

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET
SACRAMENTO, CA 95814-5512
www.energy.ca.gov

DOCKETED**12-EPIC-01****TN 72668****FEB 14 2014**

January 27, 2014

To: Researchers and Other Interested Parties: QUESTIONNAIRE for 2015-2017 Triennial Investment Plan for the Electric Program Investment Charge

Questionnaire for applied research and development, technology demonstration and deployment, and market facilitation

The Electric Program Investment Charge (EPIC) provides electric public interest investments in applied research and development, technology demonstration and deployment, and market facilitation for clean energy technologies in accordance with California Public Utilities Commission's May 31, 2012, Phase 2 Decision 12-05-037, as modified.¹ The California Energy Commission, Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE), as the four administrators of the program, submitted coordinated investment plans to the CPUC for consideration on November 1, 2012. In November, 2013, CPUC Decision 13-11-025 modified and approved the first triennial investment plans of each program administrator. The portion of the EPIC Program administered by the Energy Commission will provide funding for applied research and development, technology demonstration and deployment, and market facilitation for clean energy technologies and approaches for the benefit of ratepayers of PG&E, SDG&E, and SCE.

Energy Commission staff is implementing its first EPIC investment plan, as modified and approved by the CPUC.² Competitive solicitations for initiatives in the first EPIC investment plan will be published soon. A schedule of upcoming EPIC funding opportunities and feedback opportunities for the Energy Commission's first EPIC investment plan is available online at www.energy.ca.gov/research/epic/.

The CPUC EPIC schedule calls for EPIC administrators, including the Energy Commission, to submit a proposed second EPIC investment plan by May 1, 2014.³ To meet this schedule, Energy Commission staff is now developing the second triennial investment plan for EPIC funds collected in 2015-17. The plan must be approved by the CPUC. Staff estimates the plan may include \$340 million for applied research and development, technology deployment and demonstration, and market facilitation. As part of this information gathering process for the second EPIC investment plan, the Energy Commission seeks ideas from interested parties on proposed initiatives in the topic areas of the electricity system "Value Chain," specifically grid operations/market design, generation, transmission, distribution, and demand-side management. The Energy Commission's second EPIC investment plan will build upon and follow the initiative format of the first triennial EPIC investment plan located at: www.energy.ca.gov/research/epic/documents/final_documents_submitted_to_CPUC/2012-11-01_EPIC_Application_to_CPUC.pdf as modified and approved by the CPUC in Decision 13-11-025, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M081/K773/81773445.PDF>.

¹ http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF

² Energy Commission, October 2013, The Electric Program Investment Charge: Proposed 2012-14 Triennial Investment Plan, in Application of the California Energy Commission for Approval of Electric Program Investment Charge Proposed 2012 through 2014 Triennial Investment Plan, Attachment 1, http://www.energy.ca.gov/research/epic/documents/final_documents_submitted_to_CPUC/2012-11-01_EPIC_Application_to_CPUC.pdf, as modified and approved by the CPUC in Decision 13-11-025, <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M081/K773/81773445.PDF>.

³ CPUC Decision 12-05-037, Phase 2 Decision Establishing Purposes and Governance for Electric Program Investment Charge and Establishing Funding Collections for 2013-2020, http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF, page 31. CPUC Decision 13-04-030 modified Decision 12-05-037.

This is only a Request for Information; please do not submit proposals for funding.

Initiative ideas received, in response to this request, will be considered by Energy Commission staff in developing the second EPIC investment plan for funds collected in 2015-2017.

If you have applied research, development, technology demonstration, deployment or market facilitation ideas, please complete the attached initiative template. This template asks you to discuss your idea, identify why this research is appropriate for public funding, and include the issues/barriers that are impeding full market adoption of the clean energy technology/strategy addressed. Proposed initiatives will be compiled and posted on the Energy Commission website at: www.energy.ca.gov/research/epic/.

Here are some guidelines for completing the template:

1. The information contained in your initiative should be no more than three pages.
2. Complete one template per initiative. Multiple templates may be submitted, one for each separate initiative.
3. All proposed initiatives must advance science or technology and offer a reasonable probability of providing benefits to California Electric Investor Owned utilities (IOU) ratepayers and must meet the following criteria:
 - a. Focus on energy efficiency and demand-side management, generation, transmission and distribution, grid operation and market design issues.
 - b. Support state energy policy.
 - c. Consider opportunities for collaboration and co-funding with other entities.

Please e-mail suggested initiatives in a downloadable, searchable format such as Microsoft® Word (.doc) or Acrobat® (.pdf) by February 13, 2014. Please include the docket number 12-EPIC-01 and indicate "EPIC second investment plan" in the subject line. Send the completed initiative questionnaire to:

docket@energy.ca.gov and include in the CC line: Prab.Sethi@energy.ca.gov

A public workshop is scheduled in February, 2014 to focus on market facilitation. A draft second investment plan will be released in March, 2014 and a public workshop will be conducted to receive comments on the draft second investment plan.

Sincerely,

Laurie ten Hope
Deputy Director
Energy Research and Development Division



(This is a Request for Information only - Complete Pages 1 and 2 for each initiative)

Title of Proposed Initiative (Short and concise): **Private Developer Sourcing of Renewable Power Supplies for California High Speed Rail**

Investment Areas (Check one or more) – *For definitions, see First Triennial Investment Plan, page 12:*

- Applied Research and Development
- Technology Demonstration and Deployment
- Market Facilitation

Electricity System Value Chain (Check only one): *See CPUC Decision 12-05-037, Ordering Paragraph 12.a. http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/167664.PDF.*

- Grid operations/market design
- Generation
- Transmission
- Distribution
- Demand-side management

Issues and Barriers: (See Attached)

Describe the issues and barriers that are impeding full market adoption of the proposed clean energy technology or strategy (such as cost, integration, or lack of information).

Initiative Description and Purpose: (See Attached)

How will this technology or strategy help address the issue/issues? Describe knowledge to be advanced to overcome critical barriers. Include the recommended funding level (minimum and maximum) for each project under this initiative.

Stakeholders: (See Attached)

Identify the stakeholders who support the initiative.

Background and the State-of-the-Art: (See Attached)

- What research development and demonstration has been done or is currently being done to advance this technology or strategy (cite past research as applicable)?
- Describe any public and/or private successes and failures the technology or strategy has encountered in its path through the energy innovation pipeline: lab-scale testing, pilot-scale testing, pre-commercial demonstration, commercial scale deployment, market research, workforce development.
- Identify other related programs and initiatives that deal with the proposed technology or strategy, such as state and federal programs or funding initiatives (DOE, ARPA-E, etc.).

**EPIC TRIENNIAL INVESTMENT PLAN 2015-17
Proposed Energy Research Initiative
Questionnaire****Justification: (See Attached)**

Describe how this technology or strategy will provide California IOU electric ratepayer benefits and provide any estimates of quantified annual savings/benefits in California, including:

- Name of sector and estimated size and energy use.
- Quantifiable performance improvements for the proposed technology/strategy.
- Maximum market potential, if successful.
- Number of direct jobs created in California.
- Why this research is appropriate for public funding.

Ratepayer Benefits (Check one or more):

- Promote greater reliability
- Potential energy and cost savings
- Increased safety
- Societal benefits
- Environmental benefits - specify
- GHG emissions mitigation/adaptation in the electricity sector at the lowest possible cost
- Low emission vehicles/transportation
- Waste reduction
- Economic development

Describe specific benefits (qualitative and quantitative) of the proposed initiative

Public Utilities Code Sections 740.1 and 8360: (See Attached)

Please describe how this technology or strategy addresses the principles articulated in California Public Utilities Code Sections 740.1 and 8360. The California Public Utilities Code is available online at www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc.

SOLAR ENERGY FIELDS, INC.



Response to: EPIC TRIENNIAL INVESTMENT PLAN 2015-17 Proposed Energy Research Initiative Questionnaire

Proposed Initiative: Private Developer Sourcing of Renewable Power Supplies for California High Speed Rail

Issues and Barriers:

Describe the issues and barriers that are impeding full market adoption of the proposed clean energy technology or strategy (such as cost, integration, or lack of information).

Renewable Energy Programs currently offered by SCE are restrictively complex for small Renewable Energy Developers, placing disproportionate and excessive risk on them, thus making development of their projects economically non-viable, and restricting them from participating in meeting the High Speed Rail Authority's (Authority) demand for renewable energy sourcing per its April 23, 2013 Call to Industry. Information is not readily available to allow for small developers to take steps now to be in a position to secure PPA with the Authority or other similar opportunities.

Initiative Description and Purpose:

How will this technology or strategy help address the issue/issues? Describe knowledge to be advanced to overcome critical barriers. Include the recommended funding level (minimum and maximum) for each project under this initiative.

SEF's proposes that the Authority consider engaging in PPAs directly with Developers as the end-user of the solar/renewable electricity. This will facilitate the Agency's objectives by overcoming the immense challenges now facing small-scale developers as they attempt to negotiate for a PPA.

The Authority could benefit by engaging in agreements as a direct end-user of the electricity provided by the Developers, thus by-passing the many utility roadblocks that have prevented the State of California from achieving the Governor's and the Legislature's goal of developing alternative sources of energy, reducing dependency on non-renewable energy sources, and creating markets for new technology. For the renewable energy supply to the train stations, rolling stock maintenance facilities, and other installations, SEF suggests that the Authority might also consider the program that has been developed by the Department of General Services from the State of California as a method to achieve its goals and to benefit from low-cost renewable solar energy.

Stakeholders:

Identify the stakeholders who support the initiative.

Per the aforementioned Call to Industry, the California High Speed Rail Authority, within the context of the Governor's and Legislature's stated goals, is a primary stakeholder as are all residents of California in general.

Background and the State-of-the-Art:

- What research development and demonstration has been done or is currently being done to advance this technology or strategy (cite past research as applicable)?
 - This is not an issue of technological viability; it is an issue of equal representation and access. Small Independent Developers are simply without a voice or a means of participating under the restrictive renewable energy programs currently in place.
 - SEF submitted a comprehensive response to the Authority's Call to Industry, and will gladly provide that response upon request (note that a portion of SEF response contains confidential information).
- Describe any public and/or private successes and failures the technology or strategy has encountered in its path through the energy innovation pipeline: lab-scale testing, pilot-scale testing, pre-commercial demonstration, commercial scale deployment, market research, workforce development.
 - Data not available to respondent
- Identify other related programs and initiatives that deal with the proposed technology or strategy, such as state and federal programs or funding initiatives (DOE, ARPA-E, etc.).
 - Data not available to respondent

Justification:

Describe how this technology or strategy will provide California IOU electric ratepayer benefits and provide any estimates of quantified annual savings/benefits in California, including:

- Name of sector and estimated size and energy use.
 - The California high-speed rail will connect the mega-regions of the state, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. By 2029, the system will run from San Francisco to the Los Angeles basin in under three hours at speeds capable of over 200 miles per hour. The system will eventually extend to Sacramento and San Diego, totaling 800 miles with up to 24 stations. In addition, the Authority is working with regional partners to implement a statewide rail modernization plan that will invest billions of dollars in local and regional rail lines to meet the state's 21st century transportation needs.
 - The Authority has committed to using 100 percent renewable energy for powering the system. This will be achieved by procuring or producing enough renewable energy to offset the amount of energy it takes from the state's power grid to operate trains and facilities. This net-zero approach will increase the environmental benefits of the rail system and reinforce California's renewable energy economy while providing the Authority with a cost-stable source of electricity. The Authority views the adoption of best practices in energy and sustainability in its daily operations as core to its mission.
 - In addition to traction power, the Authority is also considering the feasibility of meeting the energy requirements of train stations, rolling stock maintenance facilities, and other installations, completely with renewable energy from sources that qualify for California's RPS. The renewable energy infrastructure design shall provide for daily and seasonal demand variations, however in each 12 month calendar year, the Authority proposes to purchase renewable energy from RPS-eligible renewable energy resources to match the annual aggregated GWh required to operate the system.

- Following is the High-Speed Rail System Energy Requirement Estimate:

Year	Energy for traction (GWh)	Energy for train stations, maintenance facilities, other installations, etc. (GWh)	Total energy requirements (GWh)
2022	180	20	200
2023	270	30	300
2024	270	30	300
2025	440	60	500
2026	440	60	500
2027	710	90	800
2028	710	90	800
2029	890	110	1000
2030	1070	130	1200
2035	1150	150	1300
2040	1150	150	1300
2045	1150	150	1300
2050	1240	160	1400

- **Quantifiable performance improvements for the proposed technology/strategy.**
 - The EPIC TRIENNIAL INVESTMENT PLAN 2015-17 Research Initiative would facilitate a substantial portion of the production of the above referenced energy needs utilizing small renewable energy projects located in the State of California. Without the proposed EPIC initiative, there is a greater chance of the Authority’s goal of utilizing 100% renewables will not be met or that it will be met utilizing a substantial amount of renewable energy from out-of-state Projects.
- **Maximum market potential, if successful.**
 - Ranges from 200 GWH for the year of 2022 to 1400 GWH in 2050 (see above table)
- **Number of direct jobs created in California.**
 - Data not available to respondent
- **Why this research is appropriate for public funding.**
 - It serves the public need as identified by governor and legislature

Public Utilities Code Sections 740.1 and 8360:

Please describe how this technology or strategy addresses the principles articulated in California Public Utilities Code Sections 740.1 and 8360. The California Public Utilities Code is available online at www.leginfo.ca.gov/cgi-bin/calawquery?codesection=puc.

Section 740.1. states that the commission shall consider the following guidelines in evaluating the research, development, and demonstration programs proposed by electrical and gas corporations:

- (a) Projects should offer a reasonable probability of providing benefits to ratepayers.
 - The Governor and State Legislature has determined that renewable energy development is a necessary component of California's energy efficiency program, and have created mandates to that end. Providing the mechanism whereby all Renewable Energy Developers, the large and the small, have a direct, fair, reasonable, and equitable pathway by which to contribute to the State's goals is of direct benefit to ratepayers and taxpayers.
- (b) Expenditures on projects which have a low probability for success should be minimized.
 - Solar electricity generation is a proven, successful technology. Increasing production capacity by reducing procedural and/or bureaucratic impediments can only serve to expand its successful utilization.
- (e) Each project should also support one or more of the following objectives:
 - (1) Environmental improvement.
 - Increased solar energy production reduces environmental impacts.
 - (2) Public and employee safety.
 - (3) Conservation by efficient resource use or by reducing or shifting system load.
 - (4) Development of new resources and processes, particularly renewable resources and processes which further supply technologies.
 - Expanding access to solar electricity by enabling small developers to participate in High Speed Rail and other such programs is, in fact, facilitating the development of new resources in the State of California.
 - (5) Improve operating efficiency and reliability or otherwise reduce operating costs.
 - Expanded access equals increased production which will result in reduced cost.