advice 3825-E (Pacific Gas and Electric Company U 39-E); Advice 16 (California Center for Sustainable Energy).

The Multifamily Affordable Solar Housing (MASH) and Single Family Affordable Solar Homes (SASH) programs have spent \$1.22 million for M&E studies out of an allocated total of \$2.16 million. SASH and MASH M&E budgets and studies are authorized and updated through a process separate from this M&E Plan update. The MASH and SASH M&E budgets and studies were most recently authorized in Decision 15-01-027. The CSI Thermal (electric displacing and gas displacing) program and the Research, Development and Deployment (RD&D) programs have an allocated \$6.25 million and \$0.50 million, respectively. Contracts have been executed under each of these programs. To date, the CSI Thermal Program has spent \$0.77 million of its allocated \$6.25 million. The Research, Development and Deployment Program Evaluation has spent \$0.36 million of its \$0.50 million. The current RD&D Program contract will be the only evaluation study conducted under this program and is contracted to spend just under \$0.50 million.

4. General Market M&E Study Schedule and Budgets

a) Impact Evaluations

The Impact Evaluations provide important analyses of customer-side solar installed through the CSI program. The CSI program conducted annual Impact Evaluations covering program years 2007 through 2010. These evaluations represent a considerable portion of the total CSI M&E budget. To conserve budget, in the April 2011 M&E Plan the Commission allowed for these studies to be conducted biennially, rather than annually.

Beginning with the 2010 CSI Impact Evaluation, the Energy Division requested that these studies estimate the impacts of customer-side solar photovoltaic (PV) systems installed through other programs in investor-owned utility (IOU) territories including the Emerging Renewables Program, the New Solar Homes Partnership Program, and the Self Generation Incentive Program (SGIP).

The April 2011 M&E Plan allowed for Impact Evaluations to be jointly funded by CSI and SGIP. The 2013 Update reduced the budget for the each Impact Evaluation from \$1.5 million to \$1 million, and did not assume any contribution from the SGIP program, but allowed for it should such a determination be made for future Impact Evaluations. This update does not assume any contribution from the SGIP for the Impact Evaluations.

This 2016 M&E Update includes one final Impact Evaluation to be conducted in 2017, as was previously planned, to close out the program. An estimated \$1.0 million is allocated for this contract.

b) Metering

A contractor was hired at the outset of CSI M&E activities to install and monitor meters on a sampling of CSI participating homes. This activity, for which \$3.66 million is allocated, is ongoing. A total of \$1.99 million has been spent to date.

c) Process Evaluations

In Section 3.3.5 of the July 2008 Assigned Commissioner's Ruling, the Commission required biennial Process Evaluations, which include Program Administration Comparative Assessments and Best Practice Studies. Thus far, the CSI program has conducted one Process Evaluation covering program years 2009 and 2010. The April 2011 M&E Plan called for one final Process Evaluation in 2014, rather than the three remaining in 2012, 2014, and 2016.

Subsequent to the April 2011 M&E Plan, the Program Administrators began to post online program administrative tracking data updated weekly and monthly.² Such data include reservation application processing times; incentive claim processing times; payment times; interconnection times; trainings offered; program dropouts, and net energy metering (NEM) participation. These data give a glimpse into the processing and administrative challenges and issues that PAs may face. This regular tracking has replaced much of the need for ongoing Process Evaluation reports.

At the time of the 2013 M&E Update, three of the six General Market sub-programs had substantially depleted their funding and were nearly closed. Given the late stage of the CSI program the Energy Division and the PAs, the 2013 M&E Update provided the option to cancel any further Process Evaluation studies or exclude one or more PAs from the evaluation if their programs had closed.

Due to the fact that the General Market CSI programs have been fully subscribed, additional Process Evaluations are not necessary. The future budget has been reduced to \$0 and the 2016 Update adjusts the total budget amount to \$171,992, to reflect the complete contracts.

d) Cost-Effectiveness Studies

In Section 3.3.6 of the July 2008 Assigned Commissioner's Ruling, the Commission required that a CSI Cost-Effectiveness study be performed every third year – in 2009, 2012, 2015, and 2017. In 2010, the CSI program released a CSI Cost-Effectiveness and a net energy metering (NEM) Cost-Benefits study. A follow-on NEM cost-effectiveness study was completed in 2010. The April 2011 M&E Plan reduced the number of studies and lowered the budget from \$1.9 million to \$1.35 million. The 2013 M&E Update added a study in 2015, which changed the budget to \$1.85 million. The 2015 study that was contracted was for the development of a NEM Public Tool to assist the Commission in its revisit of NEM pursuant to Assembly Bill 327 (Perea, 2013). In order to sufficiently fund the work conducted for development of the Public Tool, the budget was subsequently increased to \$2.4 million. No additional Cost-Effectiveness Studies will be conducted.

e) Market Transformation Studies

The Commission, in the July 2008 Assigned Commissioner's Ruling, required Market Transformation studies to be conducted in 2010, 2013, and 2016. As a result of the April 2011 M&E Plan, the three studies were consolidated into two studies - one study that was completed in January 2014, and one optional study in

² http://www.californiasolarstatistics.ca.gov/reports/data_annex/

2016, to be conducted if determined necessary by the Energy Division and the CSI PAs. The study completed in 2014 included the following reports; Third-Party Ownership Market Impact Study, The Market Transformation Study, and the Solar PV and Residential Roof Study: Assessment of Interface Issues and Costs. Due to the early exhaustion of CSI incentive funds, the Energy Division and the CSI PAs have determined that an additional Market Transformation Study is not needed. The April 2011 M&E Plan reduced the budget for Market Transformation studies from \$10 million to \$1.5 million. The 2013 Update retained the same budget. This 2016 M&E Update reduces the budget to \$769,207 to reflect the total amount spent on the contracts for the completed studies and the determination that there will not be a future study conducted.

f) On-going Progress Studies (Optional Studies)

The Commission, in the July 2008 Assigned Commissioner’s Ruling, allocated \$3.6 million to On-going Progress Studies. The April 2011 M&E Plan Update reallocated the money under this category to the “Optional Studies” category to make funds available for higher priority research activities. This reallocation of funds would have allowed Progress Studies to still occur if the Energy Division deemed them a higher priority than other “optional” studies. The 2016 M&E update determines there will be no further Progress Studies conducted.

g) Financial Audits

The budget allocated for the External Financial Audits in the July 2008 Assigned Commissioner’s Ruling was \$2 million. A Financial Audit of the CSI PAs completed in 2010 was completed at just over \$200,000. The 2011 Financial Audit was completed at just under \$200,000. The 2012-14 Financial Audit was completed in the spring of 2016 and did not exceed the contract budget of \$236,180. No additional Financial Audits will be conducted of the CSI program. This 2016 M&E Update leaves the funding allocation for these studies \$647,021.

**h) Transmission and Distribution Studies: Assembly Bill 578
Distributed Generation Impacts Study and Distributed Energy
Resources Grid Integration Study**

In response to Assembly Bill (AB) 578 (Blakeslee, 2008), the SGIP program funded a study in January 2010 on the impacts of distributed generation (DG) on California’s transmission and distribution (T&D) systems. AB 578 required that follow-up studies be conducted and submitted to the Legislature on a biennial basis. In the April 2011 M&E Plan, the Commission authorized these studies to be co-funded by the CSI and SGIP programs with 70% of the funding to come from CSI and 30% from SGIP. The April 2012 M&E Plan authorized a total CSI budget for these studies of \$210,000. The 2013 M&E Update maintained that allocation. The April 2011 M&E Plan included a 2014 report and a 2016 report, each funded at \$55,000. The 2012 AB 578 DG Impacts Study was completed at the end of 2012 and cost approximately \$100,000. Given the significant increase in DG installations

in recent years, the 2012 report contained a draft scope of work for an additional Transmission and Distribution study that would further assess DG impacts on the Transmission and Distribution systems. The 2013 M&E Plan Update identified this additional study, which is known as the Distributed Energy Resource Grid Integration Study (DERGIS). It was noted in the 2013 M&E Update that this Transmission and Distribution study may be modified to encompass the next AB 578 report. The 2013 M&E Update also contemplated consolidating the Transmission and Distribution study with an Impact Evaluation. However, for budget purposes, these two studies were not consolidated.

A biennial AB 578 DG Impact Study was included in the scope of work of the DERGIS contract and that report was released in December 2015. No additional AB 578 DG Impacts Studies will be funded through the CSI M&E budget. Funding for future AB 578 DG Impacts Studies will need to come from other sources and may require budget approval from the legislature.

The DERGIS will continue through 2016 with the possibility for a one year extension. A total of \$1.25 million has been allocated to this study. The first year of the study is under contract for \$0.73 million.

i) Public Reporting

CSI Public Reporting activities include creating and managing the California Solar Statistics (CSS) website³ and the California DG Stats website⁴, and compiling and cleaning the data that goes into the Working Data Set (WDS) and graphs on those websites. The 2013 M&E Update designated Public Reporting as a M&E activity, which authorized the PAs to pay for Public Reporting out of their M&E Budgets. The current Public Reporting contract will continue through the end of the CSI M&E Program. In order to fund the Public Reporting effort through the end of the program, an additional \$74,681 is authorized for this contract. The funding for this additional work will come from the Optional Analyses / Reserve Funding line item. With this additional funding, the total funding for Public Reporting over the life of the CSI program is \$1.27 million.

j) Advanced Metering Infrastructure Studies

In Decision 11-07-031, the Commission ordered the PAs to file a report on the potential for using Advanced Metering Infrastructure (AMI) in metering and tracking usage and generation. While Southern California Edison and the Center for Sustainable Energy/San Diego Gas & Electric completed these reports with in-house experts, Pacific Gas & Electric Company hired outside consultants. The amount paid, \$38,000, is recorded as a line item in the plan. In the 2013 M&E Update, there was no plan for future expenditures in this category, nor have any needs since been identified. This 2016 M&E Update leaves the future budget for AMI Studies at \$0.

³ <http://www.californiasolarstatistics.ca.gov/>

⁴ <http://californiadgstats.ca.gov/>

k) Project Coordination

The CSI Project Coordinator, described in Section 3.3.1 of the July 2008 Assigned Commissioner's Ruling, is responsible for coordinating the research, planning and budget tracking activities of the CSI M&E effort. The April M&E 2011 Plan reduced the scope of activities and the budgeted amount for this contract from \$1.6 million to \$1.2 million. The 2013 M&E Update left that total unchanged. The 2016 M&E Plan Update reduces the amount to \$938,170, to reflect the previous and on-going contract amounts. The current contract will carry Project Coordination through the end of the program. There will be no additional CSI Project Coordination contracts.

l) M&E Staffing Expenditures

The Commission, in the July 2008 Assigned Commissioner's Ruling, required that funding for CSI PA staffing for support and management of CSI M&E come out of the CSI program administration budget. However, in the Staff Proposal for Program Modifications to the CSI Program attached as an appendix to the Administrative Law Judge's Ruling issued on July 26, 2010, the Energy Division recommended that M&E staff time at the CPUC (up to 3 PURA positions) and CSI PAs (up to 2 Full Time Employees (FTEs) per CSI PA) be charged to the CSI evaluation budget. The April 2011 M&E Plan authorized \$3.9 million to be allocated for M&E staff time through 2017. This budget assumes 1.5 FTEs per CSI PA and 1.5 PURA positions at the CPUC with a 50% reduction in staff time in 2017 for program closeout. Program experience has shown that the Energy Division and PAs are billing the CSI program at a rate substantially below this level and that a total allocation of \$3.1 million should suffice to cover this obligation. However, should additional evaluation and public reporting needs exceed this budget, reserve funding from the "Optional Analyses/Reserve Funding" budget category may be made available to cover those costs.

m) Net Energy Metering Interconnection Audit

As part of the 2016 M&E Update, a Net Energy Metering Interconnection Audit will be conducted. This study will be funded from the Optional Analysis / Reserve Funding category. CSI has led to the interconnection of over 500,000 new customer-side solar systems under Net Energy Metering, all interconnecting using the Rule 21 tariff. Under the terms of the Rule 21 tariffs, the vast majority of behind-the-meter (BTM) solar customers do not pay substantial interconnection or upgrade costs associated with interconnection. However, occasionally there are costs borne directly by BTM solar customers. The use of Rule 21 by customers has grown exponentially in the past decade. Given the CPUC's role in reviewing the effective implementation of the State's solar program – and given that the CPUC is charged with ensuring the utilities provide safe and reliable service to its customers—it makes sense to review the utilities' administration of the Rule 21 tariff. The purpose of this Rule 21 review will be to ensure that the utilities are fairly and efficiently administering the tariff. The 2016 M&E Update allocates \$750,000 for this study, to be contracted prior to the Program's completion.

n) Optional Analyses / Reserve Funding

The CSI General Market program (excluding the electric-displacing CSI-Thermal Program) was authorized with a budget of \$25.45 million for M&E activities. In the 2013 M&E Update, the M&E activities totaled \$23.58 million, leaving \$1.87 million unallocated. The 2013 M&E Update reserved that amount for future optional studies and for unforeseen cost overruns related to projects or M&E staff time for additional evaluation and/or public reporting.

Over the course of the program, money has been transferred from the Optional Analyses / Reserve Funding category to help fund contract extensions, budget changes, and additional studies, such as Public Reporting and the comprehensive DERGIS Study. Money has also been added back to this line item from unspent money on completed contracts.

The 2016 M&E Update allocates funding in the amount of \$750,000 to the NEM Interconnection Audit from the Optional/Reserve category and also identifies a contingency amount under the Future Optional Analysis line item to accommodate any unforeseen costs that may arise with current and projected future costs. A reserve budget was determined by taking five percent (5%) of the sum of, (1) open contracts' remaining budgeted amounts to be invoiced and (2) future proposed contracts. The total reserve budget is \$311,045.

o) M&E Plan Periodic Review and Revisions

The April 2011 M&E Plan authorized the Energy Division to have the flexibility to review and, in consultation with the CSI PAs, make changes to the CSI M&E plan and budget allocations to each study area as needed without requiring the CSI PAs to file an Advice Letter. This purpose of this was to provide flexibility to allow for a more efficient planning and review process for the CSI M&E plan. Energy Division believes this approach represents the appropriate mix of due process, a representation of various opinions, and expeditiousness, though Energy Division retains the right to make further changes in the future.

5. M&E Plan Revisions Summary

The recommended revisions to the CSI M&E Plan are provided in Table 1. The CSI M&E budget and scheduling planning worksheet based on the proposed revised CSI M&E budget are included in Table 2.

Table 1 – General Market 2016 M&E Update Summary

Study Category	April 2011 CSI M&E Plan	2013 CSI M&E Update	2016 CSI M&E Update
-----------------------	------------------------------------	--------------------------------	--------------------------------

Project Coordination	<ul style="list-style-type: none"> Budget: \$1.2 million 	<ul style="list-style-type: none"> Budget: \$1.13 million 	<ul style="list-style-type: none"> Budget: \$938,170
Impact Evaluation and CSI Metering	<ul style="list-style-type: none"> Remaining Impact Evaluations conducted on a biennial basis (2013, 2015, 2017) Analysis and Reports Budget: \$10.6 million Metering Budget \$3.7 million 	<ul style="list-style-type: none"> Remaining Impact Evaluations conducted on a biennial basis (2013, 2015, 2017) Analysis and Reports Budget: \$8.09 million Metering Budget \$3.66 million 	<ul style="list-style-type: none"> Final Impact Evaluation to be conducted to close out the program. Analysis and Reports Budget: \$7.82 million. Metering Budget : \$3.66 million
Process Evaluations	<ul style="list-style-type: none"> Conduct 1 additional Process study in 2014 – two total for entire program Budget: \$450,000 	<ul style="list-style-type: none"> Possibly conduct one additional study. Budget: \$380,000 	<ul style="list-style-type: none"> No remaining studies to be conducted. Total Spent: \$171,992.
CSI/NEM Cost-effectiveness studies	<ul style="list-style-type: none"> Conduct 1 additional C/E Study Budget: \$1.35 million 	<ul style="list-style-type: none"> Conduct 1 additional C/E Study Budget: \$1.85 million 	<ul style="list-style-type: none"> No remaining studies to be conducted. Total Spent: \$2.4 million
Market Transformation Studies	<ul style="list-style-type: none"> Conduct 2 studies – 2011 and 2014 Budget: \$1.5 million 	<ul style="list-style-type: none"> After current study, conduct one more in 2016. Budget: \$1.50 million. 	<ul style="list-style-type: none"> The additional study is not to be conducted. Total Spent: \$769,207.
External Financial Audit	<ul style="list-style-type: none"> Same schedule Budget: \$900,000 	<ul style="list-style-type: none"> Audits every two years. Budget: \$880,000 	<ul style="list-style-type: none"> Current audit has been completed. No remaining studies to be contracted. Total Spent: \$647,021
CSI M&E Staffing	<ul style="list-style-type: none"> M&E staff time funded from CSI M&E budget Total Budget: \$3.9 million 	<ul style="list-style-type: none"> M&E staff time funded from CSI M&E budget Total Budget: \$3.10 million 	<ul style="list-style-type: none"> M&E staff time funded from CSI M&E budget. Total Budget: \$3.10 million
AB 578 DG Impact Study	<ul style="list-style-type: none"> Biennial Studies (2012, 2014, 2016) Total CSI portion of budget: \$210,000 	<ul style="list-style-type: none"> The 2014 study may include results from the in-depth Transmission and Distribution study. Budget: \$210,000 	<ul style="list-style-type: none"> AB 578 DG Impact Study was released in December 2015. No additional reports will be released under the CSI M&E Program.
Transmission & Distribution	<ul style="list-style-type: none"> Budget as required by D.10-09-046: \$1.25 million 	<ul style="list-style-type: none"> Budget: \$1.25 million 	<ul style="list-style-type: none"> DERGIS Study is currently underway for \$732,136; with possible one year extension. Budget: \$1.25 million
Public Reporting	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> \$300,000 on-going annually 	<ul style="list-style-type: none"> Budget: \$1.27 million

		▪ Budget \$1.20 million	
Interconnect Audit	▪	▪	▪ An Interconnection Audit will be funded under this category. ▪ Budget: \$750,000
Optional Analyses	▪ Budget: \$1.64 million	▪ Budget: \$1.87 million	▪ Budget: \$311,045

Table 2 – CSI M&E Budget and Schedule Planning Worksheet (Attachment B)

Attachment B

Attachement B: Summary of CSI M&E Contracts by Type and Year
1/4/2017

Contracts	2016 Update - Total					Spending By Fiscal Year										
	Completed	Currently Opened	Future	Proposed	Difference	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	Total
General Market																
Project Coordination	\$612,520	\$325,650	\$0	\$938,170	\$194,677	\$15,446	\$247,432	\$182,704	\$83,526	\$83,413	\$0	\$79,775	\$85,473	\$106,935	\$53,468	\$938,170
Impact Evaluations	\$5,759,135	\$0	\$1,000,000	\$6,759,135	\$1,328,566	\$211,844	\$2,720,390	\$1,890,990	\$464,752	\$267,732	\$203,427			\$1,000,000		\$6,759,135
CSI Metering	\$0	\$3,655,121	\$0	\$3,655,121	\$0			\$1,655,821		\$23,527		\$276,457	\$400,575	\$865,827	\$432,914	\$3,655,121
CSI Metering Scoping	\$303,747	\$0	\$0	\$303,747	\$0		\$303,747									\$303,747
Process Evaluations	\$171,992	\$0	\$0	\$171,992	\$208,676		\$171,992									\$171,992
CSI/NEM Cost Effectiveness Studies	\$2,330,677	\$0	\$0	\$2,330,677	-\$485,028	\$8,955	\$610,772	\$241,149	\$84,773	\$430,908	\$15,234	\$907,484	\$31,402			\$2,330,677
CSI M&E Personnel Labor	\$0	\$3,098,339	\$0	\$3,098,339	\$0	\$966	\$255,643	\$356,520	\$291,115	\$250,505	\$228,404	\$468,087	\$422,118	\$549,988	\$274,994	\$3,098,339
Financial Audit	\$410,841	\$236,180	\$0	\$647,021	\$230,486			\$212,391		\$198,450			\$236,180			\$647,021
Market Transformation Study	\$769,207	\$0	\$0	\$769,207	\$730,793					\$227,180	\$542,027					\$769,207
AB 578 DG Impacts	\$99,978	\$0	\$0	\$99,978	\$110,000					\$99,978						\$99,978
DERGIS (Trans. & Dist. Study)	\$0	\$732,136	\$517,864	\$1,250,000	\$0								\$732,136	\$517,864		\$1,250,000
Public Reporting	\$0	\$1,200,000	\$74,681	\$1,274,681	-\$74,681						\$143,142	\$272,762	\$327,351	\$357,426	\$174,000	\$1,274,681
AMI PV	\$38,636	\$0	\$0	\$38,636	-\$38,636				\$38,636							\$38,636
Interconnection Audit	\$0	\$0	\$750,000	\$750,000	-\$750,000									\$375,000	\$375,000	\$750,000
Optional Analyses / Reserve Funding	\$0	\$0.00	\$311,045	\$311,045	\$1,597,398										\$311,045	\$311,045
General Market Total	\$10,496,732	\$9,247,426	\$2,653,590	\$22,397,748	\$3,052,252	\$237,212	\$4,309,974	\$4,539,574	\$924,166	\$1,620,329	\$1,132,233	\$2,004,566	\$2,235,234	\$3,773,039	\$1,621,421	\$22,397,748
MASH/SASH	\$1,222,062	\$0	\$937,938	\$2,160,000	\$0		\$94,958	\$551,491	\$2,728		\$53,413	\$500,009	\$19,464		\$937,938	\$2,160,000
CSI Thermal M&E	\$40,434	\$2,494,828	\$3,714,738	\$6,250,000	\$0			\$2,543	\$3,027	\$293	\$41,130	\$72,462	\$2,044,938	\$969,693	\$3,115,914	\$6,250,000
RD&D	\$0	\$496,504	\$3,496	\$500,000	\$0							\$90,104	\$406,400	\$3,496	\$500,000	
Total	\$11,759,227	\$12,238,758	\$7,309,763	\$31,307,748	\$3,052,252	\$237,212	\$4,404,931	\$5,093,608	\$929,920	\$1,620,622	\$1,226,776	\$2,577,037	\$4,389,740	\$5,149,132	\$5,678,769	\$31,307,748

Attachment C

Energy Division's 2013 Update to the General Market Portion of the California Solar Initiative Measurement and Evaluation Plan

6. Summary

The California Solar Initiative (CSI) currently has the following budget allocations for Measurement and Evaluation (M&E) activities.

General Market	\$25.45 million
SASH	\$1.08 million
MASH	\$1.08 million
RD&D	\$0.50 million
CSI-Thermal Electric-displacing	\$1.25 million
CSI-Thermal Gas-displacing	\$5.00 million
Total CSI	\$34.36 million

This revision will not change any of these amounts. Rather, this 2013 Update:

(1) Revises the project and budget status of General Market M&E efforts, and

(2) Makes several changes:

- a. **Public reporting will be funded with M&E dollars.**
- b. **Public reporting will include efforts to report on rooftop photovoltaic (PV) generation that did not receive CSI rebates.**
- c. **Some studies may be consolidated.**
- d. **PAs may manage some contracts.**

7. Background

The proposed revisions continue to maintain the goals and requirements of the M&E Plan described on page 9 of Appendix A of the Assigned Commissioners Ruling issued on July 28, 2008 (July 2008 ACR) to:

1. *Utilize a standardized process for evaluating programs and reporting program results;*
2. *Provide credible and objective information on program impacts and performance;*
3. *Provide policy and program related information to ensure achievement of CSI program goals and support the "Periodic CSI Review Process" and;*
4. *Produce an accurate assessment of future opportunities to further the goals of SB 1 and established Commission objectives and directives.*

In Decision (D.) 10-09-046, the California Public Utilities Commission (Commission or CPUC) reduced the California Solar Initiative (CSI) General Market Program Measurement and Evaluation (M&E) budget from \$46.7 million to \$26.7 million with \$25.45 million allocated to non CSI-Thermal M&E activities and \$1.25 million allocated to CSI Thermal M&E.

In a joint Advice Letter⁵ filed by the CSI Program Administrators in April 2011, the M&E plan was updated, and the PAs recommended that:

...the Energy Division be given flexibility to review and, in consultation with the CSI PA, to make changes to the CSI M&E plan and budget allocations to each study area as needed without requiring the CSI PAs to file an Advice Letter.

This flexibility will allow for a more efficient planning and review process for the CSI M&E plan.

Energy Division has consulted with CSI Program Administrators PAs) about changes to the M&E effort. This Appendix, the 2013 CSI M&E Update, describes the M&E plan going forward.

8. Non-General Market M&E Plans

The MASH and SASH programs have spent \$0.65 million for M&E studies out of an allocated total of \$2.16 million. The CSI Thermal (electric displacing and gas displacing) program and the RD&D programs are allocated \$6.25 million and \$0.50 million, respectively. The Energy Division expects to work with the PAs in the near future to develop plans for these CSI sub-programs.

9. General Market M&E Study Schedule and Budgets

a) Impact Evaluations

The Impact Evaluations provide important analyses of customer-solar installed through the CSI program. The CSI program has conducted Impact Evaluations covering program years 2007 through 2010 and is currently evaluating program impacts for program years 2011-2012. Impact Evaluations also represent a considerable portion of the total CSI M&E budget. To conserve on budget, in the April 2011 M&E Plan the Commission allowed for these studies to be conducted biennially, rather than annually.

Beginning with the 2010 CSI Impact Evaluation, the Energy Division requested that these studies estimate the impacts of customer-solar photovoltaic (PV) systems installed through other programs in investor-owned utility (IOU) territories including Emerging Renewables Program, New Solar Homes Partnership Program, and Self Generation Incentive Program (SGIP). And starting with the 2011-2012 study, more data from non-rebated customer-owned distributed generation (DG) as well as from publicly-owned utilities will be incorporated. The April 2011 M&E Plan allows for Impact Evaluations to be jointly funded by CSI and SGIP. This 2013 Update does not assume any contribution from the SGIP program, but will allow for it if such a determination is made for future Impact Evaluations. Finally, based on program

⁵ Advice 2567-E (Southern California Edison Company U 338-E); Advice 3825-E (Pacific Gas and Electric Company U 39-E); Advice 16 (California Center for Sustainable Energy).

experience, the estimate for each future study is lowered from \$1.5 million to \$1.0 million.

b) Metering

A contractor was hired at the outset of CSI M&E activities to install and monitor meters on a sampling CSI participating homes. This activity, for which \$3.66 million is allocated, is ongoing.

c) Process Evaluations

In Section 3.3.5 of the July 2008 ACR, the Commission requires biennial Process Evaluations, which include Program Administration Comparative Assessments and Best Practice Studies. Thus far, the CSI program has conducted one Process Evaluation covering program years 2009 and 2010. The April 2011 M&E Plan calls for one remaining Process Evaluation – in 2014 rather than the three remaining – in 2012, 2014, and 2016.

Subsequent to the April 2011 M&E Plan, the Program Administrators began to post online program administrative tracking data updated weekly and monthly⁶. This is supplemented by an annual Data Annex written report⁷. Such data include reservation application processing times; incentive claim processing times; payment times; interconnection times; trainings offered; program dropouts, and net energy metering (NEM) participation. These data give a glimpse into the processing and administrative challenges and issues that PAs may face. This regular tracking has replaced much of the need for ongoing Process Evaluation reports.

Currently, three of the six General Market sub-programs have substantially depleted their funding and are nearly closed. Given the late stage of the CSI program the Energy Division and the PAs may decide to cancel any further Process Evaluation studies or exclude one or more PAs from the evaluation if their programs have ended. Nevertheless, the budget shown here has a place holder for such a study.

d) Cost-Effectiveness Studies

In Section 3.3.6 of the July 2008 ACR, the Commission requires that a CSI Cost-Effectiveness study be performed every third year – in 2009, 2012, 2015, and 2017. In 2010, the CSI program released a CSI Cost-Effectiveness and a net energy metering (NEM) Cost-Benefits study. A follow-on net energy metering cost effectiveness study is now nearing completion. The April 2011 Plan reduced the number of studies and lowered the budget from \$1.9 million to \$1.35 million. This 2013 Update adds a study in 2015 and brings the budget to \$1.85 million.

e) Market Transformation Studies

The Commission, in the July 2008 ACR, required Market Transformation studies to be conducted in 2010, 2013, and 2016. As a result of the April 2011 Plan the three studies were consolidated to one now under way and to one optional study in 2016, to be conducted if determined necessary by the Energy Division and the CSI PAs. The April 2011 Plan reduced the budget for Market Transformation studies from \$10 million to \$1.5 million. This 2013 Update preserves that outlook.

⁶ http://www.californiasolarstatistics.ca.gov/reports/data_annex/

⁷ <http://www.cpuc.ca.gov/PUC/energy/Solar/legreports.htm>

f) On-going Progress Studies

The Commission, in the July 2008 ACR, allocated \$3.6 million to On-going Progress Studies. The April 2011 Plan allocated these to the “Optional Studies” category. Progress Studies may still occur if the Energy Division places a higher priority on these studies than on other “optional” studies.

g) Financial Audits

The budget allocated for the External Financial Audits in the July 2008 ACR is \$2 million. The Financial Audit of the CSI PAs that was completed in 2010 cost the program just over \$200,000, and the April 2011 Plan accordingly lowered the category’s allocation to \$900,000. The Financial Audit now under way is contracted at just under \$200,000. This 2013 Update leaves the category’s allocation at roughly \$900,000.

h) AB 578 DG Impacts Study

In response to Assembly Bill (AB) 578 (Blakeslee, 2008), the SGIP programs funded a study in January 2010 on the impacts of distributed generation (DG) on California’s transmission and distribution (T&D) systems. AB 578 requires that follow-up studies be conducted and submitted to the Legislature on a biennial basis. In the April 2011 Plan, the Commission authorized these studies to be co-funded by the CSI and SGIP programs with 70% of the funding to come from CSI and 30% from SGIP. The April 2012 Plan authorized a total CSI budget for these studies be \$210,000 and this 2013 Update does not change that sum.

The April 2011 Plan foresaw a 2014 report and a 2016 report, each costing \$55,000. The study now being completed will cost about \$100,000 and it is likely that future studies will be in that range. This 2013 Update is introducing (see below) another, more in-depth Transmission and Distribution study, scheduled for 2014, inasmuch as AB 578 does not specify that *only* customer-side DG installed through CSI, SGIP, and NEM is to be included in the analysis, and that wholesale DG would conceivably have more concentrated effects on California’s T&D system, the CSI PAs recommended in the April 2011 Plan that additional funding for this study be provided by wholesale DG programs. However, no such arrangements have yet been made.

i) Transmission and Distribution

With falling prices, rooftop PV is increasingly attractive to customers, and thus the future of the technology might seem to be assured. And yet the impact of rooftop PV on the utilities’ distribution and transmission networks, once its contribution to the resource mix grows beyond the low single digits, needs to be better understood. What impact will higher penetration have on service reliability, electricity quality, utility employee safety, and customer rates? The AB 578 report which is now being completed contains a Draft scope of work for this study.

It was noted above that this Transmission and Distribution study may be modified to encompass the next AB 578 report. Depending on how the timing unfolds, the Energy Division and the PAs may also consider consolidating this Transmission and

Distribution study together with an Impact Evaluation. Such a determination can be made closer to the time of the contract. For purposes of this 2013 Update, the Transmission and Distribution study is treated as a separate study.

Energy Division currently is acting as project manager for all the active M&E contracts. The PAs have expressed interest in managing this Transmission and Distribution contract. Energy Division is open, in principle, to this idea, given the utilities' greater in-house expertise on matters dealing with the grid. At the same time, Energy Division believes this study may present a conflict of interest to utilities wishing to curtail an incipient rival, and so wishes to be cautious about designating too much authority to the utilities. The question of contract management will be reviewed closely.

j) Public Reporting

CSI Public Reporting activities include creating and managing the California Solar Statistics (CSS) website⁸, compiling and cleaning the data that goes into the Working Data Set (WDS), and from there into the website's graphs and tables. Although the Commission has not ordered the PAs to pay for this activity out of their Administrative (excluding M&E) budgets, historically they have done so. In this 2013 Update, Energy Division is designating Public Reporting as an M&E activity and thus both explicitly and implicitly authorizing the PAs to pay for Public Reporting out of their M&E budgets.

Until now, the Public Reporting effort has focused almost exclusively on CSI projects. With the sun setting on some of the CSI sub-programs, as well as the growing tendency of building owners to install rooftop PV without the benefit of rebates, the CSS website and the WDS database will soon become a backwater unless it is able to keep tabs on all rooftop installations, even those outside the CSI program. Fortunately, the utility interconnection departments now already gather most of the data that are used on the CSS website, and those data need only to be (1) transferred to the CPUC or the contractor managing the CSS site and (2) cleaned and incorporated into the CSI dataset. While challenging, this effort is not expected to be prohibitively difficult.

Finally, depending on PA performance in managing the transition to incorporating interconnection department data, CPUC may take over contract management of the ES contract at the time of the next contract renewal.

k) AMI Studies

In Decision 11-07-031 the Commission ordered the PAs to file a report on the potential for using Advanced Metering Infrastructure (AMI) in metering and tracking usage and generation. While SCE and CCSE/SDG&E completed these reports with in-house experts, PG&E hired outside consultants. The amount paid, \$38,000 is recorded as line item in the plan. There is no plan for future expenditures in this category.

l) Project Coordination

⁸ <http://www.californiasolarstatistics.ca.gov/>

The CSI Project Coordinator, described in Section 3.3.1 of the July 2008 ACR, is responsible for coordinating the research, planning and budget tracking activities of the CSI M&E effort. The April 2011 Plan reduced the scope of activities and the budgeted amount for this contract from \$1.6 million to \$1.2 million. This 2013 Update leaves that total substantially unchanged.

m) M&E Staffing Expenditures

The Commission, in the July 2008 ACR, required that funding for CSI PA staffing for support and management of CSI M&E come out of the CSI program administration budget. However, in the Staff Proposal for Program Modifications to the CSI Program attached as an appendix to the Administrative Law Judge’s Ruling issued on July 26, 2010, the Energy Division recommended that M&E staff time at the CPUC (up to 3 PURA positions) and CSI PAs (up to 2 FTEs per CSI PA) be charged to the CSI evaluation budget. The April 2011 Plan authorized \$3.9 million to be allocated for M&E staff time through 2017. This budget assumes 1.5 FTEs per CSI PA and 1.5 PURA positions at the CPUC with a 50% reduction in staff time in 2017 for program closeout. Program experience has shown that the Energy Division and PAs are billing the CSI program at a rate substantially below this level and that a total allocation of \$3.10 million should suffice to cover this obligation. However, should additional evaluation and public reporting needs exceed this budget reserve funding from section “n” will be made available to cover those costs.

n. Optional Analyses / Reserve Funding

The General Market program (excluding the electric-displacing CSI-Thermal Program) has an authorized budget of \$25.45 million. The M&E activities noted above total \$23.58 million, leaving \$1.87 million unallocated. This Update reserves that amount for future optional studies and for unforeseen cost overruns related to projects or M&E staff time for additional evaluation and/or public reporting.

o. M&E Plan Periodic Review and Revisions

The April 2011 Plan authorized the Energy Division to be given flexibility to review and, in consultation with the CSI PAs, make changes to the CSI M&E plan and budget allocations to each study area as needed without requiring the CSI PAs to file an Advice Letter. This purpose of this was to provide flexibility will allow for a more efficient planning and review process for the CSI M&E plan. Energy Division believes this approach represents the appropriate mix of due process, a representation of various opinions, and expeditiousness, and plans to retain the right to make further changes in the future.

10. M&E Plan Revisions Summary

The recommended revisions to the CSI M&E plan are provided in Table 1. The CSI M&E budget and scheduling planning worksheet based on the proposed revised CSI M&E budget are included in Table 2.

Table 1 – General Market 2013 M&E Update Summary

Study Category	April 2011 CSI M&E Plan	2013 CSI M&E Update
Project Coordination	<ul style="list-style-type: none"> ▪ Budget: \$1.2 million 	<ul style="list-style-type: none"> ▪ Budget: \$1.13 million
Impact Evaluation and CSI Metering	<ul style="list-style-type: none"> ▪ Remaining Impact Evaluations conducted on a biennial basis (2013, 2015, 2017) ▪ Analysis and Reports Budget: \$10.6 million ▪ Metering Budget \$3.7 million 	<ul style="list-style-type: none"> ▪ Remaining Impact Evaluations conducted on a biennial basis (2013, 2015, 2017) ▪ Analysis and Reports Budget: \$8.09 million ▪ Metering Budget \$3.66 million
Process Evaluations	<ul style="list-style-type: none"> ▪ Conduct 1 additional Process study in 2014 – two total for entire program ▪ Budget: \$450,000 	<ul style="list-style-type: none"> ▪ Possibly conduct one additional study. ▪ Budget: \$380,000
CSI/NEM Cost-effectiveness studies	<ul style="list-style-type: none"> ▪ Conduct 1 additional C/E Study ▪ Budget: \$1.35 million 	<ul style="list-style-type: none"> ▪ Conduct 1 additional C/E Study ▪ Budget: \$1.85 million
Market Transformation Studies	<ul style="list-style-type: none"> ▪ Conduct 2 studies – 2011 and 2014 ▪ Budget: \$1.5 million 	<ul style="list-style-type: none"> ▪ After current study, conduct one more in 2016. ▪ Budget: \$1.50 million.
External Financial Audit	<ul style="list-style-type: none"> ▪ Same schedule ▪ Budget: \$900,000 	<ul style="list-style-type: none"> ▪ Audits every two years. ▪ Budget: \$880,000
CSI M&E Staffing	<ul style="list-style-type: none"> ▪ M&E staff time funded from CSI M&E budget ▪ Total Budget: \$3.9 million 	<ul style="list-style-type: none"> ▪ M&E staff time funded from CSI M&E budget ▪ Total Budget: \$3.10 million
AB 578 DG Impact Study	<ul style="list-style-type: none"> ▪ Biennial Studies (2012, 2014, 2016) ▪ Total CSI portion of budget: \$210,000 	<ul style="list-style-type: none"> ▪ The 2014 study may include results from the in-depth Transmission and Distribution study. ▪ Budget: \$210,000
Transmission & Distribution	<ul style="list-style-type: none"> ▪ Budget as required by D.10-09-046: \$1.25 million 	<ul style="list-style-type: none"> ▪ Budget: \$1.25 million
Public Reporting	<ul style="list-style-type: none"> ▪ None 	<ul style="list-style-type: none"> ▪ \$300,000 on-going annually ▪ Budget \$1.20 million
	<ul style="list-style-type: none"> ▪ 	<ul style="list-style-type: none"> ▪
Optional Analyses	<ul style="list-style-type: none"> ▪ Total Budget: \$1.64 million 	<ul style="list-style-type: none"> ▪ Total Budget: \$1.87 million