# Energy Storage PON-13-302
# Pre-Application Workshop – Question and Answers

## Table of Contents

## Questions and Answers

**Responses are in bold**

# DEFINITIONS

1. Question: Define applied research.

   **Answer: "Applied research and development" is defined on page 10 of the PON as "activities that support pre-commercial technologies and approaches intended to solve specific problems in the electricity sector." Bench and pilot testing is performed at this stage to validate results and provide proof-of-concept. Adjustments can be made at this stage before full-scale demonstrations.**

2. Question: Re: CEQA requirements: What is a "physical change in the environment"?

   **Answer: California Code of Regulations, Title 14, section 15064, subsection (d) defines a "direct physical change in the environment" as follows:**

   **[A] physical change in the environment which is caused by and immediately related to the project. Examples of direct physical changes in the environment are the dust, noise, and traffic of heavy equipment that would result from construction of a sewage treatment plant and possible odors from operation of the plant.**

   **"Indirect physical change in the environment" is defined as follows:**

   **[A] physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment. For example, the construction of a new sewage treatment plant may facilitate population growth in the service area due to the increase in sewage treatment capacity and may lead to an increase in air pollution.**

3. Question: Can you explain direct labor versus loaded rates?

   **Answer: The direct or unloaded labor rate is the labor rate that does not include fringe benefits or other non-labor costs (e.g., overhead and general and administrative costs). The loaded rate includes both the direct labor rate and non-labor costs. More information on direct labor and loaded rates is in the Budget Forms (Attachment 7).**

# CONFIDENTIALITY

4. Question: How realistic is it to submit information for an advanced technology that is not confidential?

   **Answer: Applications that include confidential information or mark any section of the application as confidential will be rejected. The applicant should describe the technology in sufficient detail to convey the significance of the project without disclosing proprietary or confidential information in the proposal.**

5. Question: Can't we submit confidential information and mark it as such?

   **Answer: No. Applications that contain confidential information will not be accepted. See screening criterion 9 in Part IV, Section E.**

# MATCH FUNDING

*Match funds are not required and are optional for PON-13-302. Applications that include match funding will receive additional points during the scoring phase.*

6. Question: Are match funds supposed to be spent in California?

   **Answer: Match funds are not required for PON-13-302. If match funds are provided, they are not required to be spent in California.**

7. Question: How many additional points could one receive for match funding?

   **Answer: Up to 10. Please see Scoring Criterion 8 in Part IV of the PON.**

8. Question: Are commitment letters required?

   **Answer: All applicants providing match funds must submit commitment letters that include the information required in Attachment 11, Commitment and Support Letter Form.**

9. Question: Are third party/partner cash or in-kind contributions directly supporting the project considered match funding?

   **Answer: Yes, if the contributions meet all other match funding requirements as described in Part I, Section E.**

10. Question: DOE typically writes that it will intend to fund, “subject to the Congress”. Can future DOE funding that has been committed, but not received, be included as match funding?

    **Answer: No.**

11. Question: On the “Matching Funding” option, are cash matching funds given more weight than “in-kind” matching funds? For example, a team member may provide a facility and/or a site for the pilot test site under S8.2 which cost $1 million to build and maintain. Is this “past” $1 million weighted less or more than $100,000 of new cash contributions given to the proposed project during the period of performance of the proposed project? Note: We know “matching funds” are optional, but we need to know how the CEC will prioritize past funds used to build a test facility to be used during the proposed project versus new cash contributions to the project during the period of performance for the proposed project.

    **Answer: Cash matching funds are not given more weight than “in-kind” matching funds. However, match funds do not include the cost or value of the project site. Past funds used to build a test facility do not meet the Match Funding Requirements described on Page 6 of the PON.**

12. Question: Does the PON allow for federal dollars as part of match funds (such as a U.S. DOE National Lab providing in-kind funds, or federal funds awarded under a DOE opportunity that aligns with this work, and where results would leverage all dollars for the public)?

    **Answer: Yes.**

13. Question: If a contractor reduces his or her fees for this project from $100/hour to $50/hour, is the difference considered matching funds?

    **Answer: No.**

14. Question: If a contractor reduced his or her fees, would Contractor’s reduction in fees be considered contractor’s in-kind labor costs?

    **Answer: No.**

15. Can a rent reduction be considered matching funds?

    **Answer: No.**

16. Question: If an employee of the applicant that is working on the project reduces or waives his or her salary for work done on this project, is that considered matching funds?

    **Answer: No.**

17. Question: Regarding “cash in hand” match funds: some grants and awards from federal agencies are paid on a reimbursement basis, rather than an advance basis. Are awards of that nature valid as match funds for PON-13-302?

    **Answer: Yes, if the awarded funds are in the recipient’s possession and reserved for the proposed project. Please see the “Match Funding Requirement” section in Part I of the PON.**

18. If so, what is considered “proof that the funds exist as cash?” PON-31-302 states that “earned or received” awards can be claimed as match funds, but an earned award may not yet exist as cash at the date of the project kick-off meeting.

    **Answer: The application must include a commitment letter from the match fund provider that contains the information required in Attachment 11.**

19. Question: If a federal grant award is claimed as match funds for a PON-13-302 program and it starts and/or ends before or after the duration of the PON-13-302 grant program, does all of that federal grant still qualify as match funds, or does only the portion of the federal grant coinciding with the duration of the PON-13-302 grant program qualify?

    **Answer: The grant funds are considered “cash in hand” funds if they are in the recipient’s possession and are reserved for the project. Please see the “Match Funding Requirement” section in Part I of the PON.**

20. Question: (Page 6) Regarding equipment match funds: is it permissible to claim the full retail value of equipment owned by the applicant as match funds for the PON-13-302 grant program if that equipment is also used for an award program from another entity? If not, what is the correct criteria for determining the match funding value of equipment shared between a PON-13-302 grant and another award?

    **Answer: The applicant must justify the current fair market value of the equipment and the assumptions used in this determination. For example, this information and the percent use of the equipment for the project during the term of the agreement may be used to determine the match funding value of equipment.**

# ELIGIBLE PROJECTS

21. Question: Are Principal Investigators (PIs) and researchers able to participate in future funding efforts that could come forth from the research results?

    **Answer: Yes.**

22. Question: Can one organization submit two (or more) proposals for Funding Initiative S8.2?

    **Answer: Yes, though each proposal must be for a distinct and separate project.**

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

    **Answer: Yes, as long as a primary Principal Investigator is identified.**

24. Question: Regarding PON-13-302 (Developing Advanced Energy Storage Technology Solutions to Lower Costs and Achieve Policy Goals), In Section D (Background) it states: "This solicitation will award projects funded by the EPIC." Does this mean that if we were NOT funded for an EPIC project, that we cannot be awarded funds for this program (PON-13-302)?

    **Answer: No. The statement means that EPIC is the source of funds for this solicitation.**

25. Question: Are companies located outside of California eligible to participate?

    **Answer: Yes, if they all requirements of the PON.**

26. Question: Are companies located outside of the United States eligible to participate?

    **Answer: See the response above.**

27. Question: Can a proposal build-off of an existing CEC-funded effort? Not cost share but leverage infrastructure put in place by a previously funded effort?

    **Answer: Yes.**

28. Question: For 8.1, is the model supposed to include data optimization?

    **Answer: Yes.**

29. Question: For section 8.1, please clarify the level of detail required for modeling for storage, transmission, distribution, etc.

    **Answer: Modeling must include the full value of energy storage for specified use cases described in Table 1 on Page 11 of the PON. Please see the "Project Requirements" section in Part II of the PON for more details on the model requirements.**

30. Question: Are we to choose from the CPUC use cases for the model?

    **Answer: The model should cover all of the CPUC energy storage use cases described in Table 1 on Page 11 of the PON.**

31. Question: Is a pilot test required?

    **Answer: Testing activities are required for all projects. See the "Project Requirements" section in Part II of the PON.**

32. Question: For 8.2 proposals, does the project have to literally connect to the grid?

    **Answer: The project does not have to literally (physically) connect to the grid, but it should assess its full potential value to the grid under simulated conditions.**

33. Question: Our concept is to utilize solar thermal energy to produce hydrogen as a fuel, then use the fuel as a reserve to provide additional thermal power when solar irradiation is decreasing or fluctuating. Does this concept fit into the scope of the funding notice?

    **Answer: The PON is open to any energy storage technology that meets the eligibility requirements in Part II of the PON. Specifically, advanced energy storage technologies and systems that provide high value, cost-effective ancillary services and load following for the CPUC's energy storage use cases (See Table 1 on Page 11). The PON calls for storage projects that evaluate the full value of energy storage in specified use cases. However, it is the project applicant's responsibility to determine if the proposed project satisfies the requirements in the proposal. Other EPIC PONs (e.g., PON-13-303) may be more suitable for solar thermal energy storage technologies.**

34. Question: Page 16 states that all pilot tests must be located within a California electric IOU service: If we have additional pilot test sites in non-IOU territories, can EPIC funds be used for those demos and test sites?

    **Answer: Yes, if the tests in non-IOU territory are based on a use case and grid point connection site located within an IOU service territory. Pages 16-17 have been revised to state that pilot tests may be located in a California electric IOU service territory, or must be based on a use case and grid point connection site located within an IOU service territory.**

35. Question: If non-IOU territory pilot test site activities are solely funded by match funding, can they be included in an EPIC-funded project with IOU service territory pilot test sites?

    **Answer: Yes, provided the project complies with one of the allowed match funding options, and meets all project requirements specified in the PON.**

36. Question: For solicitation PON-13-302 Funding Initiative S8.2: is the energy storage technology limited to electricity storage?

    **Answer: Yes, the energy storage technology is limited to energy (electrical) storage and electricity generation when needed for ancillary services and load following.**

37. Question: We have a technology that stores solar energy in chemical bonds. The energy will then be recovered as heat for electricity generation. Will such a technology be considered for this program?

    **Answer: The PON is open to any energy storage technology that meets the eligibility requirements spelled out in the PON (see "Eligibility Requirements" beginning on Page 10). Specifically, advanced energy storage technologies and systems that provide high value, cost-effective ancillary services and load following for the CPUC's energy storage use cases (See Table 1 on Page 11). However, please other EPIC PONs (e.g., PON-13-303 ) may be more suitable for solar thermal energy storage technologies.**

38. Question: Are you expecting the same model to be able to conduct analyses for the transmission-side, distribution- side and behind-the- meter application; for every possible currently available storage technology for every use-case listed in the CPUC Table 1, and that too with an option of combining with every generation options such as concentrating solar-thermal, PV, wind and natural gas fired generation?

    **Answer: The optimal solution would be a single model that meets all of the eligibility requirements in the PON, but the PON is flexible in this regard as it allows for the development of one or more models to determine the most optimal energy storage systems by location, size and type (see Section II B(2) on page 11). The model(s) must provide the analytical tools needed to perform a comprehensive analysis under multiple scenarios. Specifically, models must capture the full range of various energy storage technologies by CPUC use case.**

39. Question: Would you consider a proposal that offers a comprehensive model that provides an in-depth analysis of any one domain such as transmission-side, distribution-side or behind the meter, and can analyze every applicable use cases for that domain? Would submission of such a proposal be rejected or would it be scored as non-responsive or minimally responsive?

    **Answer: The optimal solution would be a single model that meets all of the eligibility requirements in the PON, but the PON is flexible in this regard as it allows for the development of one or more models to determine the most optimal energy storage systems by location, size and type (see Section II B(2)).**

40. Question: Natural gas pipeline companies are developing processes for the conversion of excess renewable electricity and captured CO2 to natural gas. This allows electricity to be stored as chemical energy in the natural gas pipeline. Therefore, the natural gas pipeline acts as a battery. The electricity is recovered using existing natural gas fired assets or distributed generation using fuel cells. Will the CEC accept power to natural gas to power as an acceptable method of electricity storage under PON-13-302?

    **Answer: The objective of the PON is to advance the energy storage technologies beyond their current capabilities and their current cost and performance characteristics. Natural gas pipelines to store natural gas made by conversion of excess renewable electricity and captured CO2 would store energy However, it would not provide the necessary response for ancillary services and load following services sought by the PON (see II B(3)(b), "Technology and Other Requirements"). In addition, natural gas is already stored in many different ways to assure fuel supply to power plants and distributed generation. Consequently, a proposal for developing additional natural gas storage or a proposal "power to natural gas to power" may not lend to any additional advances in clean energy storage technologies.**

41. Question: Please confirm that a proposed Energy Storage System that meets the AB 2514 requirements (see below) is an eligible system that an applicant could propose for this PON, and that there is no restriction to limit applications just to those that are described as “Sample Projects (CAES, Flywheels and Batteries).”

    **Answer: Projects are not limited to only the examples provided in the PON. The PON is open to any energy storage technology that meets the eligibility requirements in the PON. Specifically, advanced energy storage technologies and systems that provide high-value, cost-effective ancillary services and load following for the CPUC’s energy storage use cases (Table 1 on Page 11) are eligible.**

42. Question: Could the CEC clarify whether projects that are not focused on enhancing performance of electric vehicle batteries themselves, but instead demonstrate innovative integrated solutions that enable electric vehicle battery storage to meet the CPUC’s energy storage use cases, would be eligible?

    **Answer: The PON specifies the eligibility requirements for developing and demonstrating advanced energy storage systems. Systems that meet these requirements are eligible for funding awards. The project must: (1) involve the pilot testing of a complete storage system; (2) advance the understanding of which use case assumptions (i.e. technology, size, and applications) are cost effective; and (3) address ancillary services and load following requirements.**

43. Question: To ensure systems are sized adequately and also comparatively, it would be beneficial to have a representative grid point load cycle in the solicitation, describing the load cycle of the energy storage system (i.e. electricity out during peak demand and electricity in during off-peak hours). Will the CEC provide a representative grid point load cycle?

    **Answer: No. The applicant is responsible for determining the grid point load cycle that is appropriate for the proposed project in consultation with an IOU.**

44. Question: Project required a pilot test for a complete storage system. Is there a general guideline regarding the appropriate power level for this test - 10kW, 100kW, 1MW?

    **Answer: No. The applicant is responsible for determining the power level that is appropriate for the proposed project.**

45. Question: For S8.1 Topic: For a software model, can the recipient retain and protect the Source Code from disclosure; that is, must the Source Code be delivered or disclosed as part of the deliverables under any resulting agreement?

    **Answer: The Source Code must be delivered or disclosed as part of the deliverables under the resulting agreement.**

46. Question: For S8.2 Topic: Does the storage plant have to show greater than 80% AC round-trip efficiency during the pilot testing, or does a plausible rational have to be developed and shown that the nth-of-kind type of storage plant investigated will have a greater than 80% AC round-trip efficiency?

    **Answer: The storage plant is expected to show greater than 80% AC-AC round-trip efficiency during the pilot testing (see "Technology and Other Requirements" on page 16 of the PON).**

47. Question: The RFP states the model requirements include pumped hydro (page 12). Does it mean that CPUC energy storage proceeding includes pumped hydro?

    **Answer: Yes, the CPUC energy storage proceeding includes pumped hydro. However, the CPUC AB 2514 energy storage procurement requirements exclude large-scale pumped storage projects greater than 50 MW from counting towards AB 2514 storage procurement targets. Smaller scale pumped projects may be eligible to bid under the energy storage procurement framework adopted by the CPUC. More information is available at: http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M079/K533/79533378.PDF and http://www.cpuc.ca.gov/PUC/energy/electric/storage.htm**

48. Question: Are the sample projects listed for the 8.2 category the only technologies of interest? Or are other energy storage technologies also eligible under this category?

    **Answer: The project list is a sample list only and is not all-inclusive. Other energy storage technologies meeting objectives and requirements of this PON may be considered.**

49. Question: Are small scale distributed energy storage systems in scope for S8.2 to address Behind the Meter use cases in Table 1 on page 11? Will you consider small scale distributed energy storage?

    **Answer: Yes, if it provides ancillary services and load following.**

50. Question: Does 8.2 include all use cases?

    **Answer: No. Projects must involve the development and pilot testing of advanced energy storage technologies and systems that provide high-value cost-effective ancillary services and load following for the CPUC's energy storage use cases (see Table 1 in the PON).**

51. Question: Should we be pricing small units that are local to the electric charger? Or should we be building a larger unit that feeds to the grid and determines the discharge amount by signals from the electric charger?

    **Answer: The applicant is responsible for proposing a project that meets objectives of this solicitation regardless of the unit size.**

# COST CALCULATIONS

52. Question: Can we meet one part and not all of the capital costs of energy storage?

    **Answer: Yes, though this may be reflected in the score.**

53. Question: Regarding capital costs: Will fringe benefits from system devices (i.e., Voltage Regulation via inverters) be considered in the system cost? If so, how will those benefits be converted into a dollar amount?

    **Answer: The applicant is responsible for determining the appropriate costs and benefits for the proposed energy storage system and for meeting the project requirements, including determining and quantifying the benefits as specified in the PON.**

54. Question: Does the technology cost target include siting and installation cost or only equipment cost?

    **Answer: The technology capital cost target includes the siting and installation costs in addition to the equipment cost.**

55. Question: Are you including the cost of input energy?

    **Answer: Yes.**

56. Question: Are you including cost of net loss?

    **Answer: Yes.**

57. Question: Should we include capital costs and benefits?

    **Answer: Yes.**

58. Question: Because natural gas pipeline companies can store over 100 billion cubic feet of natural gas, storage of electricity as natural gas has no fixed capacity. Therefore, the power to natural gas to power concept does not have a defined kWhr cycle capacity. How should a natural gas pipeline company calculate the cost metrics of $/kW installed, $/kWh installed and $/kWh/cycle levelized?

    **Answer: Natural gas storage is not an eligible storage technology under this PON.**

59. Question: Regarding the requirements for cost reduction goals of $1000/kW and $200/kWh, [can] those requirements be met by (1) projected future system cost if production is scaled up (2) or the delivered technology for the project?

    **Answer: Cost goals are for the delivered technology (system) for the project and not for the future system.**

60. Question: In regards to calculating the $0.15/kWh/cycle target, what cost of power ($/kW) should we assume?

    **Answer: The applicant must determine and use the appropriate cost of power ($/kW) based on where the project use case site is located within the IOU service territory and other technology requirements.**

61. Question: If I cannot meet all cost targets, will my proposal be rejected? Will the proposal be automatically rejected if one of the cost targets is not met?

    **Answer: No, the cost targets are part of the overall scoring, not a pass/fail criterion.**

62. Question: We wish to develop a technology that enables additional revenue streams, to offset the cost of storage. Our technical contribution is to combine multiple services without requiring additional storage. The result is to make energy storage much more affordable. Does this count as a method for "reducing the capital cost of energy storage?" We would argue that this is an innovative way of solving the real problem, and it can be brought to market at the funding levels you propose... whereas ideas to meet $200/kWh installed, by strict capital cost reduction alone, are likely to fall outside the range of your funding.

    **Answer: Reducing the capital cost of energy storage system is an important goal of the PON. If a technology enables additional revenue streams, it may help recover the energy storage cost sooner but it will not reduce the initial capital cost. It may in fact increase the capital cost and hinder the deployment of energy storage systems because of the high capital required for deployment. The applicant is responsible for preparing a proposal that is responsive to the solicitation goals and requirements, and determining the methods and approaches for doing so. Scoring criteria will be applied accordingly.**

63. Question: For 8.2, this PON seems to imply that proposers should use totally unrealistic cost projections for the technologies they propose, since that will be the only way they can meet the cost goals. Is this your intention?

    **Answer: No.**

64. Question: In regards to initiative S8.2: In showing a path forward to meeting the aggressive cost targets shown in the proposal, what timeline/horizon is acceptable? In other words, if we forecast that the technology will meet the $/kWh cost target in three years time would our proposal be considered responsive?

    **Answer: The projected goals (including cost target) are expected to be achieved and demonstrated during the project term, which is expected to end no later March 31, 2017.**

65. Question: One of the stated goals is to reduce the cost of energy storage systems below $1000/kW, installed. What is the cost level of currently available solutions?

    **Answer: The applicant is responsible for assessing the current status of the technology, including costs and other factors. For example, the DOE/EPRI 2013 Electricity Storage Handbook in Collaboration with NRECA (July 2013) may provide such information which can be accessed at:** http://www.sandia.gov/ess/publications/SAND2013-5131.pdf.

66. Question: The operational cost target for the energy storage system is less than 15cents/kWh/cycle levelized. Is it correct to assume that this excludes the electricity cost to charge the storage system during off-peak hours?

    **Answer: The operational cost target for the energy storage system does not exclude the electricity cost to charge the system. The cost evaluation should include the electricity cost to charge the storage system during off-peak hours.**

## PROJECT REQUIREMENTS (Funding Initiative 8.1 Projects)

67. Question: On page 11 of PON-13-302, Table 1 displays the CPUC's energy storage use cases for funding initiative S8.1. Would proposals addressing initiative S8.1 that include computer models for only a subset of the use cases (e.g., Transmission-Connected) be disqualified?

    **Answer: No, but this would be an incomplete response that would be reflected in the scoring.**

68. Question: Will proposals not meeting the "Model Requirements" on page 12 be rejected or just scored lower?

    **Answer: Proposals that do not meet all requirements will be a lower score.**

69. Question: Can the CEC please provide examples of the "public domain models" for which linkages should be supported by the software responding to S8.1 as stated in item 4 of the model requirements in page 12 of PON-13-302?

    **Answer: The applicant is responsible for identifying the appropriate public domain models, if any, for the applicant's proposed model. Please refer to: http://energystorage.org/news/esa-news/energy-storage-primed-impact-way-energy-grid-modeled-and-how-we-plan-future.**

70. Question: Can a commercial software model be used for "Optimize grid-level energy storage deployment with respect to location, size, and type; and Develop innovative utility-scale and generation energy storage technologies and applications to mitigate intermittent renewables and meet peak demand?"

    **Answer: A commercial software model cannot be used because the objective of the PON is to develop a public domain model.**

71. Question: Can you provide more information on what is required for the models?

    **Answer: Modeling project requirements are detailed on pages 12-14 of the PON. In brief, the PON solicits modeling projects involving the development, testing, and validation of one or more computer models for the CPUC's energy storage use cases (shown on Table 1, page 11 of the PON) in order to determine the most optimal energy storage system by location, size and type.**

72. Question: Can commercial software be used for 8.1?

    **Answer: No. The objective of S8.1 is to develop a model that is comprehensive enough to cover all energy storage technologies, use cases, and grid points as described in Table 1 of the PON. It must be made available in the public domain.**

73. Question: The model requirements limit the model creation to "Standard software application architecture components." The list doesn't include Matlab/Simulink. Matlab is an industry standard in model creation. Will Matlab/Simulink models satisfy the model requirement?

    **Answer: Only if the standard software application architecture components are not sufficient. Applicants can propose other software architectures that they meet all other project requirements.**

## PROJECT REQUIREMENTS (Funding Initiative 8.2 Projects)

74. Question: What is required for pilot demonstration?

    **Answer: Pilot testing must involve the development and demonstration of advanced energy storage technologies and systems that provide high-value cost-effective ancillary services and load following for the CPUC's energy storage use cases (see Table 1 on page 11 of the PON). See pages 15 and 16 for testing requirements.**

75. Question: What size are you expecting to demonstrate in terms of KWhrs and MWhrs?

    **Answer: The applicant is responsible for determining the size appropriate for the proposed project.**

76. Question: Can EVs be included in the use cases?

    **Answer: The PON specifies the eligibility requirements for developing and demonstrating advanced energy storage systems. Systems that meet these requirements are eligible for funding awards. The project must: (1) involve the pilot testing of a complete storage system; (2) advance the understanding of which use case assumptions (i.e. technology, size, and applications) are cost effective; and (3) address ancillary services and load following requirements. If an EV system can also store energy for the grid and provide the other ancillary services as required, it is eligible for funding under the PON.**

77. Question: For 8.2 proposals, are you considering all locations?

    **Answer: The solicitation is considering grid point connections and use cases in which ancillary services and load following can be provided *in the electric IOU service areas*.**

78. Question: On S8.2 Topic: Do the pilot plant hardware equipment or hardware components purchased or developed during the project become property of the CEC after the proposed project is completed, or do they become property of the proposer after the project is completed?

    **Answer: See the discussion of equipment in Attachment 13, terms and conditions. Title to equipment acquired by the Recipient with grant funds will vest in the Recipient. The Recipient may use the equipment in the project for which it was acquired as long as needed, regardless of whether the project or program continues to be supported by grant funds. However, the Recipient may not sell, lease, or encumber the property (i.e., place a legal burden on the property such as a lien) during the agreement term without the Commission Agreement Manager's prior written approval.**

79. Question: On S8.2 Topic: Can a project that uses "lessons learned" from one or more past pre-commercial energy storage pilot plants be used in a proposed project to design, make improvements, and perform tests on an existing (or parts of an existing) pre-commercial energy storage pilot plant be proposed to respond to S8.2? The idea is to have a proposed project show that improvement to an old/existing pre-commercial pilot plant yields an energy storage plant that now meets the S8.2 goals (e.g., greater than 80% efficiency, system life greater than 5000 cycle, less than $1000/kW capital cost installed, less than $200/kWh installed cost, and less than 15 cents/kWh/cycle levelized cost).

    **Answer: Any lessons learned from past research are appropriate for informing a future research project.**

80. Question: Section B.3.b of the solicitation (page 16) requires that the projects meet the following projected goals:

    - $1000/kW installed, less than $200/kWh installed, and less than 15 cents/kWh/cycle levelized
    - System cycle efficiency > 80% and system life > 5000 cycles

    Is it acceptable to propose a system that greatly satisfies the capital cost requirement and has a system life time of way more than 5000 cycle with slightly lower efficiency?

    **Answer: Projects are not required to meet these goals, though failure to meet them will be reflected in the scoring.**

81. Question: Please help better define the calculation of system efficiency. For the sake of clarity, picture three systems:

    - System 1 stores electricity in a battery, and returns electric power when called on.

    - System 2 serves a facility that currently uses electricity to heat a fluid. As a Thermal Energy Storage device storing heat during off-peak periods, System 2 is able to shift the time when that consumption occurs and reduce on-peak power while still serving the load.

    - System 3 is a hybrid in that it stores electrical energy and returns dispatchable power to the grid, but it also captures waste heat from the charging cycle. In so doing System 3 is able to not only return kWh out for kWh in like a standard battery, the Thermal Energy Storage component of the system is also able to offset on-peak electric power consumption associated with fluid heating that would have otherwise occurred.

    For the purposes of defining efficiency calculations, System 3 requires 100 kWh to charge, is able to supply 81 kWh back to the grid from the battery, and offsets 17 kWh of on-peak energy consumption that would have otherwise been used at the facility for fluid heating. For the purposes of this PON, would the efficiency of the system be 81% (electricity in/out only) or 98% (Electricity in/out plus electricity energy shifted in time)?

    **Answer: On-peak energy consumption offset is not part of the round trip AC to AC efficiency of the energy storage system. Therefore, the greater than 80% system efficiency requirement is the round trip AC to AC efficiency of the energy storage system itself.**

82. Question: For 8.2, can delivered KVARH be considered in efficiency calculations if it leads to overall distribution efficiency in the proposed test site?

    **Answer: No. The delivered KVARH cannot be considered in efficiency calculations even if it leads to overall distribution efficiency in the proposed grid point connection test site. The >80% efficiency requirement is for the energy storage system round trip AC–to–AC efficiency.**

83. Question: The CAISO duck chart shows that 15,000MW ramp capacity is needed in the later afternoon. How do small energy storage systems help meet the ramp requirement, or the peak demand in the RFP S8.2?

    **Answer: Small energy storage systems are only one means of meeting the ramp requirements. The purpose of the PON is to advance the energy storage technology, not specifically to assess how energy storage can help meet CAISO's ramping needs.**

84. Question: Comment/feedback: 80% efficiency is eliminating many technologies that can potentially be more cost effective overall (thermal storage, etc.). I think it would be good if you make this condition more flexible.

    **Answer: The objective of this solicitation is to advance the energy storage technology and attempt to achieve the stated goals. Applicants must focus on those energy storage technologies that show strong potential to achieve an efficiency of 80% or greater.**

85. Question: Project Requirements for S8.2 state that the procurements for AB2514 must be met. Do you imply commercialization path by 2020? Could you please clarify this requirement?

    **Answer: The PON focus is to help advance the capability of energy storage technologies and systems which may help meet the CPUC's AB 2514 energy storage procurement targets by 2020.**

86. Question: If I can meet one goal for battery technologies, but not the other, can I apply?

    **Answer: Projects are not required to meet the goals listed in the "Technology and Other Requirements" section on page 16, though failure to meet the goals will be reflected in the scoring.**

87. Question: Some battery technologies can meet the $1000/kW goal but not the $200/kWh. Must we meet both or one of these goals?

    **Answer: See the response above.**

88. Question: How will cycles be defined for energy profiles?

    **Answer: The applicant is responsible for determining and specifying the appropriate energy profiles and cycles suitable for the proposed project.**

89. Question: Regarding system life: Each type of grid feature produces a different power/energy profile, and we've found that the impacts on battery life have varied dramatically. Will there be a specific definition for a cycle? How will a cycle be defined?

    **Answer: See the response above.**

90. Question: Must 8.2 projects be complete by the AB2514 2020 timeframe?

    **Answer: No. The projects must be completed by March 31, 2017 as specified in the "Key Activities Schedule" in Part I of the PON.**

91. Question: Is 80 percent round trip efficiency negotiable?

    **Answer: The PON specifies greater than 80% round trip AC – AC efficiency as one of the projected goals. Applicants can submit a proposal for a project that doesn't meet this particular goal. However, proposals that do not meet all project goals and requirements will be scored lower.**

92. Question: Is 80% efficiency a requirement or goal?

    **Answer: Greater than 80% round trip AC-AC efficiency is a projected goal.**

93. Question: Can we avoid a scoring penalty for not providing a location of site for a pilot location?

    **Answer: Proposals for Section 8.2 projects will fail if they do not identify a pilot test site location. Please see screening criterion 8 in Part IV, Section E.**

94. Question: For 8.2, are you requiring every project to meet all five of the above numerical goals at once, or is it just necessary to meet some of the five, or is it acceptable to improve some of the five metrics without reaching the stated numerical goals?

    **Answer: Proposals not responsive to all requirements will be scored accordingly.**

95. Question: For 8.2, can you please specify your requirements for “ancillary services and load following,” i.e. what specific services are meant, preferably with example references to a utility rate book, and are there any specific metrics to be met? If you list multiple services, please specify how many of them "must" be provided.

    **Answer: The applicant is responsible for researching the relevant requirements for ancillary services and load following using appropriate resources available from the CPUC, IOUs, and CAISO, etc.**

96. Question: For 8.2, at the time of scoring applications, will you penalize companies that have not already registered with the State of California to do business there? In our case it makes sense to do so only after we have secured the State's funding.

    **Answer: Companies that have not already registered with the State of California will not be penalized during the scoring. However, California business entities and non-California business entities that conduct intrastate business in California and are required to register with the California Secretary of State must do so and be in good standing in order to enter into an agreement with the Energy Commission. If not currently registered with the California Secretary of State, applicants should contact the Secretary of State’s Office as soon as possible. For more information, visit the Secretary of State’s website at: www.sos.ca.gov.**

97. Question: Regarding 8.2, our technology matches your category “Behind-the-Meter.” As well as load following (which is driven by utility request, of course), we propose to apply Peak Shaving to each individual host building, with the same system. Our control technology allows us to do this without conflict. This is beneficial at the grid level, even though the Peak Shaving is customer-sited and not coordinated across a wide network. Would this type of technology still be considered responsive to the PON?

    **Answer: The applicant is responsible for preparing a proposal that is responsive to the solicitation goals and requirements (e.g., CPUC Decision 13-10-040 use cases) and describing the proposed use case accordingly. Scoring criteria will be applied accordingly.**

98. Question: For 8.2, one requirement of pilot projects is that they provide ancillary services and load following - however, these services are not in the use cases for "Behind-the-meter" (unless "Power Quality" is intended to include these) - does this eliminate Behind-the-Meter projects from the range of possible pilot projects?

    **Answer: No.**

99. Question: For 8.2, why is the price per kW five times the cost per kWh? Level III charging requires fast discharge and it appears that the parameters presented in the PON tend to favor really slow discharge with a large system.

    **Answer: These are the energy storage system cost metrics based on power capacity and the energy capacity for advancing cost-effective energy storage technology innovations and breakthroughs to facilitate the widespread deployment of these technologies.**

100. Question: In regard to initiative S8.2, the measure of efficiency in the scope of this solicitation only considers the real power component of energy transfer (KWh). If the proposed system can perform frequency and/or power factor regulation that increases the overall distribution efficiency of a target, can those benefits be captured and count towards the 80% system efficiency target? For example, if the power factor at peak load is particularly lagging, the inverter can supply leading KVARs to correct the power factor and increase distribution efficiency. However, the power loss within the electronics will be the same without delivering as much real power. In effect, the inverter/energy storage system would be improving local grid efficiency at the cost of ESS-only efficiency. Is a calculation of efficiency that takes into account this larger system acceptable for demonstrating 80% round trip efficiency?

    **Answer: Frequency and/or power factor regulation that increase the overall distribution efficiency of a target cannot be counted towards the >80% system efficiency target. The >80% round trip efficiency requirement is for the energy storage system AC - AC. If the proposed system can perform frequency and/or power factor regulation that increases the overall distribution efficiency, those benefits can be captured and described separately. But those benefits cannot be counted towards the >80% energy storage system efficiency target. Therefore, a calculation of efficiency that takes into account this larger system is not acceptable for demonstrating the >80% round trip efficiency.**

101. Question: In regard to initiative S8.2: What are the State's expectations for minimum and ideal expected system capacities (in both kW and kWh) for Energy Storage Systems that fall into the Transmission-Connected, Distribution-Connected, and Behind-the-Meter categories?

    **Answer: Applicants are responsible for determining the appropriate energy system capacities that are best suited for the proposed project.**

102. Question: In regards to initiative S8.2: Does the state have an ideal or target ratio between kW and kWh for energy storage systems? In other words, is there a target C-rate for the Energy Storage Systems?

**Answer: No. Applicants are responsible for determining the appropriate target ratio between kW and kWh for energy storage systems that are best suited for the applicant's proposed project.**

103. Question: In regards to initiative S8.2: Can the state provide additional specifications for the expected ancillary service and load following applications (e.g. maximum power slew rate, maximum time for full discharge, maximum time for full recharge, representative ancillary load profiles, number of charge/discharge cycles per day, grid dispatch protocols, etc.)?

**Answer: The applicant is responsible for determining the appropriate specifications for the expected ancillary services and load following applications.**

104. Question: In regards to initiative S8.2: Safety and low toxicity of the Energy Storage System (particularly for battery systems) is emphasized in the solicitation, but no points are explicitly allocated for safety/toxicity in the scoring criteria. How many of the points in the general technical section will be allocated based on the safety/toxicity of the system?

**Answer: Scoring Criterion 3(a) addresses the need for increased safety. Points awarded under this criteria would reflect measures/approaches for reduced toxicity and increase safety in energy storage technologies.**

105. Question: In regard to initiative S8.2: Certain technologies incorporate materials that are subject to large market fluctuations in price. How will a technology with a low but stable price be rated versus a technology with a slightly lower but more volatile price?

**Answer: The applicant is responsible for determining the appropriate risk factors for the energy storage technology that is to be demonstrated under its proposed project.**

106. Question: In regards to initiative S8.2: Are there any prior California funded initiatives, testing facilities, or technologies that the state would like to see leveraged in responding to this solicitation? If so, could a list of such prior funded resources be provided?

**Answer: Past projects may not be relevant, but applicants can search the Energy Commission's website[1] for energy storage projects completed in the past.**

[1] Annual Reports of the Research Program: http://www.energy.ca.gov/research/annual_reports.html

# TEST PLANS

107. Question: The solicitation on page 16 (section B.3.b) requires the projects to include pilot tests using simulated real-time grid services. Is this requirement applicable to initiative 8.2? Could you please clarify the implementation of simulated real-time grid services to Energy Storage Systems?

**Answer: Funding Initiative 8.2 projects must involve pilot testing. As projects must benefit ratepayers in IOU electric service territories, simulated real-time grid services (ancillary services and load following) must be conducted for projects that would interconnect within IOU service territories.**

108. Question: If an advanced Thermal Energy Storage system is proposed to work with an Advanced Adiabatic Compressed Air Energy storage System, does the pilot test need to include the power generation unit (turbine)?

**Answer: Yes.**

109. Question: Must the pilot test include real-time simulated grid services?

**Answer: Yes.**

110. Question: Does the pilot test for advanced thermal energy storage have to include the entire system?

**Answer: Yes.**

# TEST SITES

111. Question: Will the Commission propose test sites?

**Answer: No.**

112. Question: How are the 3 IOU service territories defined for the location of pilot tests? If the proposed test site is at a generator located within another utility territory, but sells power to one of the 3 IOUs, does that qualify?

**Answer: "IOU" is defined on page 2 of the PON. Pages 16-17 have been revised to state that pilot tests must either be located within California IOU service territory or based on a use case and grid point connection site located within IOU service territory.**

113. Question: PON-13-302 (Page 16) states that "pilot tests must be located within a California electric IOU service territory." Does this include the University of California San Diego microgrid (one of the leaders in California for testing stationary storage systems)?

**Answer**: **See the response above.**

114. Question: In regards to initiative S8.2: We are a California based research and product development company. Our local electricity provider is the Los Angeles Department of Water and Power (LADWP). Allowing the test site to be within or in close proximity to our facility will greatly increase our development efficiency. Can the pilot test be performed with LADWP?

**Answer: See the response above.**

115. Question: In regards to initiative S8.2: If a test site and test plan are established with a non-Investor Owned Utility (such as LADWP), is it required to have one of the three Investor Owned Utilities (IOU) identified in the solicitation as part of the team in order to be considered for this opportunity?

**Answer: See the response above. IOUs are not required to be a part of the projet team.**

# IOU RELATED ISSUES

116. Question: On page 2 of the solicitation the investor-owned utility has been introduced as Pacific Gas and Electric Co., San Diego Gas and Electric Co., and Southern California Edison. In different sections of the solicitation the "three companies" are referenced as the IOU. We are partnered with Southern California Gas, which is the sister company of Southern California Edison (as a part of Sempra). We are partnering with Southern CA Gas Company. Can we compete?

**Answer: Yes, if pilot tests are either located within California IOU service territory or based on a use case and grid point connection site located within IOU service territory. Please note that natural gas storage is not an eligible storage technology under this PON.**

117. Question: If not in IOU territory but can sell to IOU, can we apply?

**Answer: See the response above.**

118. Question: In regards to initiative S8.2: Based on the solicitation it appears one of the three identified Investor Owned Utility (IOU) needs to be included on any proposing team. Can contact information for IOU representatives or a path to teaming with these IOUs be provided by the state?

**Answer: The PON does not require the IOUs to be on the project team. Applicants may request IOU representatives' contact information from the IOUs.**

119. Question: Can a Community Choice Aggregation in an IOU territory be included?

**Answer: Yes. Projects must be for ancillary services and load following service sites located in IOU (electric) service territories. Any applicant may submit a proposal as long as the project is for the use case sites located within an IOU service territory.**

120. Question: Can we apply if we are within LADWP territory?

**Answer: Yes, if pilot tests are either located within California IOU service territory or based on a use case and grid point connection site located within IOU service territory..**

# FORMATTING AND SUBMITTALS

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

**Answer: No.**

122. Question: Do you want a single Word document or can each attachment be submitted as a stand-alone Word document?

**Answer: Each attachment must be submitted as a stand-alone Word document or Excel document as required in the solicitation.**

123. Question: Do the project schedule and budget worksheets need to be inserted as pictures or other images into the Word document?

**Answer: No. The project schedule and budget worksheets must be submitted as separate Excel documents.**

124. Question: Can the pages of each section be numbered within the section (1 of X) or does the whole proposal document need to be numbered (1, 2…X – or 1 of X)?

**Answer: The pages of each section can be numbered within the section (1 of X).**

125. Question: Are Table of Content pages excluded from the sixty page count?

**Answer: Yes.**

126. Question: Page 18 notes that Project Team Form (Att 5) is limited to one page for each form and two pages for each resume and that the Project Team Forms are to be included in the sixty page limit. Are the resumes also included in the sixty page limit? It is possible that a proposal could have several key personnel which could result in 10 or more pages of the sixty page count being used for Project Team forms. We request that neither be included in the sixty page count.

**Answer: The PON has been revised to clarify that resumes are not included in the sixty-page limit.**

127. Question: Please confirm that Reference and Work Product Forms (Attachment 9) and Commitment and Support Letter Forms (Attachment 11) and the commitment and support letters are not included in the sixty page count.

**Answer: Correct. The Reference and Work Product Form (Attachment 9), the Commitment and Support Letter Form (Attachment 11), and the commitment and support letters are not included in the sixty page count.**

128. Question: If the recipient is a new corporation with no customers, should the references be for the individuals involved?

**Answer: Yes.**

129. Question: PON-13-302 (Page 18) Submission of ten hard copies of a >60 page application will be expensive to print and ship. Will the CEC consider allowing online submission instead?

**Answer: No.**

# SCORING CRITERIA

130. Question: Our question references Scoring Criterion 6: EPIC Funds Spent in California. Specifically, the scoring criteria state that "Spent in California" means that… Business transactions (e.g. material and equipment purchases, leases, rentals, and contractual work) are entered into with a business located in California." GCN sells its system as a unit, which is assembled and manufactured entirely at our headquarters in Santa Clara, California. However, the individual components within each system may be delivered from out-of-state manufacturers. In determining the percentage of funds that will be spent in California, should we consider the system (as a whole) to be assembled in state, or are we required to break out our system by sub-components?

**Answer: The funds spent on the purchase of the components are not funds "spent in California" if the components were purchased from an out-of-state manufacturer. Wages paid to workers who assemble the units are funds "spent in California" if the workers meet the requirements described in scoring criterion 6.**

131. Question: Are the scoring criteria the same for 8.1 and 8.2?

**Answer: Yes.**

132. Question: Scoring criterion number 6 on page 31 of PON-13-302 only applies to EPIC funds and not to matching funds, since they are scored differently as explained in scoring criteria 8 in page 31. Is this correct?

**Answer: Yes, scoring criterion 6 only applies to EPIC funds.**

133. Question: For scoring criterion #3 - how are the benefits quantified? Market opportunity? Addressing the transmission requirement versus the customer-side for the IOUs?

**Answer: Applicants may refer to the references in Attachment 12, to the extent that they apply to the project. The applicant must otherwise determine how to quantify the benefits derived from the proposed project and technology.**

**In making that determination, applicants must consider that the CPUC defines "ratepayer benefits" as greater reliability, lower costs, and increased safety. In addition, the California Public Resources Code Section 25711.5(a) requires EPIC-funded projects to:**

- **Benefit electricity ratepayers; and**
- **Lead to technological advancement and breakthroughs to overcome the barriers that prevent the achievement of the state's statutory energy goals.**

134. Question: We are ARPA-E awardees with a phenomenal new concept for energy storage that would fit very well for this PON. However, we are not located in California but our technology would provide enormous benefit for the State of California. Based upon the scoring criteria would we be unable to reach your 70 point threshold for consideration?

**Answer: It is not possible to make this determination at this point, as the answer depends on the proposal's overall score.**

# TERMS AND CONDITIONS

135. Question: Once developed, would the Energy Commission make the model an open-source model for anyone and anywhere to customize and then sell in the market, and neither the EPIC grantee nor the EPIC program receiving any royalties for their IP?

**Answer: The recipient, the Energy Commission, or a third party will make the model an open-source model. The model will be kept free and accessible to everyone as an open-source model in the public domain. Please see the intellectual property section of the terms and conditions (Attachment 13):**

**Intellectual Property Licenses for Energy Storage Models:**

**1) Both the Energy Commission and the California Public Utilities Commission have a no-cost, non-exclusive, transferable, irrevocable, royalty-free, worldwide, perpetual license to use, publish, translate, modify, and reproduce energy storage models for governmental purposes.**

**2) The Recipient must make the model(s) publicly available through means such as a website, which will be hosted by the Energy Commission, the Recipient, or a third party, at the Energy Commission's discretion. Any member of the public that**

**wishes to use an energy storage model has a no-cost, non-exclusive, irrevocable, royalty-free, worldwide, perpetual license to use it.**

**Any licensing restrictions placed on use of the model(s) (e.g., restrictions on distribution or types of uses) by members of the public require the Commission Agreement Manager's advance written approval.**

136. **3) Neither the Recipient nor any other individual or entity may charge a fee for use of an energy storage model developed under this Agreement.**Question: Would the algorithms developed for analysis in the model remain in a black box (encrypted) except to be shared with the EPIC staff and EPIC's expert consultants for model validation? Users can still use the models and get an output for their inputs but will not have access to algorithms.

**Answer: The model algorithms can remain encrypted to the public as long as the model itself is fully accessible and operational as a free resource in the public domain. Refer to the intellectual property provisions in Attachment 13:**

**The Recipient owns all intellectual property, subject to the licenses described in subsections b and c.**

**"Intellectual property" means: (a) inventions, technologies, designs, drawings, data, software, formulas, compositions, processes, techniques, works of authorship, trademarks, service marks, and logos that are created, conceived, discovered, made, developed, altered, or reduced to practice with Agreement or match funds during or after the Agreement term; (b) any associated proprietary rights to these items, such as patent and copyright; and (c) any upgrades or revisions to these items.**

137. Question: Are costs associated with preparation of a NEPA document (if required to be compliant with CEQA) eligible for payment through these grant funds?

**Answer: No.**

138. Question: Where can we find information on how direct labor and fringe benefit rates are compared to loaded labor rates?

**Answer: See Attachment 7, Budget Forms and Scoring Criteria 7 in Part IV of the PON. The Rates Summary worksheet (Tab B-7 of Attachment 7) in the budget forms compares the weighted direct labor and fringe benefits rate to the weighted loaded rate. This ratio, as a percentage, is multiplied by the possible points to determine the score for Scoring Criteria 7.**

139. Question: If a company is not a recipient, but is an important contractor who will be engaged by the recipient on normal commercial terms (i.e. not donating anything), then we assume a letter of support from the company is not required. Is that correct?

**Answer: Yes.**

140. Question: The Key Activities schedule states that the agreement end date will be March 31, 2017, or 26 months after the anticipated agreement start date. However, the instructions for the Scope of Work template state that work must be scheduled for completion within 36 to 48 months of the project start date. Will work towards completion of a PON-13-302 program after March 31, 2017, but less than 48 months from the project start date still be eligible for reimbursement under this agreement?

**Answer: The agreement end date must be March 31, 2017. The agreement end date supersedes the 36 to 48 months instructions in the Scope of Work template.**

# BUDGET

141. Question: For 8.1 and 8.2 proposals, can the Commission increase the funding and by how much?

**Answer: The Energy Commission reserves the right to change the amount of funds available for this PON if appropriate.**

# MISCELLANEOUS

142. Question: Copies of recent scientific and technical journal articles: Page 22 states up to five are required, Attachment 9 says up to three. Which is correct?

**Answer: Attachment 9 is correct. Page 22 has been revised to reflect to correct limit.**

143. Question: We missed the pre-application workshop held on April 30th. Are there any workshop material/documents we can obtain from you?

**Answer: See the Energy Commission's website at: http://www.energy.ca.gov/contracts/epic.html#PON-13-302**

144. Question: Could you add my contact into your distribution list of questions and answers?

**Answer: Yes.**

145. Question: Are there examples of projects demonstrations?

**Answer: Yes. See page 16 of the PON for examples of projects that qualify for funding under initiative 8.2.**

146. Question: What will be the number of awards for 8.2?

**Answer: The estimate is 3 to 4 projects.**

147. Question: Can you please advise what the allowable indirect cost rate is for this solicitation for UCLA applicants?

**Answer: Please consult with your legal and/or accounting department to determine the allowable indirect cost rate.**