



CALIFORNIA ENERGY COMMISSION

Pre-Application Workshop

GFO-15-507

Natural Gas Solicitation for Energy-Related Environmental Research

Energy Research and Development Division

California Energy Commission

August 19, 2016

Yu Hou



Agenda

Time	Topic
10:00 am	Welcome and Introductions <ul style="list-style-type: none">• Housekeeping• Commitment to Diversity• Connect with Us
10:15 am	Solicitation Information <ul style="list-style-type: none">• Program Background and Drivers• Purpose, Groups, and Funding• Key Dates• Application Requirements
11:00 am	Questions and Answers
12:00 pm	Adjourn & Networking



Housekeeping

- In case of emergency
- Facilities
- Sign-in sheet / Business card sheet
- Updates on solicitation documents including this presentation will be posted at the Grant Funding Opportunity's webpage:
<http://www.energy.ca.gov/contracts/pier.html#GFO-15-507>



Commitment to Diversity

The Energy Commission adopted a resolution strengthening its commitment to diversity in our funding programs. We continue to encourage disadvantaged and underrepresented businesses and communities to engage in and benefit from our many programs.

To meet this commitment, Energy Commission staff conducts outreach efforts and activities to:

- Engage with disadvantaged and underrepresented groups throughout the state.
- Notify potential new applicants about the Energy Commission's funding opportunities.
- Assist applicants in understanding how to apply for funding from the Energy Commission's programs.
- Survey participants to measure progress in diversity outreach efforts.



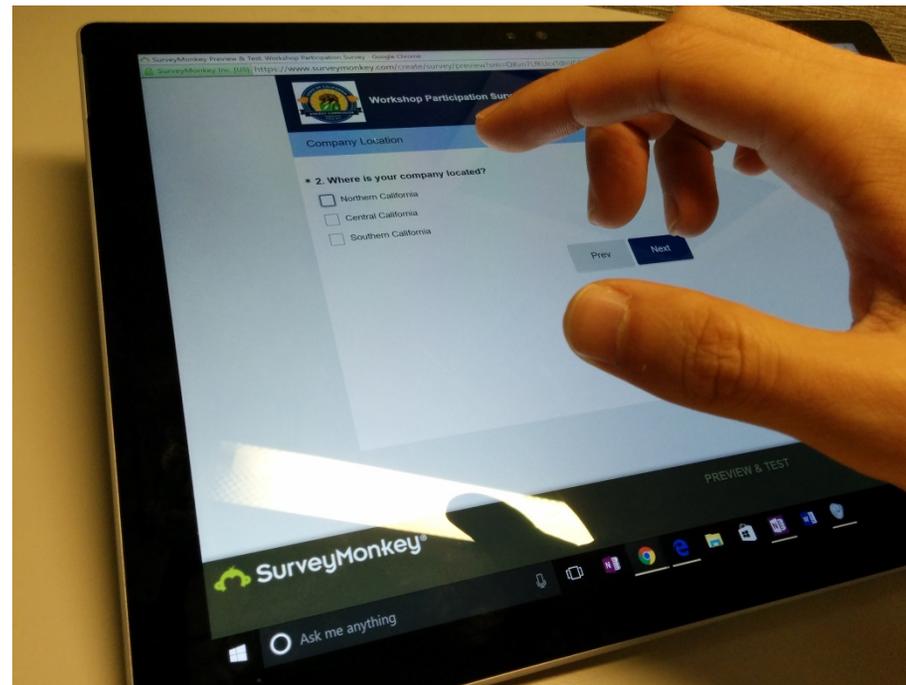
We Want to Hear From You!

1-Minute Survey

- The information supplied will be used for public reporting purposes to display anonymous overall attendance of diverse groups.
- iPads are being passed around the room
- Online SurveyMonkey for WebEx Participants:

<https://www.surveymonkey.com/r/08-19-2016>

Thanks for your time!





CALIFORNIA ENERGY COMMISSION

Connect with the Energy Commission!



<https://www.facebook.com/CAEnergy/>



<http://bit.ly/CalEnergyNetwork>



<https://twitter.com/CalEnergy>

...and the Energy
Commission's listserves
www.energy.ca.gov/listservers

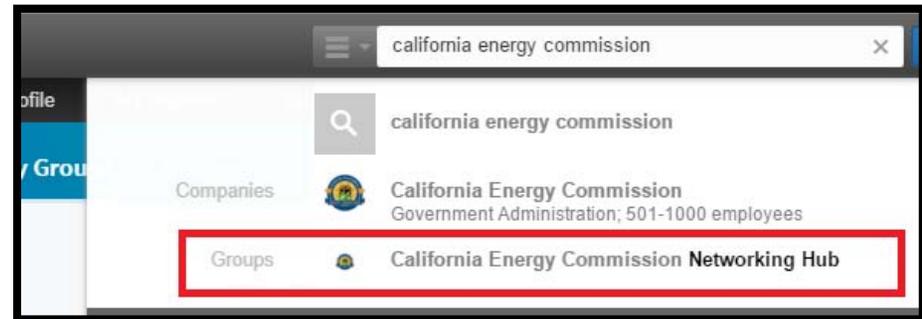


Find Partners via LinkedIn

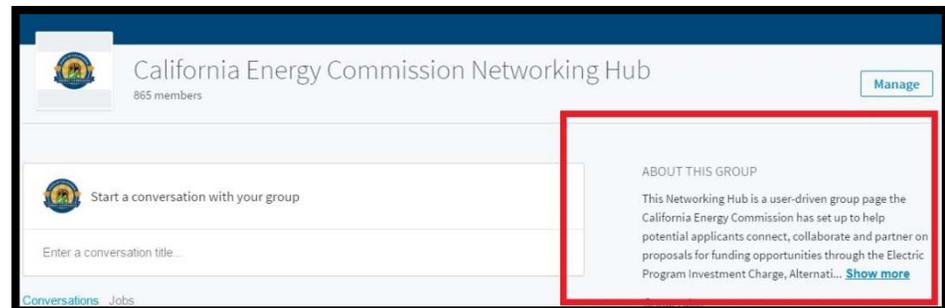
The Energy Commission created a user-driven LinkedIn group page to help potential applicants **connect, collaborate** and **partner** on proposals for funding opportunities.

Join the “California Energy Commission Networking Hub” using:

- The LinkedIn Search Box
- URL: [bit.ly/CalEnergyNetwork](https://www.linkedin.com/groups/7066089)



Then, use the ‘About this Group’ section on the LinkedIn group page to find funding opportunity specific subgroups.



Subgroup page for this GFO: <https://www.linkedin.com/groups/7066089>



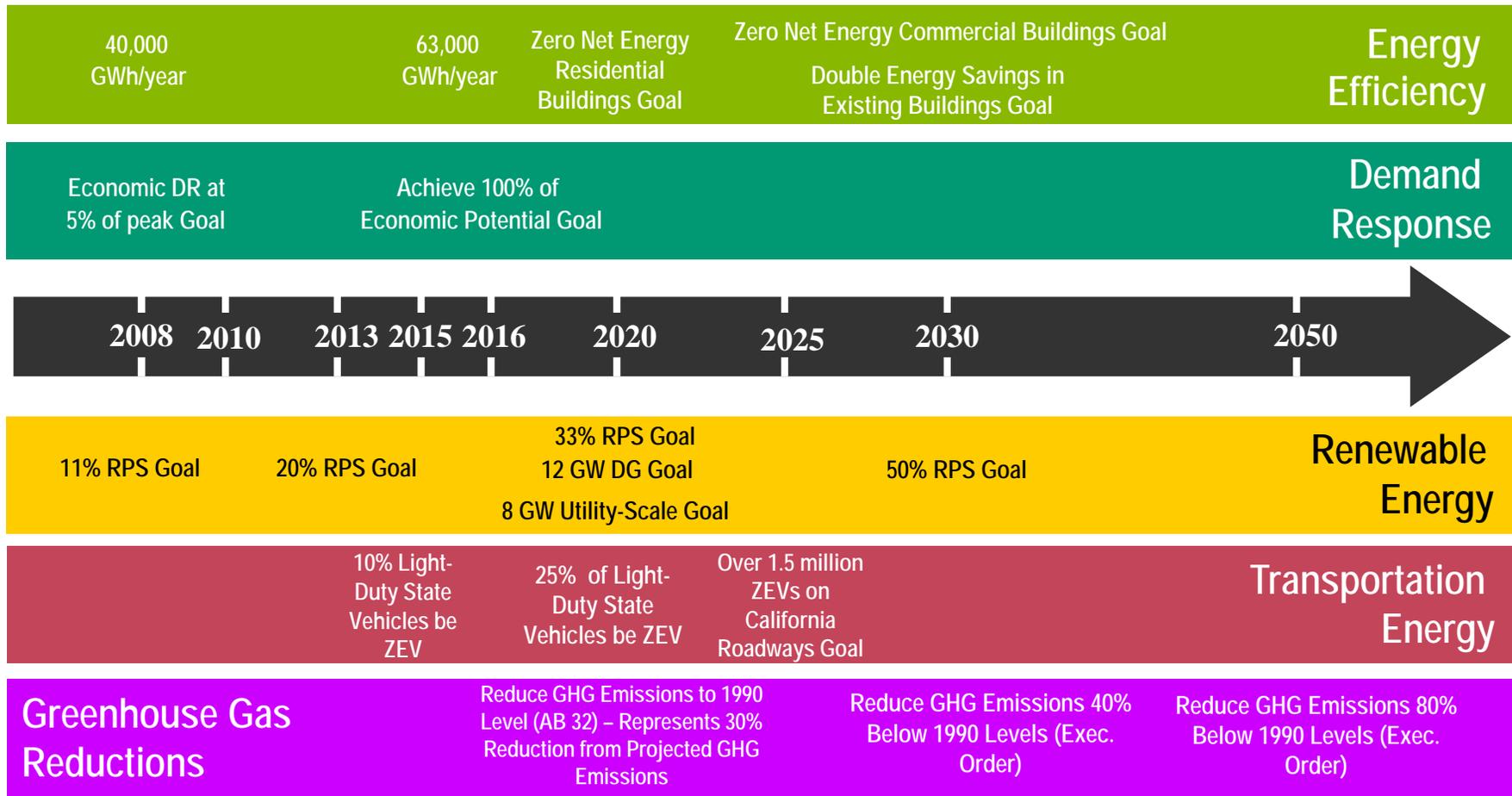
Natural Gas Program Background

- The Natural Gas Research, Development and Demonstration Program is funded by a natural gas ratepayer surcharge established by the California Public Utilities Commission (CPUC) in 2000
- The purpose of the Natural Gas RD&D Program is to benefit the ratepayers of natural gas investor-owned utilities*
- The Natural Gas RD&D Program funds clean energy technology projects that promote greater natural gas reliability, lower costs, and increased safety
- Funded projects must lead to technological advancement and breakthroughs to overcome the barriers that prevent the achievement of the state's statutory energy goals.
- Annual program funds total \$24 million

* Pacific Gas and Electric Co., San Diego Gas and Electric Co., and Southern California Gas Company



State Energy Policy Drivers





Solicitation Purpose

- The purpose of this solicitation is to fund Energy-Related Environmental Research that reduces greenhouse gas emissions, improves indoor air quality, develops energy scenarios for natural gas sector and assesses impacts of severe drought on the California natural gas infrastructure.
- **Group 1:** Long-Term Strategic View of the Use of Natural Gas in a Carbon-Constrained, Water-Efficient Environment
- **Group 2:** Measurement of Methane and Nitrous Oxide Emissions from California's Natural Gas System and Industrial Facilities and Development of GIS Lifecycle Emission Estimates
- **Group 3:** Characterization of the impact of California Drought-Related Subsidence on California's Natural Gas Infrastructure
- **Group 4:** Characterization of the Impact of Drought-Related Subsidence on Methane Emissions from Abandoned/Plugged Natural Gas Wells in California
- **Group 5:** Indoor Air Quality: Assess the Impact of Ventilation on Indoor Environmental Quality (IEQ), Health, and Human Performance in New and Retrofit Buildings



Program Areas, Strategic Objectives and Funding Initiatives

- Natural Gas Research projects must fall within one or more specific focus areas (“**funding initiatives**”) identified in the Natural Gas Research, Development, and Demonstration Program Budget Plan for FY 2015-2016 and the supplemental budget plan. This solicitation targets the following funding initiatives:
- **Program Area: Energy-Related Environmental Research**
 - **Funding Initiative:** Long Term Strategic View of the use of Natural Gas in a Carbon-Constrained, Water-Efficient Environment
 - **Funding Initiative:** Natural Gas Market Scenarios
 - **Funding Initiative:** Characterization of N₂O emissions From Natural Gas Combustion Units, which Use Modern Air Pollution Control Devices
 - **Funding Initiative:** Identification and Quantification of Methane Leaks
 - **Funding Initiative:** Groundwater related subsidence impacts on the natural gas system
- **Program Area: Energy Building Efficiency Research**
 - **Funding Initiative:** Indoor Environmental Quality for ZNE/Low Energy Use Buildings



Group 1: Long Term Strategic View of the Use of Natural Gas in a Carbon-Constrained and Water-Efficient Environment - \$1,100,000

Overview:

- Develop energy scenarios for California natural gas system from the present to 2050, that consider primary and secondary climate impacts as well as pressures from recent and likely policy changes.
- Analyze how those impacts and changes may affect options to decarbonize the natural gas sector.
- Explore different pathways, including the carbonization of natural gas, that natural gas utilities and natural gas consumers should take in the next decades to 2050 in response to on-going and expected energy and climate policies.
- Be multifaceted and multidisciplinary.



Proposed research must:

- Create natural gas scenarios to evaluate anticipated changes to the natural gas supply and market dynamics for California end uses as a result of related CEC studies and other studies:
 - Potential physical impacts of climate change;
 - new data on the extent of economically available natural gas resources as well as on fugitive methane leaks;
 - and multiple climate related policies (including coal power plant retirements, Clean Air Act § 111(d), and increases in renewable and natural gas reliance in North America).
- As a minimum, the scenarios work should consider impacts on the natural gas market dynamics, including price, over the next 3 decades from . . . **a long list of parameters listed on page 14** of the solicitation manual.
- Coordinate with several other EPIC sponsored studies on electricity scenarios and water-constrained energy production.



Proposed research:

- Analyze the implications of natural gas scenarios on the potential means to decarbonize the state's natural gas system. And, if so, at a minimum **consider the potential for injection of hydrogen and/or bio-methane into natural gas pipeline** and should clearly examine the technical issues surrounding the efficacy and adoption of that strategy.
- Analyze the options for the natural gas sector in a carbon-constrained world that are relevant to natural gas utilities, policy makers and regulators, and consumers.

This work **will** include the exploration of options to decarbonize the natural gas system, for example through injection of hydrogen and/or bio-methane into natural gas pipelines. The proposed research may explore technical issues such as potential obstacles to the injection of hydrogen to the natural gas system. The analysis should also include the volume necessary for injection in order to meet the 80% GHG reduction goal. In this case some exploratory laboratory research may be needed, but it is not essential for this study. At a minimum, the analytical exploration technical issues should be conducted Alfeld K., D. Pinchbeck. 2013. Admissible hydrogen concentrations in natural gas systems.



Group 2: Measurement of Methane and Nitrous Oxide Emissions from Natural Gas System and Industrial Facilities and GIS Lifecycle Emission Estimates- \$1,400,000

Overview:

- Measurement of methane emissions and nitrous oxide emissions, when applicable, from the natural gas system and large industrial facilities.
- Characterize emissions from a proper lifecycle perspective using a GIS framework.
- Develop methods to evaluate the implication of methane emissions for energy technology evaluations.



- Proposed research must*:
 - Develop a plan to survey the industrial and power sectors;
 - Utilize an imaging technique such as infrared (IR) cameras
 - Quantify, to the extent possible, leaks associated with the selected facilities and estimate overall emissions downstream of the meter for both methane and N₂O (post combustion);
 - Report any non-technical issues that helped or hampered the measurements and suggest ways to overcome them in future research or voluntary emission reduction programs;
 - Present results in a way that does not disclose the identity of surveyed facilities.
 - Life cycle emissions using a GIS framework.
 - Develop emissions profiles (chemical and isotopic fingerprints)
 - Improve method to evaluate energy technologies taking into account methane emissions.

* The list on page 15 in the solicitation manual continues on page 16



Group 3: Characterize the Impact of California's Drought-Related Subsidence on Natural Gas Infrastructure - \$1,600,000

Need for research:

- The long, linear nature of pipelines makes them susceptible to subsidence
- Subsidence may lead to exhumation and damage of the pipeline infrastructure
- NASA-studies revealed alternations in the slope of the land/ change in drainage patterns

Proposed research must:

- Identify areas of risk to natural gas infrastructure and identify remedial actions.
- Use the subsidence GIS maps created by NASA/JPL for DWR and expand these maps, as needed, to cover the natural gas sector.
- Evaluate existing monitoring methods, determine needs for improvement
- Verify and document on-the-ground actual damage to infrastructure
- Determine and evaluate short and long-term potential damages and mitigation costs in case of a natural gas pipeline failure.
- Use the climate scenarios adopted for CA's Fourth Climate Assessment including a prolonged dry scenario and existing laws and regulations for the management of groundwater basins



Group 4: Characterize the Impact of Drought-Related Subsidence on Methane Emissions from Abandoned/Plugged Natural Gas Wells – \$600,000

Goal:

The goal of this research is to determine the geographic scope of the risk to natural gas wells from groundwater-related subsidence in California, and to clarify whether, and to what extent any damage is leading to increased methane emissions from abandoned wells.

Background

- There are about 116,000 known abandoned /plugged natural gas and oil wells in California;
- Many of these wells are located in area where land has been subsiding or the area is in near term risk of future subsidence;
- Some studies have suggested that subsidence can degrade the integrity of plugged wells and may create underground pathways for methane to escape.



Proposed research must:

- Determine the potential geographic scope of the problem of risk to natural gas wells from subsidence in California;
- Characterize the emissions from abandoned wells and investigate if subsidence is an explanatory variable associated with higher levels of methane emissions;
- Make preliminary recommendations for how to minimize and ameliorate emission;
- If time available during the execution of the project, use the results of a study by NASA/JPL designed to locate super-emitters in the natural gas system, which may include abandoned wells;
- Coordinate with Division of Oil, Gas & Geothermal Resources (DOGGR) to utilize information on age of the well, capping techniques and others.



Group 5: Indoor Air Quality: Assess the impact of ventilation on Indoor Environmental Quality (IEQ), Health, and Human Performance in New and Retrofit Buildings - \$1,000,000

Goal:

The goal of this research is to support the implementation of net zero energy homes and buildings while protecting IEQ, health, and human well-being.

Background

- Very low natural ventilation rates in highly efficient buildings can result in the accumulation of internally released air and toxic pollutants;
- This is an open solicitation searching for innovative approaches suggesting research projects that will significantly advance science and inform regulations, the development of standards and practices, or energy policy;
- The applicants should also take into account past research sponsored by the Energy Commission and others.



CALIFORNIA ENERGY COMMISSION

Proposed research must:

- The application should briefly summarize the technical literature and explain how the proposed work would inform future standards for net zero energy homes and/or buildings or for the retrofit of existing homes/buildings;
- The applicants should demonstrate a good knowledge of the process used to develop energy efficiency standards for homes/buildings and electric appliances by clearly demonstrating how their proposed work would influence future standards;
- The proposed research must have a strong connection to energy efficiency **and to natural gas system in particular**. Proposals offering generic IEQ studies without a clear link to natural gas will not be considered for funding.



Available Funding

There is up to \$5,700,000 available for this solicitation.

Project Group	Available funding	Maximum amount per award
Group 1: Long Term Strategic View of the Use of Natural Gas in a Carbon-Constrained and Water-Efficient Environment	\$1,100,000	\$1,100,000
Group 2: Measurement of Methane and Nitrous Oxide Emissions from Natural Gas System and Industrial Facilities and GIS Lifecycle Emission Estimates	\$1,400,000	\$1,400,000
Group 3: Characterize the Impact of California Drought-Related Subsidence on Natural Gas Infrastructure	\$1,600,000	\$1,600,000
Group 4: Characterize the Impact of California Drought Related Subsidence on Methane Emissions from Abandoned/Plugged Natural Gas Wells	\$600,000	\$600,000
Group 5: Indoor Air Quality: Assess the Impact of Ventilation on Indoor Environmental Quality (IEQ), Health and Human Performance in New and Retrofit Buildings	\$1,000,000	\$1,000,000



Eligible Applicants

- This is an open solicitation for public and private entities.
- Applicants must accept the PIER terms and conditions.
 - Standard T&Cs: <http://www.energy.ca.gov/research/contractors.html>
- Applicants are required to register with the California Secretary of State and be in good standing to enter into an agreement with the Energy Commission. <http://www.sos.ca.gov>
- Applicants must propose a team with proven ability to successfully complete similar projects.



Key Dates

ACTIVITY	DATE	TIME (PST or PDT)
Solicitation Release	7/29/2016	
Pre-Application Workshop	8/19/2016	10:00 a.m.
Deadline for Written Questions	8/26/2016	5:00 p.m.
Anticipated Distribution of Questions and Answers	9/02/2016	
Deadline to Submit Applications	10/03/2016	3:00 p.m.
Anticipated Notice of Proposed Award Posting Date	12/01/2016	
Anticipated Energy Commission Business Meeting Date	3/8/2017	
Anticipated Agreement Start Date	4/3/2017	
Anticipated Agreement End Date	3/31/2020	



GFO Application Requirements

- Submit Applications with all attachments in the order specified by the due date and time listed in Section III of the manual.
- Application documents should meet formatting requirements, page limits, and number of copies specified on page 22.



Application Requirements

Each Applicant must complete and include the following:

1. Application Form (<i>requires signature</i>) (.pdf)	7. Budget (.xls)
2. Executive Summary (.docx)	8. CEQA Compliance Form (.docx)
3. Fact Sheet (.docx)	9. References and Work Product (.docx, .pdf)
4. Project Narrative (.docx)	10. Contact List (.docx)
5. Project Team (.docx, .pdf)	11. Commitment and Support Letters (<i>letters require signature</i>) (.pdf)
6. Scope of Work (.docx)	12. California Based Entity Form (.docx)
6a. Project Schedule (.xlsx)	

Be consistent in your application!



Project Narrative (Attachment 4)

- This is your opportunity to tie everything together and explain the entirety of the project. The narrative should explain:
 - Why your project is important?
 - What you will be doing in your project?
 - How are you going to complete the project?
 - How will ratepayers benefit?
 - What it is going to cost ratepayers, and is it worth it?



Scope of Work (Attachment 6)

- Tell us exactly what you are proposing to do in your project.
- Identify what you will deliver to the Energy Commission.
- Be sure to include in the tasks:
 - At least one product per task
 - At least one product per year
- Be sure to include Project Schedule (Attachment 6a)



Budget (Attachment 7)

- Identify how you will be spending Natural Gas funding and match funds to complete this project.
- Each Applicant and subcontractor receiving \$100,000 or more of Energy Commission funds must complete the budget forms.
- This must be submitted in the same format as it is provided.
- Do not delete sheets or rows, use the hide/expand functions.
 - Shaded cells are automatically filled or calculated.



Commitment and Support Letter Form (Attachment 11)

- This form provides guidelines for letters of support or commitment that are submitted with the application.
 - Commitment letter commits an entity or individual to providing the service or funding described.
 - Support letter details an entity's or individual's support for the project.
- All Applicants are required to submit **at least one** support letter from a project stakeholder.
- Any project partners that will make other contributions to the project must submit a commitment letter.
- Match funding for each Application must be supported by a match fund commitment letter.
- Limited to two pages per letter, excluding the cover page.



How will my Application be Evaluated? → Administrative Screening

Application Admin Screening Process

1. Energy Commission staff screens applications per criteria in the solicitation (page 27).
2. Criteria is evaluated on a pass/fail basis.
 - ✓ Applicants must pass all screening criteria or the application will be disqualified.

Some Reasons for Disqualification

- ✓ Application not submitted by the specified due date and time.
- ✓ Applicant did not address one of the eligible project groups.
- ✓ Requested funding is outside of the specified minimum/maximum range.
- ✓ Project completion date beyond the specified agreement end date.
- ✓ Application does not include one or more support letters.
- ✓ Application contains confidential material.



How will my Application be Evaluated?

- **Evaluation Committee applies the scoring scale to the scoring criteria.**
- **Applications must obtain a minimum passing score of 70% for criteria 1-4 (or 49 points) in order to continue evaluation, and must also obtain a minimum passing score of 70% overall for criteria 1-7 (or 70 points), in order for an Application to be considered for funding. Passing applications will be considered for match funding preference points.**
- **Each Applicant must review the Evaluation and Award Process section of the solicitation and ensure that the application provides a clear and complete response to each scoring criteria in the project narrative.**

Scoring Criteria (pages 33-36)	Maximum Points
Technical Merit and Need	20
Technical Approach	20
Impacts and Benefits for CA IOU Ratepayers	20
Team Qualifications, Capabilities and Resources	10
Budget Cost-Effectiveness	10
Natural Gas Funds Spent in CA	15
Ratio of Direct Labor and Fringe Benefit Rates to Loaded Labor Rates	5
Total	100
Minimum points to pass	70



What is the Technical Scoring Scale?

% of Possible Points	Interpretation	Explanation for Percentage Points
0%	Not Responsive	Response does not include or fails to address the requirements being scored. The omission(s), flaw(s), or defect(s) are significant and unacceptable.
10-30%	Minimally Responsive	Response minimally addresses the requirements being scored. The omission(s), flaw(s), or defect(s) are significant and unacceptable.
40-60%	Inadequate	Response addresses the requirements being scored, but there are one or more omissions, flaws, or defects or the requirements are addressed in such a limited way that it results in a low degree of confidence in the proposed solution.
70%	Adequate	Response adequately addresses the requirements being scored. Any omission(s), flaw(s), or defect(s) are inconsequential and acceptable.
80%	Good	Response fully addresses the requirements being scored with a good degree of confidence in the Applicant's response or proposed solution. No identified omission(s), flaw(s), or defect(s). Any identified weaknesses are minimal, inconsequential, and acceptable.
90%	Excellent	Response fully addresses the requirements being scored with a high degree of confidence in the Applicant's response or proposed solution. Applicant offers one or more enhancing features, methods or approaches exceeding basic expectations.
100%	Exceptional	All requirements are addressed with the highest degree of confidence in the Applicant's response or proposed solution. The response exceeds the requirements in providing multiple enhancing features, a creative approach, or an exceptional solution.



What is Important?

Scoring Criteria (pages 36-39)	The Question to Answer
Technical Merit and Need	Why should your project be funded?
Technical Approach	How you're going to do what you're going to do?
Impacts and Benefits for CA IOU Ratepayers	How will your project benefit ratepayers?
Team Qualifications, Capabilities and Resources	Who is going to make this project happen, and what resources are available to make it happen?
Budget Cost-Effectiveness	Are you spending money wisely?
Natural Gas Funds Spent in CA	This is a direct calculation based on budget forms.
Ratio of Direct Labor and Fringe Benefit Rates to Loaded Labor Rates	This is a direct calculation based on budget forms.



Match Funding

- Scoring criteria and points only apply to match funding commitments **above minimum requirements**.
- Match funding contributors must submit match funding commitment letters that meets the requirements of Attachment 11. Failure to do so will disqualify the match funding commitment from consideration.
- 3 points for this criterion will be awarded based on the percentage of match funding relative to the funds requested. This ratio will be multiplied by 3 to yield the points, and rounded to the nearest whole number.
For example: If requested PIER funds are \$1,000,000 and match funds are \$500,000, the match funding ratio is 0.50 ($\$500,000/\$1,000,000$). The proposal will be awarded 2 points ($0.50 \times 3 = 1.5$, rounded to the nearest whole number = 2).
- The remaining 2 points for this criterion will be based on the level of commitment, dollar value justification, and funding replacement strategy described in the match funding commitment letter



How can I receive optional bonus points?

- Applications must meet both minimum passing scores (Scoring Criteria 1-4 and 1-7) to be eligible for the additional points. Bonus point criteria include:
 - Match Funding
 - California Based Entities

Scoring Criteria (pages 37)	Maximum Points
Match Funding	5
California Based Entities	5
Total	10



Questions and Answers



- Please state your name and affiliation as an introduction.
- Please keep questions within 3-5 minutes to allow enough time for others.
- Please note that our official response will be given in writing in the Q&A document. We encourage you to submit all questions in writing in addition to asking them today.



Questions and Answers

Please send all questions related to GFO-15-507 to:

Douglas Harvey

Commission Agreement Officer

1516 Ninth Street, MS-18

Sacramento, CA 95814

(916) 654-4747

(916) 654-4423 (fax)

douglas.harvey@energy.ca.gov

Deadline to submit questions:

August 26, 2016 5:00 PM PDT



Thank you!