



# **GFO-23-502 Pre-Application Workshop**

**Industrial Carbon Dioxide Utilization for Value Added Products**

Energy Research and Development Division, California Energy Commission

Presenter: Ilia Krupenich

Date: April 16, 2024



# Housekeeping

- This workshop will be recorded and posted.
- Slides and participant list will be posted.
- Participants will be muted during the presentation.
- Please type 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/2024-03/gfo-23-502-industrial-carbon-dioxide-utilization-value-added-products>



# Agenda

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



# 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!

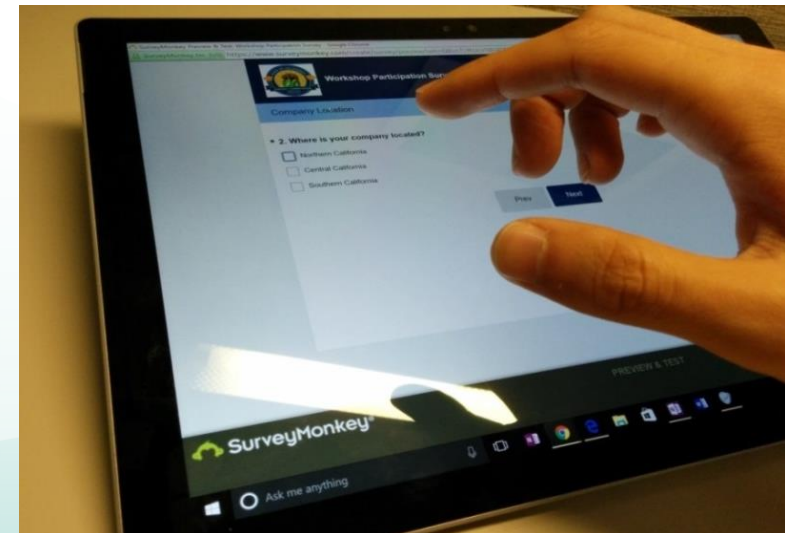
## 1 Minute Survey

The information supplied will be used for public reporting purposes to display anonymous overall attendance of diverse groups.

- Please use this link:

<https://forms.office.com/g/uBJzbPdKA9>

Thank you!





# Connect With Us

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California Energy Commission  
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# EmpowerInnovation.net



[Link to Empower Innovation Video](#)



# 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/42723>





# Research Program Background

- The Gas R&D Program funds public interest research to support the transition to clean energy, greater reliability, lower costs, and increased safety for Californians.
- Annual budget of \$20M funded by gas investor-owned utility (IOU) ratepayer surcharge.
- Directed towards developing science or technology:
  - Not adequately addressed by competitive or regulated entities.
  - Benefits accrue to California citizens and gas IOU ratepayers.



# Policy Drivers

- **AB 1279, California Climate Crisis Act 2022:** achieve net zero GHG by 2045, achieve and reduce GHG emissions to at least 85% below the 1990 levels.
- **SB 905, Carbon Sequestration: Carbon Capture, Removal, Utilization, and Storage program 2022:** requires CARB to establish a CCUS program to evaluate the efficacy, safety, and viability of CCUS technologies and CO<sub>2</sub> removal technologies and facilitate the capture and sequestration of CO<sub>2</sub> from those technologies.
- **AB 209, Committee on Budget. Energy and Climate Change 2022:** This bill requires the CEC to establish various clean energy programs that reduce GHG emissions among other benefits, including industrial decarbonization and carbon removal programs
- **California Air Resources Board's 2022 Scoping Plan:** This plan takes the unprecedented step of adding carbon neutrality as a science-based guide and touchstone for California's climate work. Outlines how carbon neutrality can be achieved by expanding actions to capture and store carbon through the state's natural and working lands and using a variety of mechanical approaches.



# Background

- Carbon dioxide (CO<sub>2</sub>) utilization is a promising approach in facilitating adoption of carbon capture and carbon removal while partially diverting the need for long term transportation and underground storage of CO<sub>2</sub>. Adopting novel approaches to manufacturing carbon-based products may reduce upstream gas use compared to incumbent approaches.
- Current CO<sub>2</sub> utilization technologies are at an early stage of development and bear technical, economic, and market uncertainty.
  - The carbon footprint associated with the energy consumption required to convert CO<sub>2</sub> into value-added products prevents large-scale deployment of these technologies.
- Targeting CO<sub>2</sub> sourced from industrial flue gas; industrial gas use accounts for 22% GHG emissions in CA. Gas R&D program requires benefits to gas IOU ratepayers.



# Purpose of Solicitation

- Fund projects that improve the energy efficiency of:
  - approaches and processes for manufacturing commodities using CO<sub>2</sub> captured from industrial operations burning fossil gas. The goal is to decarbonize difficult-to-abate industrial fossil gas use via carbon dioxide utilization to create value-added products.
- Areas of interest include:
  - carbon dioxide mineralization for cement, concrete, and materials
  - conversion of carbon dioxide into fuels, chemicals, and plastics
  - conversion of carbon dioxide into food products and textiles

See Section I.C. for details



# Available Funding

Project Group	Available Funding	Minimum Award Amount	Maximum Award Amount	Match Funding (% of requested funds)
Group 1: CO <sub>2</sub> Utilization Research and Development	\$2,100,000	\$300,000	\$500,000	None
Group 2: CO <sub>2</sub> Utilization Field Demonstrations	\$4,000,000	\$2,000,000	\$4,000,000	20%



# Match Funding

- Match funding is required for Group 2 only.
- Applications in Group 1 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.



# Group 1 Research and Development

- \$2.1 M available funding
- Focus on technologies between TRL 4-5 at the start of the agreement. Goals for Group 1:

Research Metrics	Research Goals
Carbon intensity relative to incumbent product	85% reduction of GHG emissions
Energy efficiency improvement of proposed technology from start to end of the agreement	10% improvement of energy efficiency



# Group 2 Field Demonstrations

- \$4M available funding
- Focus on technologies between TRL 6-7 at the start of the agreement. Goals for Group 2:

Research Metrics	Research Goals
Carbon intensity relative to incumbent product	85% reduction of GHG emissions
Energy efficiency improvement of proposed technology from start to end of the agreement	10% improvement of energy efficiency
Cost and scalability	Proposed product value is $\geq 10\%$ higher than the cost of manufacturing
Performance standards	Proposed product is at least compliant with industry and/or commercial standards identified by the applicant
Market potential	Estimate and justify the market potential for fully scaled-up proposed technology in California, and provide purchase agreements from at least two companies





# 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 include the following:

1. Executive Summary (.docx)
2. Project Narrative (.docx)
3. Project Team (.docx, .pdf)
4. Scope of Work (.docx)
5. Project Schedule (.xlsx)
6. Budget (.xlsx)
7. CEQA Compliance Form (.docx)
8. References and Work Product Form (.docx, .pdf)
9. Commitment and Support Letters (.pdf)
10. Project Performance Metrics (.docx)
11. Applicant Declaration Form (.docx)
12. California Based Entity Form (.docx)



# Project Narrative (Attachment 2)

- This is your opportunity to explain the entirety of the project. The narrative should explain:
  - 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.

## **Additional Requirements in Section I.C. under:**

- Technical Merit
- Technical Approach
- Impacts and Benefits to CA IOU Ratepayers
- Budget and Cost Effectiveness

Respond to the scoring criteria described in Section IV.F and requirements in Section I.C. under Project Focus.



# Project Narrative - Group 1

## Technical Merit:

- Identify source of waste CO<sub>2</sub> and purity requirements for use in the proposed technology.
- Identify potential market partners for the CO<sub>2</sub>-derived commodity

## Technical Approach:

- Describe and discuss plans for engagement with environmental justice organizations and community-based groups to address potential needs and concerns of local communities.

## Impacts and Benefits for CA IOU Ratepayers:

- Establish GHG emissions and energy usage of similar incumbent products versus the CO<sub>2</sub>-based product.
- Estimate life cycle and cost analysis at pilot and commercial scale, such as:
  - energy consumption per unit of CO<sub>2</sub> processed
  - material consumption per unit of CO<sub>2</sub> used
  - cost of waste material disposal
  - CO<sub>2</sub> emissions, including fugitive emissions not converted by proposed technology



# Project Narrative - Group 2

## Technical Merit:

- Discuss and justify how the project will meet the research goals:
  - Carbon intensity relative to incumbent product
  - Energy efficiency improvement of proposed technology
  - Cost and scalability
  - Performance standards
  - Market potential

Baseline performance, energy use, and performance standards are to be described and justified by applicant.

## Technical Approach:

- Describe plans for engagement with EJ groups and community-based organizations to address potential needs and concerns of local communities. Describe how community benefits plan will be developed and implemented.



# Project Narrative - Group 2 (cont.)

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## Impacts and Benefits for CA IOU Ratepayers:

- Describe how the project will verify reduced emissions and gas use via comprehensive life cycle analysis.

## Budget and Cost Effectiveness:

- Describe cost-effectiveness of the proposal, includes project fixed costs and other costs necessary for long term use (e.g., beyond the term of proposed project).



# Project Narrative - Group 2 Technology

- **For projects converting CO<sub>2</sub> into chemicals and fuels:**
  - Describe how the project will demonstrate a net reduction in emissions, including criteria air pollutants, compared to incumbent chemical manufacturing
  - Provide independent laboratory results showing that fuels made for combustion will be able to reduce criteria air pollutant emissions compared to incumbent fuel production and combustion processes.
  - Provide documentation of potential to comply with all local air quality emission requirements when used as fuel.
- **For projects converting CO<sub>2</sub> into food products:**
  - Describe how the project will demonstrate increased protein content in animal feed compared to market standards such as soy and fishmeal and potential decreases in energy and CO<sub>2</sub> emissions due to reductions in agricultural activities (animal feed, water, processing etc.).



# Scope of Work (Attachment 4)

- Tell us exactly what you are proposing to do in your project.
- Identify what will be delivered 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 5):
  - Product deliverables that correspond with the Scope of Work.
  - Realistic dates on when product deliverables can be completed.





# Budget (Attachment 6)

- 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 should be limited to project task specific in-state travel.
  - Travel to conferences are generally not considered applicable travel for projects and should not use CEC funds



# Commitment and Support Letter Forms (Attachment 9)

- 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 Applicant (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.



# 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.**

<b>Scoring Criteria</b>	<b>Maximum Points</b>
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
<b>Total</b>	<b>100</b>
<b>Minimum Points to Pass</b>	<b>70</b>



# 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:

- California Based Entities
- Match Funding
- Disadvantaged & Low-income Communities and/or Tribes

Scoring Criteria	Maximum Points
8. California Based Entities Funding	5
9. Match Funds	10
10. Disadvantaged & Low-Income Communities and/or Tribes	5*
<b>Total Bonus Points (Group 1)</b>	<b>15</b>
<b>Total Bonus Points (Group 2)</b>	<b>20</b>

\* Available for Group 2 projects only



# 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.



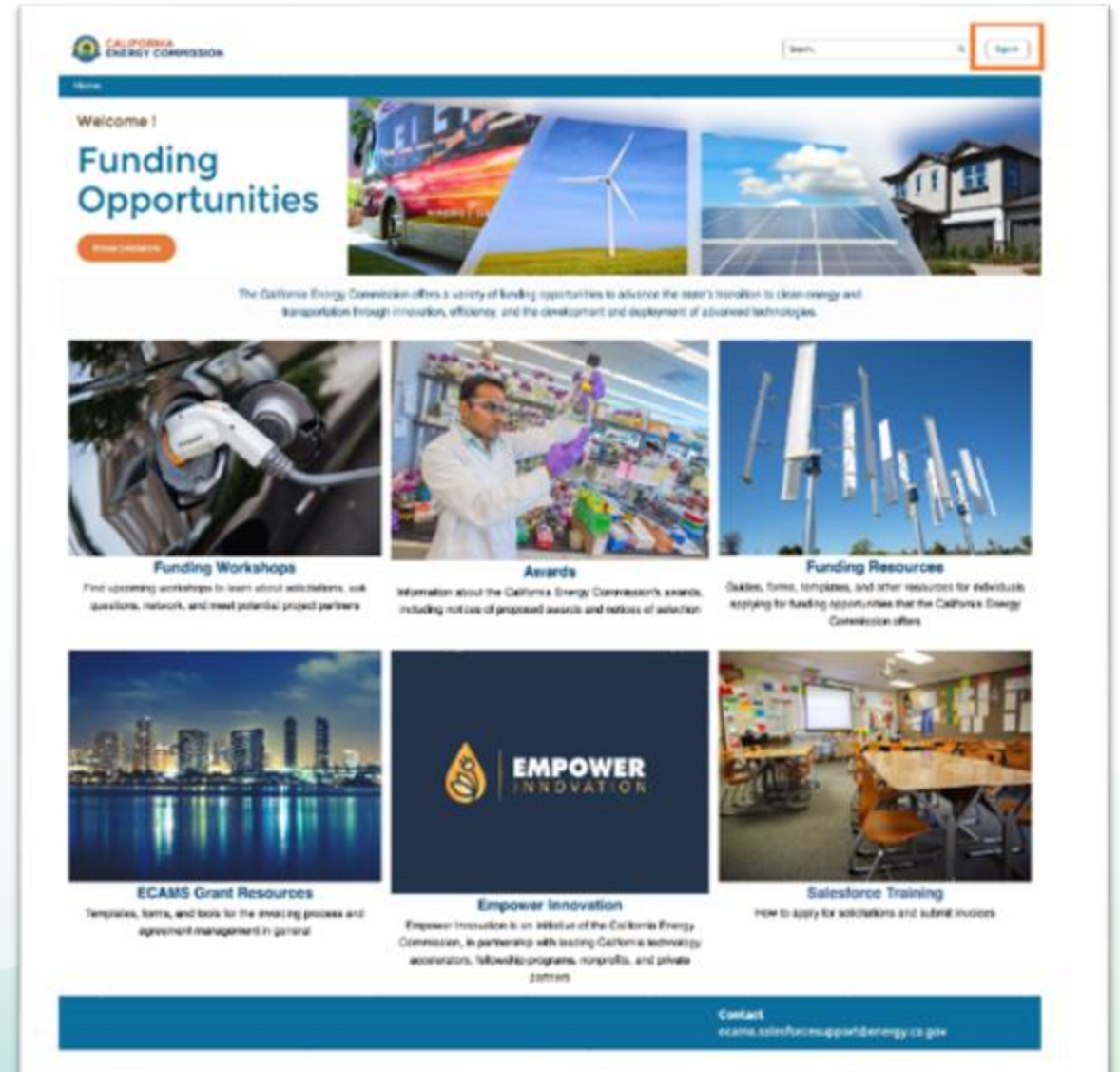
# GFO Submission Requirements

- Applicants must have or must create a user account to submit a solicitation application. To create an account, please see the guidance **User Registration Instructions** at:

<https://www.energy.ca.gov/media/7893>

Note: One account manager per organization, but users can be added by account manager

- Applications must be submitted through the **Energy Commission Agreement Management System (ECAMS)** at: <https://ecams.energy.ca.gov/>





# GFO Submission Requirements (cont.)

- For detailed instructions on application submittal, please see the *Applying for a Solicitation* at: <https://www.energy.ca.gov/media/7956>
- Both referenced guidance documents are available at: <https://www.energy.ca.gov/funding-opportunities/funding-resources> under General Funding Information.
- Questions with the ECAMS system should be directed to: [ECAMS.SalesforceSupport@Energy.ca.gov](mailto:ECAMS.SalesforceSupport@Energy.ca.gov)





# GFO Submission Requirements (files)

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- Electronic files, other than those requiring signatures, must be consistent with the specific file format provided in the solicitation.
- Application documents should meet formatting requirements, and page recommendations as specified in the solicitation manual.
- Attachments requiring signatures (Application Form and Support/Commitment Letters) may be signed, scanned, and submitted in PDF format.



# Submission Warning

## START THE PROCESS EARLY!

- Applications must be fully submitted BEFORE the deadline listed in the solicitation manual.
- The ECAMS system will reject applications submitted after the deadline.
- Applications in the process of being submitted prior to the deadline will NOT be accepted after the deadline.
- ECAMS support is ONLY available from 8am – 5pm Monday-Friday.



# Application Submission

- Register as a New User (if applicable)
- Log In
- 4-Step Application Submittal Process:
  1. Select Solicitation
  2. Enter Application Information
  3. Upload Files
    - Select documents for upload
    - Tag files with document type
    - Designate confidential documents (if applicable)
  4. Review and Submit
- Confirmation from ECAMS system that submission was successful

**All steps must be complete BEFORE the submission deadline**



# Application Reminders

We recommend you carefully review your application before submission.

- Verify that all necessary documents have been uploaded.
- Verify that all documents uploaded are the accurate version you intend to submit as your final.
- Verify that your documents are not marked "confidential" unless the solicitation allows specific material to be confidential. Most solicitations do not allow submission of confidential information.
- Verify that your match commitment letters accurately reflect the match amounts included in your budgets, including the match provided by the prime applicant.
- Verify that support and commitment letters are included, if required.
- Verify that amounts entered within the system's budget (if any) concur with information included on uploaded budget worksheets.



# 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	March 13, 2024
Pre-Application Workshop	April 16, 2024 at 10:00 a.m.
<b>Deadline for Written Questions</b>	<b><u>April 23, 2024 at 5:00 p.m.</u></b>
Anticipated Distribution of Questions and Answers	Week of May 13, 2024
<b>Deadline to Submit Applications</b>	<b><u>August 07, 2024 at 11:59 p.m.</u></b>
Anticipated Notice of Proposed Award Posting	Week of September 09, 2024
Anticipated Energy Commission Business Meeting	November 13, 2024
Anticipated Agreement Start Date	December 18, 2024
Anticipated Agreement End Date	March 31, 2028



# Questions and Answers

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- Please type your question in the Question and Answers window or raise your hand and you will be called on to unmute yourself. Please remember to introduce yourself by stating your name and affiliation. (Feature found under the Participants panel)
- Keep questions under 3 minutes to allow time for others.
- Note that our official response will be given in writing and posted on the GFO webpage.



# Additional Questions

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Please send all questions related to GFO-23-502 to

**Angela Hockaday**

Commission Agreement Officer

715 P Street, MS-1

Sacramento, CA 95814

[Angela.Hockaday@energy.ca.gov](mailto:Angela.Hockaday@energy.ca.gov)

**Deadline to submit questions:**

**Tuesday, April 23 5:00 PM**





**Thank You!**

