

APPENDIX A

THE ADOPTED CALIFORNIA SOLAR INITIATIVE RESEARCH, DEVELOPMENT AND DEMONSTRATION PLAN

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APPENDIX A

The Adopted California Solar Initiative Research, Development and Demonstration Plan

Summary

This plan (CSI RD&D Plan) allocates \$50 million of the California Solar Initiative (CSI) funds to research, development, demonstration, and deployment (RD&D) Projects under the CSI RD&D program. The RD&D program runs through 2016 and is funded by the electric ratepayers of California's three largest investor-owned utilities (IOUs), namely Pacific Gas and Electric, Southern California Edison Company, and San Diego Gas & Electric (SDG&E) as described in Decision (D.) 06-12-033.

Background and CSI RD&D Requirements

The CSI program was codified when the Governor signed Senate Bill (SB) 1 in August 2006.¹ Pub. Util. Code § 2851(c)(1) as enacted by SB 1 states the Commission shall:

“ . . . not allocate more than \$50 million to research, development, and demonstration that explores solar technologies and other distributed generation technologies that employ or could employ solar energy for generation or storage of electricity or to offset natural gas usage.”

CSI RD&D Plan

The CSI RD&D Plan includes program principles and objectives, budget allocation guidelines, guidelines and criteria for project selection, program administration, and program evaluation.

¹ Chapter 132, Statutes of 2006.

RD&D Program Principles and Objectives

The CSI RD&D Plan adheres to seven key principles:

1. Improve the economics of solar technologies by reducing technology costs and increasing system performance.
2. Focus on issues that directly benefit California, and that may not be funded by others.
3. Fill knowledge gaps to enable successful, wide-scale deployment of solar distributed generation technologies.
4. Overcome significant barriers to technology adoption.
5. Take advantage of California's wealth of data from past, current, and future installations to fulfill the above.
6. Provide bridge funding to help promising solar technologies transition from a pre-commercial state to full commercial viability.
7. Support efforts to address the integration of distributed solar power into the grid in order to maximize its value to California ratepayers.

Allocation of CSI RD&D Funds

Allocation of Funds by RD&D Stages

The following will be used as guidelines by the RD&D Program Manager and the Energy Division² to allocate funds to various stages of RD&D.

- Research: 20%--Basic and fundamental research that yields discoveries with potential application to the improvement of energy technologies, and that are directed at the invention or improvement of specific energy technologies. The research component of the CSI RD&D program (\$10 million) will be dedicated to the Lawrence Berkeley National Laboratory (LBNL)/UC Berkeley Helios project.

² Tasks or responsibilities assigned to the Energy Division are assigned to the Energy Division's Director or such staff as the Director designates.

- Development: 5-10%--Activities that convert research outcomes into prototypes.
- Demonstration: 45-55%--Activities that bring promising technologies closer to market and demonstrate real-world feasibility of new technologies to manufacturers.
- Deployment (Market Support): 5-10%-- Deployment includes activities that enhance the competitiveness of new technologies, or help reach a “tipping point” into widespread commercialization.

Allocation of Funds by Target Activities

The following will be used as guidelines by the Program Manager and the Energy Division to allocate funds to various target activities of RD&D and the milestones under each category.³

Production Technologies - 10-25%: Supporting commercialization of new photovoltaic (PV) technologies.

- Demonstrate economic viability of distributed concentrating PV systems.
- Building integral PV products become cost competitive with rooftop PV and key technical integration issues are addressed (e.g. spacing/cooling).

Grid-Integration - 50-65%: Improving PV integration with transmission and distribution systems.

- Identify and address key barriers to the development of PV minigrids or central PV;
- Demonstrate economic viability of new PV system storage technologies;
- High value locations for distributed generation (DG) PV on transmission and distribution (T&D) are identified and the

³ Asterisks denote areas that have no known overlap with California Energy Commission (CEC) Public Interest Energy Research (PIER) and other CEC-planned work.

impacts/benefits of large concentrations of DG PV in one location on transmission and distribution are assessed.

Business Development and Deployment - 10-20%: Supporting the market and end-users.

- Potential roles for utilities in solar PV, including attractive business models, are identified and vetted with utility companies;
- Lower cost, utility grade PV system control, metering, and monitoring capacity developed consistent with 1% cost parameter established by the California Public Utilities Commission (Commission) for CSI;
- Perform field tests to quantify operational risks and benefits of PV.
- Demonstrate improved PV economics using advanced metering, price responsive tariffs (e.g. Time of Use--TOU, Feed-in Tariff) and storage.

Allocation of Funds for RD&D Administration and Evaluation

- Total RD&D program administration and evaluation budget-15%
- 3% of the total budget is reserved for formal evaluation activities.

IOUs' associated contracting and accounting costs will be paid from the total RD&D program administration and evaluation budget.

The Energy Division will conduct an annual review to determine if the administrative costs can be further reduced. Unspent administrative funds will be returned to the RD&D grantmaking budget for further allocation to RD&D projects.

RD&D Administration

Structure of RD&D Program Administration

The CSI RD&D program will have an RD&D Program Manager and an RD&D Program Evaluator to assist the Energy Division with the administration

and evaluation of the entire program. The Energy Division will select the RD&D Program Manager and the RD&D Program Evaluator through Request for Proposal (RFP) processes and will seek Commission's approval of the Energy Division's Program Manager's selection through a resolution. The Energy Division will select and direct one of the IOUs (the selected IOU) to enter into contracts with the RD&D Program Manager and the RD&D Program Evaluator. The Energy Division will direct the RD&D Program Manager and the RD&D Program Evaluator throughout the life of the RD&D program.

- Within one month after being selected by the Energy Division, the selected IOU will establish a single co-funding agreement with the other IOUs at the outset that governs payment to the following:
 - RD&D Program Manager;
 - RD&D Program Evaluator;
 - grant recipients;
 - formal evaluations; and
 - And all other expenses of the RD&D program.

The co-funding agreement will govern all financial transactions among the IOUs for the RD&D program based on the program budget described in D.06-12-033. IOUs may file advice letters to receive reasonable compensation for this accounting function from the RD&D fund.

The roles and responsibilities of the RD&D Program Manager and the RD&D Program Evaluator are described in the following sections.

RD&D Program Manager Functions

The Program Manager is responsible for administration of the CSI RD&D program with oversight by the Energy Division.

- Support the Commission's Energy Division throughout the RD&D program, including assisting with reports, public comment process, meetings, workshops, and evaluation activities and other activities as specified in its contract.
- Maintain all program data.
- Develop specific RFPs consistent with guidelines, principles and objectives set forth by the Commission to implement the Adopted CSI RD&D Plan.
- Assist the Energy Division in soliciting, through formal RFP processes, a strategic variety of RD&D proposals to receive funding.
- Evaluate grant requests and propose projects for funding through the advice letter process.
- Enter into Grant Agreements with Commission-approved individual grant recipients.
- Examine and monitor project budgets and expenditures, prepare quarterly reports and facilitate semi-annual review at joint Commission/CEC workshops.
- Oversee project implementation by establishing target check-ins and on-going evaluations.
 - Regularly monitor progress on all approved projects, according to the scope of work, milestones, and deliverable schedules outlined in the Grant Agreements.
 - Recommend next steps based on evaluation of individual project's progress, assist grant recipient to disseminate "lessons learned" from the grant (such as through technical papers or trade journals) Assist the Energy Division with reviews of RD&D program costs.

RD&D Program Manager Qualifications and Experience

The RD&D Program Manager will be an entity that has no affiliation with any potential grant recipients. Entities that might apply for RD&D grants can respond to the Program Manager RFP. However, if selected, they are prohibited from applying for RD&D grants through the CSI RD&D program. If University of California at Berkeley or LBNL wishes to become RD&D Program Manager, each should propose procedures that would permit them to dispense their duties as the RD&D Program Manager impartially. If selected, they, as all potential Program Manager candidates, are prohibited from applying for grants under this Program.

The RD&D Program Manager's staff must have the following:

- Expertise in electrical and solar engineering.
- Legal expertise for contracting with both IOUs and grant recipients.
- Accounting and finance expertise as needed for project management.
- Knowledge of business development strategies.

No substitution of key personnel will be allowed without advance approval from the Energy Division.

RD&D Program Manager Selection Process

The Energy Division will select and direct the RD&D Program Manager.

- The Energy Division will issue to the parties to this proceeding, a draft RFP for an RD&D Program Manager.
- After receiving comments and making necessary revisions, the Energy Division will select one IOU to issue the final RFP. The selected IOU shall issue the RFP

within three months after the Energy Division has directed it to do so.

- The Energy Division will review the proposals, select a Program Manager and seek Commission's approval of its selection through a resolution. The Energy Division will direct the selected IOU to contract and renew or extend the RFP as appropriate with the Program Manager to perform the administrative duties as specified in this plan.

Guidelines for Project Solicitation, Selection, Funding, and Evaluation

Project Solicitation

- Under the direction of the Energy Division, the RD&D Program Manager prepares and issues to the parties to this proceeding, a draft RFP for project solicitation based upon the criteria stated herein.
- Following a public comment process, the Program Manager will revise as necessary and issue a final RFP.
- The Energy Division issues public notice of the RFP via CPUC website, and to the parties to this proceeding.
- The RD&D Program Manager conducts bidders' workshop or conference call.

Project Selection

- Program Manager reviews and evaluates proposals based on the project characteristics and criteria listed in this plan.
- Program Manager submits its recommendation of projects for RD&D funding through an advice letter process to the Energy Division.
- The Energy Division prepares a resolution for Commission consideration.
- Commission approves projects for funding through the resolution process.

Project selection will adhere to the following general guidelines:

Project results in 8+ years horizon 20% (highest risk)

Project results in 4-7 year horizon 20%

Project results in 1-3 year horizon 60 % (lowest risk)

Project Characteristics

- Eligible Technologies: solar technologies and other distributed generation technologies that employ or could employ solar energy for generation or storage of electricity or to offset natural gas usage. First solicitation will be for PV.
- Eligible Recipients: preference to fund in-state businesses or in-state sponsor.
- Project Location: preference to fund in-state projects or project component.

Project and Proponent Selection Criteria

- Milestones targeted;
- Benefits accrue to California ratepayers;
- Level of funding sought from CSI RD&D program;
- Potential to expand PV market opportunities or reduce barriers;
- Institutional and regulatory feasibility;
- Utility participation;
- Probability of commercial success;
- Compliance with cost-sharing guidelines⁴- Proposals must submit proof of cost sharing when submitting requests for grants:
 - Development 10%

⁴ These may vary depending on the nature of a project.

- Demonstration 50%
- Deployment 75%
- Visibility and educational benefit;
- Capabilities, qualifications and experience of team members;
- Size of RD&D grants: \$3 million cap (except Helios);

Timing of Solicitations and Awards

- RD&D grants will be made in 2-3 funding cycles, each with multiple RFPs (per subject area); and
- First cycle is any of three time frames (1-3 years, 4-7 years, 8+ years).

Guidelines for Project Funding

- The Energy Division directs the selected IOU to enter into a co-funding agreement with the other IOUs so it can issue payments to approved individual RD&D grant recipients.
- Selected IOU will transfer RD&D funds as directed by the Commission to the approved individual grant recipients.
- Program Manager enters into Grant Agreements with the individual grant recipients.

Project Evaluation

- The RD&D Program Manager and the Energy Division will monitor the progress on each project, according to the contractual scope, milestones and the deliverable schedules for each grant. In assessing the individual grant's achievements, the evaluation will focus on the principles, guidelines, and criteria discussed above

The Energy Division will coordinate its evaluation with other agencies or Commission programs as necessary. In addition, project evaluation will rely on the CPUC evaluation protocols established for the IOU energy efficiency

programs in 2006-2008 funding cycle and modified as necessary to make them applicable to the CSI RD&D.⁵

Stakeholder Process

Stakeholder process will provide opportunities for the stakeholders to provide input in the following areas:

- The RFP processes for the RD&D Program Manager, the RD&D Program Evaluator, and individual project solicitation.
- Semi-annual public workshops of joint Commission and CEC staff. The purpose of these workshops will be to provide a forum for dialogue among the RD&D Program Manager, the Energy Division, and CEC to examine where program coordination may be beneficial. The Energy Division may invite selected RD&D entities such as Department of Energy, National Renewable Energy Laboratory, and other State RD&D managers or non-profit and advocacy groups to these workshops as well to explore related RD&D strategies. The Program Manager will send notice of workshops to parties to the CSI proceeding.
- The development of the RD&D Program evaluation plan and the program evaluation as described below.

Independent Triennial RD&D Program Evaluation

In addition to the Energy Division's and the RD&D Program Manager's ongoing oversight of individual grants, the Energy Division will select an independent Program Evaluator to perform triennial evaluations of the entire program and the Program Manager's performance. The RD&D Program Evaluator will be paid by the selected IOU per the co-funding agreement as

⁵ http://www.cpuc.ca.gov/static/energy/electric/energy+efficiency/ee+policy/evaluatorsprotocols_final_adoptedviaruling_06-19-2006.doc.

specified above. The Energy Division and the RD&D Program Manager will develop a comprehensive RD&D program evaluation plan.

The roles and responsibilities of the RD&D Program Evaluator are:

- Support the Commission's Energy Division throughout the RD&D program, including reports, public comment periods, meetings, workshops, and evaluation activities and others as specified in its contract.
- Maintain program data.
- Perform triennial evaluation of the program and an evaluation of the Program Manager's performance, or as directed by the Energy Division.

The RD&D Program Evaluator Qualifications and Experience

The Program Evaluator will be an entity that has no affiliation with any grant recipient or the RD&D Program Manager. The Program Evaluator staff must have the following:

- Technical expertise in program measurement and evaluation specific to energy technology RD&D programs and as required to perform the duties above.

No substitution of key personnel will be allowed without advance approval from the Energy Division.

Program Evaluator Selection Process

The Energy Division will select and direct the RD&D Program Evaluator.

- The Energy Division will issue to the parties to this proceeding, a draft RFP for an RD&D Program Evaluator.
- After receiving comments and making necessary revisions, the Energy Division will select one IOU to

issue the final RFP. The Selected IOU shall issue the RFP within three months after the Energy Division has directed it to do so.

- The Energy Division will review the proposals, select a Program Evaluator and direct the selected IOU to contract and renew or extend the RFP as appropriate with the Program Evaluator to perform program evaluation as specified in this plan.

Triennial Evaluation Criteria

The RD&D Program Evaluator will conduct triennial evaluations and rely on the following in its review of the RD&D program's progress:

- Interviews with project coordinators and stakeholders;
- Individual project progress reports provided by the Program Manager;
- Prior program evaluation results;
- Issues identified by Commission staff for further investigation, and
- New information about technologies or the marketplace.

Independent triennial evaluations of the RD&D program will rely on the Commission evaluation protocols established for the Energy Efficiency programs in the 2006-2008 funding cycle and modified as necessary to make them applicable to the CSI RD&D.

The triennial evaluations will consider whether the RD&D portfolio demonstrates progress on at least the following:

- Increasing the performance and efficiency of solar panels, inverters, and system designs.
- Decreasing the costs of solar energy on a dollar/kilowatt hour basis

- Contributing to a significantly greater scale of annual installation activity.
- Applying results within the ten-year program, and no later than 2017.

Confidentiality of Information and Intellectual Property Rights

Individualized grant agreements between Program Manager and grant recipient will mirror the CEC PIER program's requirement for protecting confidentiality of information and intellectual property (IP) rights. The RD&D Program Manager may propose revisions to the general rules as necessary to tailor the adopted guidelines to individual projects. The Energy Division will review and approve any recommended general changes to the general rules and incorporate them into the final proposal RFP.

(END OF APPENDIX A)