

Pre-Application Questions, Answers, and Clarifications
PON-13-303
Advancing Utility-Scale Clean Energy Generation
California Energy Commission
June 19, 2014

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PON-13-303 Pre-Application Workshop Questions/Answers

(Responses are in bold and italics)

Definitions

1. How is utility-scale defined? Is bigger better? Is a megawatt better than a kilowatt?

“Utility-scale” means central station electricity generation 20 megawatts or larger. The solicitation is designed to facilitate the development of utility-scale renewable energy generation technologies and strategies by funding the eligible research and development activities described in the solicitation.

2. Can you please further define utility scale; is distribution connected (12 or 4 kV) applicable?

Please see the response to question 1.

3. So you are not looking for a rooftop device, but something covering acres?

Same as above.

4. Please clarify if the projects are all for centralized locations or only one project.

Same as above.

5. Can you define the size of pilot-scale? It is not clearly defined.

“Pilot scale demonstration” means a small-scale demonstration that is larger than a bench-scale demonstration and smaller than a full-size demonstration. After basic research determines that the technology or strategy has demonstrated preliminary feasibility, a pilot-scale demonstration or test is used to validate results and provide proof of concept. Pilot demonstrations test the design and validity of an approach, and adjustments can be made at this stage before full-scale demonstrations.

6. We are interested in a forecasting project that would create a scaled implementation of individual pieces that have been tested in the lab. Does this meet the threshold of being applied R&D?

Pilot-scale demonstrations of technologies or strategies that have already been verified at the lab or bench scale are eligible for applied research and development funding under this solicitation. Please see the response to question 5.

7. On Page 9, the “Project Requirements” section states that the application should be focused on applied research and development, which includes “early, pilot-scale testing activities.” Are pilot-scale testing activities required, or is this just an example?

“Early pilot-scale testing activities” is an example of what can be proposed for technology-focused projects. The important distinction is that this solicitation will not fund basic research or full-scale demonstrations.

8. On Page 1, the first sentence talks about technologies and strategies. Are non-technology proposals such as innovative operational management strategies (versus a widget), acceptable?

Yes, innovative strategies will be considered as stated in the Application Manual.

9. We're talking about the technology and strategy; does that mean not the latest and greatest widget?

Applications do not necessarily have to have a technology focus; innovative management, operating, and/or modeling strategies are also allowed where stated in the Application Manual.

Eligible Projects

10. Regarding Project Group 1 on page 10, is conversion of thermal energy into a gas considered energy storage? If a system converts concentrating solar into hydrogen or methane, does it fall within Group 1?

No. Applications must address thermal energy storage for concentrating solar power and must describe the electricity IOU ratepayer benefits. Other forms of energy storage, including hydrogen or methane, are not eligible for this solicitation.

11. Will a converted product of natural gas or hydrogen for injection into pipeline infrastructure and other use as opposed to electricity conversion at the site for load distribution be considered as a possible strategy? Would this conversion receive weight?

No, this is not an eligible project. Please see the response to question 10.

12. Evaluating meeting the other criteria, is there flexibility into NG or Hydrogen to be transported/distributed as possible advantage to conversion?

No. Please see the response to question 10.

13. There is a reference to \$0.06 per kilowatt-hour, which is one of DOE's SunShot key performance indicators. The SunShot Initiative also includes other criteria. Are they included as an extension?

The primary focus of Group 1 projects is on reductions in the installed cost of concentrating solar power, but it is recommended that Applications also highlight the other benefits of the project, including the ability to meet or exceed other performance targets of the SunShot Initiative.

14. For Group 1 thermochemical heat storage, is there a list of chemicals that will not be considered?

No, there is no list of chemicals that will not be considered. All chemicals are eligible, but it is recommended that the Application describe how use of the chemical will not have an adverse effect on the environment.

15. Will a project that saves power consumption in reverse osmosis be eligible for Group 1?

Group 1 Applications must focus on thermal energy storage for concentrating solar power applications. The Application must describe how the project meets the project requirements for Group 1 listed in the Application Manual.

16. Will the Energy Commission consider mountain lakes as natural storage for solar energy that can be utilized to produce power?

Group 1 projects must address thermal energy storage for concentrating solar power applications. Other forms of energy storage, or power generation that is not a direct result of concentrating solar power, are not eligible for funding under Project Group 1.

17. Solar power drives weather and controls the hydrologic cycle. Fresh water lakes represent natural, temporary storage of solar energy. Elevated mountain lakes have potential energy available to generate electric power at lower elevation from hydraulic pressure. From some lakes, pressure can

reach 2,000 pounds per square inch, as in Lake Hemet. The large pressure will largely increase the power/water ratio compared to conventional hydropower concept. The high pressure will also allow microfiltration of the water for multiple beneficial uses. Is our innovative approach to utilize such hydrostatic (hydraulic) pressure to drive electric generators by different mechanical engines classified under Group 1 as defined in the PON-13-303?

Group 1 projects must focus on improvements to thermal energy storage for concentrating solar power applications. Other forms of energy storage are not eligible for funding under this solicitation.

18. Will Mountain Lakes be classified under Group 1 as natural solar energy storage?

Please see the response to question 16.

19. Our company is developing an integrated CSP solution with thermal storage. The storage and generation repeating units are 20kW in size, allowing systems to be built economically that range between a few hundred kilowatts to tens of megawatts. These systems can store energy anywhere from a few hours to providing 24-hour operation, if desired.

A key component of our system is the pebble-bed storage block, combined with air as our working fluid. However, as I read this PON and compare it to PON-13-302, it seems to me that both awards are focused on cost reduction of storage. Our system, given its size range, can be connected to the distribution-grid, providing firm solar electricity and storage services, favoring PON-13-302. However, we are clearly CSP, favoring PON-13-303.

Are you able to say which PON we would be best suited for, or would there be no penalty to apply for both? What would be your preference?

Applications that are focused on improvements to thermal energy storage for concentrating solar power applications are eligible under PON-13-303, Group 1, as long as other application requirements are met. Other forms of energy storage are not eligible under PON-13-303. Please refer to project eligibility requirements under PON-13-302. The applicant must determine which solicitation best aligns with the proposed project.

20. Regarding "Development of Alternative or Improved Technological Approaches to TES" under Group 1 (Thermal Energy Storage for Concentrating Solar Power): Does the solicitation cover a novel receiver system that incorporates storage, or does it only cover projects which are exclusively storage? For example, would a novel receiver design with a new approach to storage that enables lower cost, more efficient TES but uses conventional heat-transfer materials be eligible?

The primary focus of projects in Group 1 should be on the improvement of thermal energy storage for concentrating solar power. A proposal may also involve the improvement of a solar receiver, but it should provide a description of how this will improve thermal energy storage and help to meet the listed DOE cost reduction targets.

21. Do the Thermal Energy Storage projects (Group 1) need to fulfill the quantitative metrics defined by DOE SunShot initiative (i.e., TES cost < \$15/kWh, Exergetic efficiency > 95%, and Material degradation due to corrosion < 15 µm/year)?

Applications for Group 1 should include a description of how they will help to achieve the cost reduction goal of the DOE SunShot Initiative. Specifically, page 10 of the

Application Manual states that “Proposals addressing heat transfer fluids and storage media or systems must explain how the proposed technology advancement can reach commercial status by 2020 and contribute to meeting the U.S. Department of Energy’s SunShot Initiative goal of reducing the total installed cost of solar energy systems to \$0.06 per kilowatt-hour (kWh) by 2020.”

Applications may also include a description of how the proposed project will help to meet additional SunShot Initiative goals in order to highlight the benefits of the research approach.

22. Does the proposed project for Group 1 need to include the entire system, i.e., heat transfer fluid and storage fluid and system?

For Group 1, projects must address the development of tools and/or technologies to improve the cost and efficiency of thermal energy storage for concentrating solar power. While a project can address heat transfer fluids, storage fluid, modeling, or all of the above, the Application must describe how it will benefit the entire system and help to achieve the Department of Energy’s SunShot Initiative goal of reducing the installed cost of solar to \$0.06 per kilowatt-hour by 2020.

23. For Group 2, are projects that address one or the other (solar or wind forecasting) acceptable or must projects involve both wind and solar?

Projects proposed under Group 2 can focus on either solar or wind, or a combination of both solar and wind forecasting and modeling.

24. Group 2 states "wind AND solar" forecasting. Can a proposal address forecasting on just wind forecasting OR just solar forecasting?

Please see the response to question 23.

25. Granted the overall solicitation focus is on utility-scale efforts, for project group 2– is a project with a local utility used for xyz results acceptable?

Group 2 projects that are focused on a local utility are acceptable as long as the results are transferrable to the larger grid. Each application must also demonstrate electricity IOU ratepayer benefits, and any pilot demonstration must be located in IOU territory.

26. In Group 2, there is a reference to a "microgrid"; thus is it assumed that a microgrid is a "centralized" energy resource?

The ‘microgrid’ reference is provided as an example. The Application should discuss how the proposed technology or strategy will benefit utility-scale generation, for example, from a grid planning perspective or operating as a larger aggregated resource.

27. Even though this is a utility-scale generation solicitation, can you use distributed generation (DG) for Project Group 2?

Yes, as long as the application clearly describes utility-scale benefits or demonstrates that results are applicable at the utility scale. Each application must also demonstrate electricity IOU ratepayer benefits, and any pilot demonstration must be located in IOU territory.

28. Within Group 2: Solar and Wind Forecasting and Modeling, there is a research area that mentions distributed renewables and controllable loads specifically. Are rooftop and/or distributed PV acceptable to use or centralized utility-scale only?

Group 2 projects may include a focus on distributed PV, but should offer a clear benefit to grid-scale operations (i.e. reduced integration costs or greater reliability).

29. Group 2 topics emphasize accuracy of (single) solar and wind forecasts including ramp events. For operational planning, greater value may be obtained by considering multiple forecasts that represent the range of possible resource availability time series for the hours ahead. Would a proposal on probabilistic forecasting that yields multiple scenario paths, for use in stochastic unit commitment, be of interest?

For Group 2 projects, probabilistic forecasting for solar and/or wind is an acceptable topic as long as the applicant can justify that it will provide benefits for grid operations and planning.

30. I am requesting your guidance on whether PG&E is eligible to apply for funding under PON-13-303, Group 2: Solar and Wind Forecasting and Modeling for the following high-level study scope.

The project will focus on PG&E's distribution and transmission systems by aggregating key prior and ongoing relevant research findings as well as documentation from relevant CPUC and California Energy Commission (CEC) proceedings to identify data gaps in distribution planning and policy decision-making with respect to distributed generation systems requiring future primary research efforts. The project will then prioritize key data gaps and seek to fill them with primary research before analyzing all available data to establish a baseline of distributed generation impacts from which to perform scenario analyses based on expected distributed generation system penetration levels associated with various policy goals. In doing so the final outputs of this project will serve to inform future policymaking and research related to distributed generation systems.

This solicitation is open to all public and private entities and individuals (please see page 9 of the Application Manual). However, Group 2 projects must involve the development and validation of advanced solar and wind forecasting and modeling tools and technologies.

31. The Introduction to the Program Opportunity Notice states that, for Group 3, the project must "Increase the efficiency and extend the operating life of existing geothermal energy generation facilities by improving . . . system design" Does Group 3 apply only to existing facilities?

The core of my project is a whole new system design that no existing facility would be able to adopt completely, although certain aspects of my design may improve the efficiency of some existing facilities. Should we apply for this PON, or will a later PON call for new designs for new facilities?

Applications submitted for Group 3 should address research and development that can improve existing geothermal energy facilities. However, projects can also provide benefits to new geothermal facilities.

32. This question concerns PON-13-303, specifically eligibility for a grant in the geothermal category, or any other category, for that matter:

- In the lab or in a small cooling tower, flow test a method of efficiency improvement for wet and dry cooling towers. Experience at several geothermal plants is that existing flow designs are fair to good, but all could be better. The goal is slightly more air flow, which produces an incremental improvement in power sent to the grid, with no other modifications to the plant or its operation.
- In the lab or on a small turbine, flow test a method to improve the flow efficiency in turbine outlets. The common application would be an ORC or CO₂-type turbine. The goal is reduced turbine backpressure, which will produce an incremental improvement in power sent to the grid, with no other changes to the plant or its operation.

Are the above concepts eligible for this grant solicitation?

Any Application that meets the project requirements and can show a potential improvement for existing geothermal facilities is eligible under PON-13-303, Group 3. The Energy Commission’s Geothermal Resource Development Account (GRDA) program may provide funding for additional geothermal-related activities.

33. Regarding the use of “and” and “or” under Group 3 – where it says “and” is it permissible to read it as “or”? Particularly for Project Group 3 toward the bottom of page 11. Where it says “and” ancillary– flexible load as needed and provide ancillary services –could this be “or”?

From page 11: “Projects will help to broaden the role of geothermal energy in addressing grid regulation and support issues by improving the ability of power plants to: operate in either baseline production or flexible mode as needed; and provide additional ancillary services to the grid.”

Yes, “and” in the language quoted above can be considered “and/or.” However, we encourage the applicant to address each of these items in an Application.

Application Requirements and Formatting

34. As for concepts that span two Project Groups, is this not allowed? For instance: forecasting solar production for CSP - where does this fit?

Each Application may address only one project group. The same application cannot be submitted for two groups.

35. Is the team allowed to submit more than one application as long as the applications are distinct and separate?

Yes. The Application Manual has been revised to clarify that if an applicant submits more than one application that addresses the same project group, each application must be for a distinct project (i.e., no overlap with respect to the tasks described in the Scope of Work, Attachment 6).

36. Can we submit more than one proposal in the same group as well as different groups?

Applicants may submit multiple proposals, though each proposal may address only one project group. Please also see the response to Question 35.

37. Are there requirements for including subcontractors with veteran status, academic institutions, or others?

No.

38. When disclosing past history – when you say a project was “terminated”, do you mean prematurely, or if it was at a go/no go point?

“Terminated” means concluded prior to the scheduled end date, for any reason.

39. Can the lab-scale and/or prototype-scale research and development be utilized toward graduate degrees at academic institutions?

Please consult with the academic institution at issue for guidance.

40. Will existing U.S. patents be utilized in the Applied R&D stage?

Technologies or strategies included in the Applied R&D stage can utilize existing patents, but should include innovation to develop advanced technologies or strategies.

41. Can a contractor or subcontractor be of foreign identity to bring innovative ideas and equipment?

Yes.

42. EPRI is preparing its application for submission under PON-13-303 and needs some clarification concerning the Application form.

In the section for past agreements on page three, is CEC interested in seeing a comprehensive list of ALL active and completed agreements with the entities listed, spanning over the past three years?

Our organization has literally thousands of agreements with California and DOE agencies spanning numerous funding and project types over the past 36 months. A comprehensive list of this sort would be quite labor intensive and time-consuming to arrange. Would it be acceptable for an applicant to narrow this list down to a limited number of its most recent agreements with California and DOE agencies?

Page three of the Application Form has been revised as follows: “If the number of agreements for the applicant or subcontractor exceeds ten, list at least ten of the applicant or subcontractor’s most recent agreements, in order of date and relevance to the proposed project.”

43. Can you please clarify the level of involvement required by a "support" entity? I know it states a letter that describes the interest in the project and to what extent the development is supported. However, beyond the letter and general following of the project, is there more involvement being committed at that time (i.e. meeting attendance, reporting of any nature)?

No, support letters do not require a commitment to participate in the project. Please see Attachment 11.

44. Page 13 of the PON requires that pages be numbered and printed double-sided. Are pages within sections to be numbered within each section (1 of x) as provided in the templates or from 1 to the end of the document (1, 2, 3...X) or (1 of X)?

Each section of the Application must be numbered separately (1 of x) as provided in the templates. In addition, each section of the Application must fall within the page limits listed on page 13 of the Application Manual.

45. Page 13 of the PON requires that the Project Team Form (Attachment 5), one for each “key personnel,” be included in the forms and documents that count towards the sixty page limit. There could be up to 10 or more “key personnel” depending on the proposed project team structure. Request that the Project Team Forms not count towards the sixty-page limit.

The Project Team Form will no longer be counted toward the page limit. This change has been made in Addendum 1.

46. Page 1 of the PON’s Attachment 1 requires the applicant to identify its status. The choices are: Private Company, Non-profit, California State Agency (includes the University of California and California State Universities), or Government Entities (e.g., city, county, federal government, air/water/school district, joint power authority, out-of-state university). Lawrence Berkeley National Laboratory is a U.S. DOE federally funded research and development center managed by the University of California. Which is the correct box to check - California State Agency or Government Entity?

U.S. DOE –funded national laboratories fall under the “Government Entities” category.

47. Can the point size for captions and/or table text be smaller than 11 point?

Yes.

48. We are a multi-institutional academic/industrial team based in California. Can we have multiple Co-Principal Investigators (Co-PIs) on the proposal?

Multiple principal investigators may be included in a single Application if their roles and responsibilities are clearly described. However, a single point of contact must be identified in the Contact List (Attachment 10).

49. Is there a minimum or maximum for the projects' duration? Does the project have to start and end on the anticipated agreement start and end dates?

The project start and end dates must fall within the schedule listed on page 7 of the Application Manual.

Budget and Match Funding

50. Is there a rate table that specifies the range for labor rates? Subcontractor rates? Are the labor rates published? Can we review them prior to bid?

There is no such list. However, rates will be evaluated as described in the Scoring Criteria on pages 23-27 of the Application Manual.

51. For privacy, is a bank letter, in good faith, sufficient to prove cash-in-hand funds? And of what amount?

“Cash in hand” funds must be justified by a commitment letter signed by an authorized representative of the entity providing match funds. Commitment letters must meet the requirements outlined in Attachment 11.

52. If there is a support letter that states an entity intends to eventually fund a portion of the project, but, as stated, is not directly committed to that amount with that letter, does that count towards the match funding scoring criteria? Or is that not counted since it is not officially committed?

All match funding must be documented by a commitment letter that meets the requirements described in Attachment 11 in order to qualify for additional points.

53. Part of the scoring criteria is related to funds spent in California. For reference, other than 0 points for that score, is there any penalty for a proposal if there are no funds spent in California? Is the proposal considered less viable?

There is no requirement for funding to be spent in California. However, all applications will be scored on the amount of funding spent in California according to the table in scoring criterion 6.

54. Please clarify that the scoring criterion for funds spent in California only applies to EPIC funds and not cost sharing.

That is correct.

Project Reporting

55. What are reporting requirements during the course of the project?

Refer to Task 1 in the Scope of Work Template (Attachment 6). The primary reporting requirements are the monthly progress reports, the final report, and any interim reports or deliverables, which must be submitted according to the project schedule (Attachment 6A). Additionally, there will be Critical Project Review (CPR) meetings and reports built into the project schedule. CPRs will be scheduled by the Energy Commission Agreement Manager.

56. Please clarify reporting/meeting/presentation requirements for agreements over the three year term. Monthly progress reports and “CPR” meetings/reports were mentioned in the workshop, but these are not listed in the PON.

- Will reports be required to follow PIER guidelines (http://www.energy.ca.gov/contracts/pier/contractors/#research_manual)?
- Who will the CEC program manager be for Group 3 projects?
- Will the Q&A from the workshop be posted?

Reporting requirements, including monthly progress reports and CPR meetings, are discussed in the Scope of Work Template (Attachment 6) and in the EPIC terms and conditions posted on the Energy Commission’s website. The Commission Agreement Manager (CAM) will provide a Style Manual for Final Reports.

CAMs will not be assigned until projects have been recommended for award.

This Q&A document will be posted online, along with the other solicitation materials, at: <http://www.energy.ca.gov/contracts/epic.html#PON-13-303>.

Confidentiality

57. It was made clear that everything in the application process is not to be marked confidential. Is there a similar confidentiality restriction for documents developed during the project, assuming it is awarded?

Please refer to the “Confidentiality” section in the terms and conditions for guidelines regarding submission of confidential information to the Energy Commission during the agreement term.

Terms and Conditions

58. Section 16 provides for a broad general indemnification. How will the Energy Commission treat an application that places a cap on such indemnification to the amount of the contract? Will the result be automatic rejection of the proposal or will it simply count as a point against the proposal such that a strong proposal might still be funded with such a cap?

Applicants must agree to enter into an agreement with the Energy Commission without modification of the terms and conditions (see page 3 of Attachment 1). The application will be disqualified if the applicant includes a statement or otherwise indicates that it will not accept the terms and conditions, or that acceptance is based on modifications to the terms and conditions (see Screening Criterion 9 on page 21 of the Application Manual).

59. The indemnification clause (Section 18) is very broad. In particular, it is not clear where are the limits of the phrase "...in connection with this Agreement." Under previous PIER funding, the relevant wording was "...in connection with the performance of this Agreement." The new wording implies that the Recipient may be liable for things that are not related to Recipient's performance of the agreement and for which the applicant is not at fault and may not be able to prevent, for example for issues that relate to the Energy Commission's policies for giving awards or errors, etc. Could the Energy Commission confirm that the intent of the language is to have indemnification only for matters that arise from the Agreement for which the Recipient acted improperly or with negligence?

"In connection with this Agreement" means "in connection with the performance of this Agreement." However, "performance" is not limited to improper or negligent acts.

60. Section 20(b)(3) requires that the Recipient preserve pre-existing and new IP generated for the proposal. What does "preserve" mean? Does it mean Energy Commission access such that the Energy Commission will be able to use the IP? Does it mean file as a patent every potential invention that may be conceived? May the Recipient use its ordinary business judgment in determining when the cost of prosecution exceeds the benefit (e.g., if an Examiner rejects a patent, must the Recipient appeal the rejection?) And if it means Recipient must file the patents, could you confirm that only US patents are required, as to file worldwide could be prohibitively expensive?

"Preserve" means to keep safe from harm or loss. Preservation does not require filing a patent, though the Energy Commission may seek patent protection under the "March-In Rights" provision in Section 21 of the terms and conditions.

61. Section 21: Access to and Preservation of IP: With regard to know-how, are we correct that a company's normal recordkeeping (lab notebooks, email archives, etc) are sufficient to preserve know-how?

Please see the response to question 60 above. Recipients may use any appropriate means to preserve intellectual property, including normal recordkeeping.

62. Under Section 21(b)(1), the CEC gains a transferable right to IP. Under what circumstances would the CEC actually transfer their rights for the benefit of the IOUs? If a private company were actively working to market the technology developed under an EPIC project to the California IOUs, would

the CEC potentially step in and transfer its rights to the IOUs or some other party who would sell to the IOUs?

The Energy Commission administers EPIC funds under the direction of the California Public Utilities Commission, which authorizes license transfers. (See CPUC Decision 13-11-025, page 140, section 30). Licenses are transferable by the Energy Commission only for the purposes described in Section 21(b)(2) of the terms and conditions. The Energy Commission will take into account the Recipient's marketing plans prior to making a decision to transfer a license.

63. Section 21(d), the Intellectual Property Indemnity makes clear that the Recipient will defend and indemnify the Energy Commission for any claim, lawsuit, liability, expense, loss, etc. arising out of any allegation that the product (defined in section 5 as any tangible item delivered to the Commission in the scope of work) infringed IP or any claims of negligence or omissions by the Recipient related to the product. Is the "Product" only the tangible item actually delivered to the Commission or is it the Commission's position that the Commission can use the product as the basis for making hardware or software and all IP liabilities for the reproduced hardware or software also flows to the Recipient? In other words, if the product is a report, is the Recipient liable for the Commission choosing to build the hardware or software technology described in the report?

"Product" refers only to the tangible item delivered to the Energy Commission.

Solicitation Information

64. Will a list of workshop participants made available?

A list of participants is available on the Energy Commission's website at:

<http://www.energy.ca.gov/contracts/epic.html#PON-13-303>.

65. Will verbal (phone) questions be posted online?

Yes, all questions received at the workshop and in writing before the deadline will be posted on the Energy Commission's website at: <http://www.energy.ca.gov/contracts/epic.html#PON-13-303>.