



GFO-22-504 Pre-Application Workshop

Hydrogen Blending and Lower Oxides of Nitrogen Emissions in Gas-Fired Generation (HyBLOX)

Energy Research and Development Division, California Energy Commission

Presenter: Nadia Richards Ph.D., Mechanical Engineer

Date: January 23, 2023



Agenda

Time	Item
10:00 am	Welcome and Introduction
10:05 am	Solicitation Background <ul style="list-style-type: none">• Gas Research Program• Purpose of Solicitation• Available Funding
10:25 am	Application Requirements <ul style="list-style-type: none">• Project Group Requirements• Attachments• Submission Process• Evaluation Process
11:00 am	Q&As
12:00 pm	Adjourn



Housekeeping

- This workshop will be recorded.
- Participants will be muted during the presentation. Please chat your question in the Q&A window.
- Updates on solicitation documents including this presentation will be posted at the Grant Funding Opportunity's webpage:

<https://www.energy.ca.gov/solicitations/2023-01/hydrogen-blending-and-lower-oxides-nitrogen-emissions-gas-fired-generation>



Commitment to Diversity

The Energy Commission adopted a resolution strengthening its commitment to diversity in our funding programs. The Energy Commission continues 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.



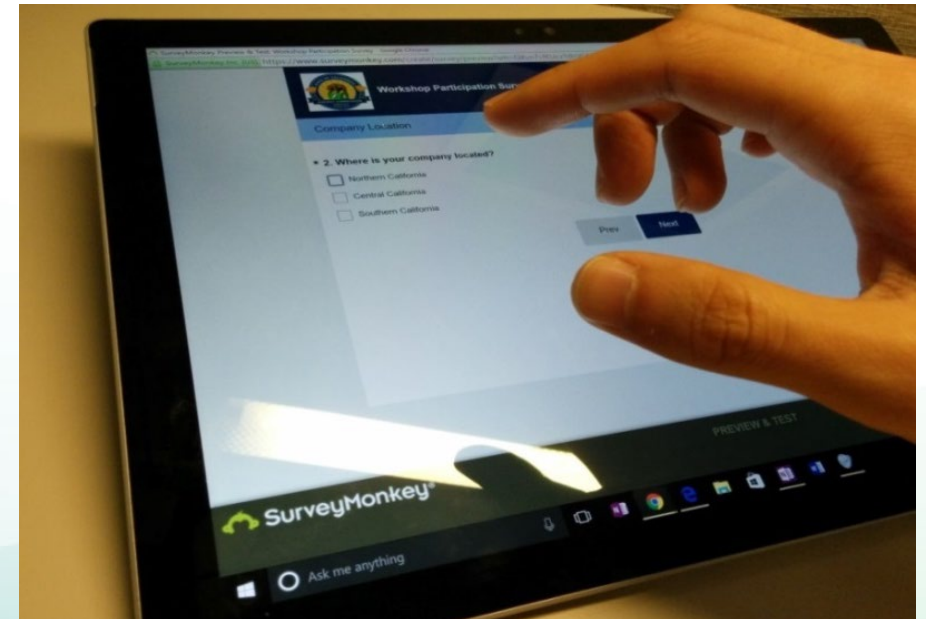
We Want to Hear From You!

Participation Survey

Survey responses will be summarized anonymously to track attendance of underrepresented groups in our workshops for public reporting purposes.

- Online participants, please use this link:
<https://forms.office.com/g/C3f4cw83QP>

Thanks!





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Find a Partner on EmpowerInnovation.net

Empower Innovation strives to accelerate your clean tech journey with easy access to funding opportunities from the Energy Commission and other funding providers, curated resources and events, and connections to people and organizations.

FIND A PARTNER

Announce your interest in this funding opportunity and message other interested parties to find potential partners.

RESOURCES & TOOLS

Browse the collection of resources for clean tech innovators including Resource Libraries, Funding Sources, Tools, and Databases.

<https://www.empowerinnovation.net/en/custom/funding/view/36915>



EmpowerInnovation.net



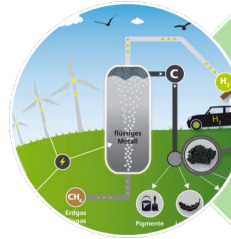


Research Program Background

- Gas R&D Program with a \$24 million annual budget, funded by a gas consumption surcharge.
- Fund R&D not adequately addressed by competitive or regulated entities.
- Support state energy policy and provide equitable benefits.
- Advancing safety, decarbonization, and equity through renewable hydrogen.



Safety



Decarbonization



Equity



Policy Drivers

- **SB-32, California Global Warming Solutions Act of 2006:** reduce greenhouse gas (GHG) emissions to 40% below 1990 levels by 2030.
- **SB 100, The 100 Percent Clean Energy Act of 2018:** 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources.
- **Executive Order B-55-18:** carbon neutrality no later than 2045 and seek to improve air quality.
- **SB 1075 Hydrogen:** to study and model potential growth for hydrogen and its role in decarbonizing, as defined, the electrical and transportation sectors of the economy, and helping to achieve specified goals.



Purpose of Solicitation

To develop and demonstrate emission-mitigating and gas-fired power generation technologies:

- High blends of hydrogen (H₂)
- Mitigate greenhouse gas (GHG) and oxides of nitrogen (NO_x) emissions
- Efficient performance and durability



Available Funding

Available Funding	Minimum Award Amount	Maximum Award Amount
\$8,500,000	\$2,125,000	\$4,250,000



Match Funding

- 20% of match funding is required.
- Applications that include match funding will receive additional points during the scoring phase.
- Match funding contributors must submit match funding commitment letters that meet the requirements. Failure to do so will disqualify the match funding commitment from consideration.
- Refer to the Solicitation Manual for more details on match funding.



Unallowable Costs

Fuel Costs:

- CEC funds cannot be used to purchase fuel for the proposed project.
- Applicants may use match or other non-CEC funds to purchase all the fuel needed for the project.
- Applicants are encouraged to source hydrogen from low carbon pathways.



Background

- In-state gas-fired generation accounts for more than half of the power generation sector's GHG emissions.
- Potential of using hydrogen to decarbonize in-state gas-fired generation by replacing fossil gas.
- Challenges when using hydrogen volumetric blends that exceed 30%.
- Hydrogen combustion impacts on GHG and NOx emissions.



Requirements

- Hydrogen must exceed 30% by volume.
- Microturbines or internal combustion engines between 0.3 to 5 MW.
- Residential, commercial, or light industrial sites.
- Local power generation or combined heat and power.



Requirements (continued)

1. Use emissions mitigation techniques.
2. Remain emissions-compliant.
3. Minimum of 500 cumulative hours, with at least 300 continuous hours.
4. Demonstrate an increase in maturity where the technology readiness level* (TRL) must achieve TRL 6 or higher.

*TRL guide:

<https://www2.lbl.gov/dir/assets/docs/TRL%20guide.pdf>



Examples for maximizing benefits

- Decarbonization using higher blends of hydrogen that exceed 30% by volume.
- Effective emissions-mitigating techniques for reducing NOx emissions.
- Improvement in safety and integrity for constant and consistent system performance.



Additional Requirements

- **The Technical Approach in the Project Narrative (Attachment 3):**
 - Discuss the project's approach regarding safety concerns for hydrogen blended gas-fired generation.
 - Provide a detailed safety plan to address safe operation and procedures.
- **The Impacts and Benefits to California IOU Ratepayers in the Project Narrative (Attachment 3):**
 - Describe the plan for sourcing the hydrogen to be used in the project.



Eligible Applicants

- This is an open solicitation for public and private entities.
- Applicants must accept the PIER terms and conditions.
 - Standard, UC, and DOE T&Cs available online:
<https://www.energy.ca.gov/funding-opportunities/funding-resources>
- Applicants are encouraged to register with the California Secretary of State, as all recipients must be registered and in good standing to enter into an agreement with the Energy Commission: <http://www.sos.ca.gov>



Application Requirements

Each Applicant must complete and including the following:

- | | |
|-------------------------------|---|
| 1. Application Form (.pdf) | 8. CEQA Compliance Form (.docx) |
| 2. Executive Summary (.docx) | 9. References and Work Product Form (.docx, .pdf) |
| 3. Project Narrative (.docx) | 10. Commitment and Support Letters (.pdf) |
| 4. Project Team (.docx, .pdf) | 11. Project Performance Metrics |
| 5. Scope of Work (.docx) | 12. Applicant Declaration (.docx) |
| 6. Project Schedule (.xlsx) | 13. California Based Entity Form (.docx) |
| 7. Budget (.xlsx) | 14. References for Calculating Energy End-Use and GHG Emissions |



Project Narrative (Attachment 3)

- This is your opportunity to explain the entirety of the project. The narrative explains:
 - Why is your project necessary and important to California?
 - What is your project approach and how will each major task be implemented?
 - How will the project be completed in the term proposed
 - How will the project outcomes benefit gas ratepayers?
 - Address the requirements for your group as described in Section I.C.

Respond to the scoring criteria described in Section IV.F.



Scope of Work (Attachment 5)

- Tell us exactly what you are proposing to do in your project.
- Identify what will be deliver to the Energy Commission.
- Be sure to include in the technical tasks:
 - At least one product deliverable per task.
 - Address requirements in Section I.C. under Project Focus.
- Be sure to include in the Project Schedule (Attachment 6):
 - Product deliverables that correspond with the Scope of Work.
 - Realistic dates on when product deliverables can be completed.



Budget (Attachment 7)

- Identify how the Energy Commission funds and match funds be spent to complete the project
- Subcontractors receiving \$100,000 or more Energy Commission funds must complete a separate budget form.
- Ensure that all rates provided are **maximum** rates for the entire project term.
- Travel Restrictions:
 - CEC funds are limited to lodging and any form of transportation (e.g., airfare, rental car, public transit, parking, mileage).
 - If an applicant plans to travel to conferences, including registration fees, they **must** use match funds.



Commitment and Support Letter Forms (Attachment 10)

- Follow guidelines provided for commitment and support letters.
 - Commitment letters are required for entities or individuals that are committing match funding, testing/demonstration sites, including the **Prime**.
 - Support letters describe a project stakeholder's interest or involvement in the project.
- All applicants must submit **at least one** support letter.
- Match funding must be supported by a match fund commitment letter.
- Any project partners that will make contributions to the project (other than match and sites) must submit a commitment letter.
- Limit to two pages per letter, excluding the cover page.



GFO Submission Requirements

- Method of Delivery is the Energy Commission Grant Solicitation System, available at: <https://gss.energy.ca.gov/>
- Electronic files must be in Microsoft Office Word (.doc, .docx) and Excel (.xls, .xlsx) formats, unless originally provided in solicitation in another format.
- Application documents must meet formatting requirements, and page recommendations.
- Attachments requiring signatures (Application Form and Support/Commitment Letters) may be scanned and submitted in PDF format.
- First-time users must register as a new user to access system.
- Grant Solicitation System (GSS) How to Apply presentation: <https://www.energy.ca.gov/media/1654>



GSS WARNING

START THE PROCESS EARLY!

- Applications must be fully submitted BEFORE the deadline listed in the solicitation manual
- **The GSS system will shut off at the deadline**
- Applications in the process of being submitted prior to the deadline will NOT be accepted after the deadline
- Applications will NOT be accepted after the deadline



GSS Structure

- Register as a New User
- Log In
- 3 Step Application Process:
 1. Select Solicitation
 2. Upload Files
 - Select documents for upload
 - Tag files with document type
 - Designate confidential documents (if applicable)
 3. Review and Submit

All three steps must be complete BEFORE the deadline



How will my Application be Evaluated?

Application Screening

Admin Screening Process

- Energy Commission staff screens applications per criteria in Section IV.E.
- Criteria are evaluated on a pass/fail basis.
- Applicants must pass all screening criteria or the application will be disqualified.

Some Reasons for Disqualification

- Application is not submitted by the specified due date and time.
- Application does not include one or more support letters.
- Application contains confidential material.



How will my Application be Evaluated?

Application Scoring

- **Evaluation Committee applies the scoring scale to the scoring criteria.**
- **Applications must obtain a minimum passing score of 52.5 points for Criteria 1-4 in order to continue evaluation.**
- **Applications must obtain a minimum passing score of 70 points for Criteria 1-7 in order to be considered for funding.**
- **Review Section IV of the manual and ensure the application provides a clear and complete response to each scoring criteria.**

Scoring Criteria	Maximum Points
1. Technical Merit	15
2. Technical Approach	25
3. Impacts and Benefits for CA IOU Ratepayers	20
4. Team Qualifications, Capabilities, and Resources	15
5. Budget and Cost-Effectiveness	10
6. CEC Funds Spent in California	10
7. Ratio of Direct Labor Costs to Indirect Costs	5
Total	100
Minimum Points to Pass	70



How will my Application be Evaluated?

Application Scoring – Preference Points

- **Passing applications (score of 70 or more from Criteria 1-7) will be considered for bonus points. Criteria for bonus points include:**
 - **Match Funding**
 - **Disadvantaged Communities**
 - **California Based Entities**

Scoring Criteria	Maximum Points
8. California Based Entities Funding	5
9. Match Funds	10
10. Disadvantaged & Low-income Communities	5
Total Bonus Points	20



Match Funding Points

- Applicants may receive up to 10 additional preference points based on the criteria below:
 - Up to 5 points will be awarded based on the percentage of proposed cash relative to the total match contributions using the Match Scoring Table in the Scoring Criteria.
 - The remaining 5 points may be awarded to applications that exceed the minimum match requirements up to 100 percent using the Exceeds Minimum Match Scoring table.
 - Refer to the Solicitation Manual for more details on the match funding scoring criteria.



Disadvantaged and Low-Income Communities

- Projects with **all test or demonstration** sites located in disadvantaged and/or low-income communities and justifies how the project will benefit these communities may receive additional points.
- Applications must:
 - Identify economic impacts such as customer bill savings and job creations.
 - Increase access to clean energy or sustainability technologies.
 - Have letters of support from technology partners, community-based organizations, environmental justice organizations, or other partners.



Identifying Disadvantaged Communities

These areas represent the **25% highest scoring census tracts in CalEnviroScreen**, census tracts with high amounts of pollution and low populations, and federally recognized tribal areas as identified by the Census in the 2021 American Indian Areas Related National Geodatabase.

<https://oehha.ca.gov/calenviroscreen/sb535>





Identifying Low-Income Communities

Low-income communities:

<https://www.hcd.ca.gov/grants-and-funding/income-limits>

Use CARB's Priority Population Map to determine AB 523 low-income communities

<https://www.arb.ca.gov/cc/capa/ndtrade/auctionproceeds/communityinvestments.htm>





Next Steps After Grant Award

- **Notice of Proposed Award:** Shows total proposed funding amounts, rank order of applicants by project group, and the amount of each proposed award.
- **Agreement Development:** Proposal documents will be processed into a legal agreement.
- **Failure to Execute:** The Energy Commission reserves the right to cancel the pending award if an agreement cannot be successfully executed with an applicant.
- **Project Start:** Recipients may begin work on the project **only** after the agreement is fully executed (approved at an Energy Commission business meeting and signed by the Recipient and the Energy Commission).



Key Dates

Activity	Date
Solicitation Release	January 6, 2023
Pre-Application Workshop	January 23, 2023 at 10:00 a.m.
Deadline for Written Questions	January 30, 2023 at 5:00 pm
Anticipated Distribution of Questions and Answers	Week of February 13, 2023
Deadline to Submit Applications	April 5, 2023 at <u>11:59 pm</u>
Anticipated Notice of Proposed Award Posting	June 2, 2023
Anticipated Energy Commission Business Meeting	September 13, 2023
Anticipated Agreement Start Date	October 16, 2023
Anticipated Agreement End Date	March 31, 2027



Questions and Answers

Three ways to ask questions:

1. Use the raise hand feature in Zoom:

- Zoom phone controls:
 - *6 – Toggle mute/unmute
 - *9 – Raise hand
 - Introduce yourself by stating your name and affiliation
 - Keep questions under 3 minutes to allow time for others

2. Type questions in the Q&A Box in Zoom:

- Please provide name and affiliation.

3. Submit written questions:

- Email questions to Crystal.Willis@energy.ca.gov by **January 30, 2023 at 5:00 pm**

Note that an official CEC response will be provided in writing and posted on the GFO webpage in ~3 weeks.



Additional Questions

Please send all questions related to GFO-22-504 to:

Crystal Willis

Commission Agreement Officer

715 P, MS-18

Sacramento, CA 95814

(916) 529-1108

Crystal.Willis@energy.ca.gov

Deadline to submit questions: January 30, 2023, at 5:00 PM

Deadline to submit applications: April 5, 2023, at 11:59 PM



Thank You!

