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Document Title:	Draft Solicitation Concept for Distributed Clean Hydrogen Production with Onsite End Use (H2ONSITE)
Description:	The Draft Solicitation Concept focuses on Distributed Clean Hydrogen Production with Onsite End Use for the Clean Hydrogen Program. The Draft Solicitation Concept outlines proposed funding, eligibility requirements, project focus, evaluation process, and specific questions for stakeholders.
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DRAFT SOLICITATION CONCEPT

Clean Hydrogen Program

Subject Area: Distributed Clean Hydrogen Production with Onsite End Use (H2ONSITE)

No proposals are being accepted at this time. This is a draft compilation of solicitation concepts. Do not design or submit proposals according to this DRAFT. The actual solicitation is subject to change.

The purpose of this draft solicitation concept is to solicit public feedback on eligibility requirements, goals and vision, and solicitation format (See Section 8 for specific questions). Staff will accept comments submitted to the California Energy Commission (CEC) Dockets Unit or by email until Friday, October 27, 2023, at 5:00 p.m. (See Section 9 for additional details on how to comment.)



<http://www.energy.ca.gov/contracts/index.html>

State of California
California Energy Commission
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I. INTRODUCTION

This “draft solicitation concept” document details the concept under consideration for a competitive grant solicitation on distributed hydrogen production with onsite use to be issued by the CEC’s Clean Hydrogen Program. The purpose of this solicitation is to fund the demonstration of onsite clean hydrogen production, storage, and use in California. Projects funded from this solicitation will be required to execute a community engagement plan and report on their proposed project’s community benefits and impacts. Projects will increase the technology readiness and decrease the cost of producing clean hydrogen, with a focus on community engagement and bringing direct benefits to the community.

II. FUNDING

The CEC reserves the right to modify the available funding and the minimum/maximum award amounts described in this section.

A. Available Funding

A minimum of \$20 million is available for the grants resulting from this competitive solicitation.

B. Maximum Award

The maximum award will be up to \$10 million for each award.

C. Minimum Award

The minimum funding amount is \$7 million for each award.

D. Match Funding Requirements

Applicants must provide match funding of at least 50 percent of requested CEC funds for this solicitation, along with supporting documentation.

E. California Spending Requirement

At least 50% of CEC funds must be spent in California. Preference points will be given for spending over 50%.

- "Spent in California" means that:
 - (1) Funds in the "Direct Labor" category and all categories calculated based on direct labor are paid to individuals that pay California state income taxes on wages received for work performed under the agreement. Payments made to out-of-state workers do not count as “funds spent in California.” However, funds spent by out-of-state workers in California (e.g., hotel and food) can count as “funds spent in California”; AND
 - (2) Business transactions (e.g., material and equipment purchases, leases, and rentals) are entered into with a business located in California.
 - (3) Total should include any applicable subrecipients and vendors.

III. ELIGIBILITY REQUIREMENTS

A. APPLICANT REQUIREMENTS

1. Eligible Applicants

This is an open solicitation for public and private entities.

Each grant agreement resulting from this solicitation will include terms and conditions that set forth the recipient's rights and responsibilities. By submitting an application, each applicant agrees to enter into an agreement with the CEC to conduct the proposed project according to the terms and conditions that correspond to its organization, without negotiation: (1) University of California and California State University terms and conditions; (2) U.S. Department of Energy terms and conditions; or (3) standard terms and conditions.

If an applicant, by law, cannot agree to the (1), (2), or (3) terms and conditions listed above without negotiation, the applicant can apply and request to negotiate terms. The CEC retains the sole right to refuse to agree to any terms changes. Note: the ECAMS system will require applicants to agree to certain certifications before submitting an application, including certifying the applicant will conduct the proposed project according to the terms and conditions without negotiation. Applicants that, by law, cannot agree to the terms and conditions will not be penalized for agreeing to the ECAMS system certifications.

All terms and conditions will be located on the Funding Resources page under "Clean Hydrogen Program Information" at <https://www.energy.ca.gov/funding-opportunities/funding-resources>. Please refer to the applicable Grant terms and conditions. Failure to agree to the terms and conditions by indicating that acceptance is based on modification of the terms will result in rejection of the application. Applicants must read the terms and conditions carefully. The CEC reserves the right to modify the terms and conditions prior to executing grant agreements.

All corporations, limited liability companies (LLCs), limited partnerships (LPs) and limited liability partnerships (LLPs) that conduct intrastate business in California are required to be registered and in good standing with the California Secretary of State prior to its project being recommended for approval at an Energy Commission Business Meeting. If not currently registered with the California Secretary of State, bidders are encouraged to contact the Secretary of State's Office as soon as possible to avoid potential delays in beginning the proposed project(s) (should the application be successful). For more information, contact the Secretary of State's Office at <http://www.sos.ca.gov/>. Sole proprietors using a fictitious business name must be registered with the appropriate county and provide evidence of registration to the Energy Commission prior to their project being recommended for approval at an Energy Commission Business Meeting.

2. Number of Applications

Applicants can either submit one application with multiple project sites throughout the state or submit one application per site within the state.

B. PROJECT REQUIREMENTS

1. Eligible Project Costs

Costs incurred for the following are eligible for CEC's reimbursement or as the applicant's match share:

- I. Equipment, including installation and materials, specifically associated with hydrogen production, storage, and use
- II. Services conducted by subcontractors or vendors for:
 - a. Site construction and preparation
 - b. Engineering and design
 - c. Measurement and verification (M&V)
- III. Required project tasks (See Project Goals and Vision) related to:
 - a. Community benefits and engagement
 - b. Safety
 - c. Business and market
 - d. Operations and maintenance (O&M)
 - e. Administration (e.g., progress reporting, project meetings, final report)

The allocation of CEC funds must meet the following requirements:

- Services, including site construction, engineering and design, and M&V, will only be reimbursed when subcontractors or vendors that are in the budget and meet the definitions in the solicitation are used.
- Costs for required project tasks must not exceed 10 percent.
- Engineering and design task costs must not exceed 20 percent.
- Site construction and preparation costs must not exceed 5 percent.
- At least 65 percent of CEC funds must be allocated towards equipment, including installation, and materials.

The following are not eligible for CEC reimbursement but may be counted toward match share:

- Permit costs and the expenses associated with obtaining permits, with the exception of costs incurred by University of California recipients.
- Onsite power acquisition for the project, such as costs for installing or operating eligible renewable energy resources, as defined in California Public Resources Code Section 25741 and subject to the requirements of Public Utilities Code 399.12(e)(1)(A)-(D) and 399.12(e)(2). Eligible renewable electricity sources include fuel cells using eligible renewable feedstocks, geothermal, small

hydroelectric (30 megawatts or less), ocean wave, ocean thermal, tidal current, photovoltaics (PV), solar thermal, biomass, biomass digester gas, municipal solid waste conversion (non-combustion thermal process), and wind, as outlined in Section 25741(a)(1) of the California Public Resources Code but excluding landfill gas.

- Costs for installing or operating carbon capture, utilization, and storage (CCUS) equipment.

2. Project Timeline

The expected project timeline is four years, from CEC agreement execution to completion, including the required minimum ten months of demonstration.

IV. PROJECT FOCUS

Hydrogen can replace fossil fuels and reduce emissions in hard-to-electrify sectors like transportation, industry, and electricity generation. However, the emerging market faces obstacles to improving both hydrogen demand and the efficiency and cost-effectiveness of onsite clean hydrogen production, storage, and utilization. The awards from this competitive solicitation will address challenges and opportunities to deploy clean hydrogen production at distributed locations, co-located with hydrogen end use, and potentially co-located with renewable energy sources.

The overall goal of this solicitation is to fund hydrogen production facilities that are co-located with their end uses to reduce clean hydrogen costs. Additionally, an ancillary goal is to support the development of technology readiness level¹ (TRL) 6 or higher hydrogen technologies that have the potential to bring benefits to their surrounding communities, such as resiliency, workforce development, and economic growth. Co-located production facilities and end-use applications must focus on either addressing hard-to-electrify sectors or ensuring reliable power generation. Projects must demonstrate clean hydrogen production, storage, and end use on the same property, either at new facilities or at existing hydrogen production facilities that have been scaled up. These projects can benefit communities, workforces, air quality, and natural environments should hydrogen be used to replace diesel, fossil gas, or other fossil fuels. Projects must also have a community engagement plan and report on their project's benefits and impacts on surrounding areas. Proposed hydrogen production, storage, end-use systems, and technologies must meet the minimum requirements and project elements identified in this solicitation to be eligible to apply.

As part of the Clean Hydrogen Program and informed by AB 209, this solicitation targets hydrogen produced from water using eligible renewable energy sources, or produced from these eligible renewable energy resources, as defined in and subject to the requirements of Public Utilities Code 399.12(e)(1)(A)-(D) and 399.12(e)(2).

¹ U.S. Department of Energy, "Technology Readiness Assessment Guide".
<https://www2.lbl.gov/dir/assets/docs/TRL%20guide.pdf>

Projects must use 100 percent renewable energy resources onsite or a PPA with bundled Renewable Energy Credits (RECs) to source renewable energy in California. Projects may receive preferential points during scoring for onsite renewable energy resources. To align with the state's carbon neutrality goals, projects must minimize GHG emissions of the fuel and feedstock procurement process, hydrogen production facility operations, storage, and end-use applications. Applications can include CCUS to meet this requirement, but it is not a reimbursable CEC cost (See Eligible Project Costs). Additionally, projects must help reduce sector-wide emissions by avoiding any benefit to facilities associated with high emissions, fossil fuels, or technologies that may contribute to high emissions. Project scoring will use a technology neutral approach to consider all pathways for clean hydrogen in California.

A. Project Elements

The primary objectives of these funded projects will be to:

- 1) Demonstrate production of one to five metric tons² of clean hydrogen per day at each project site.
- 2) Demonstrate and deploy onsite clean hydrogen production, storage, and end use.
- 3) Measure and report on the impacts and benefits of distributed hydrogen systems on local communities.
- 4) Meet demand for low-carbon fuels and contribute to the overall hydrogen economy in California.
- 5) Accelerate the deployment of clean hydrogen production facilities with onsite end use by reducing risks and enabling economies of scale and knowledge sharing.
- 6) Lower the cost barrier and carbon impact of clean hydrogen production by co-locating renewable energy production with hydrogen production, storage, and end use.
- 7) Benefit geographically diverse areas of the state.

Projects must meet the following minimum requirements to be funded by this solicitation:

- Minimize water consumption where possible and limit water consumption to 9-13.5 kilograms of water per kilogram of hydrogen produced. Water for projects must not be originally intended for human consumption. Additionally, there is a preference for facilities that have a secured water source or can ensure the use of process or wastewater.
- Ensure onsite end uses align with California's carbon neutrality targets and reduce sector-wide emissions (e.g., avoiding any benefit to facilities that are associated with fossil fuels or high emissions or that contribute to high emissions).
- Locate hydrogen production facilities in places that have high potential to bring

² The hydrogen production capacity requirement is the annualized average for each project site.

benefits to local communities (e.g., reduce GHG emissions, reduce waste, increase economic development).

- Provide a commitment letter from the site host for each proposed site location.
- Exhibit a carbon intensity of 0.45 kilograms of carbon dioxide equivalent per kilogram of hydrogen produced and demonstrate technologies that can enable a project to achieve a carbon intensity of 0.00 kilograms of carbon dioxide equivalent per kilogram of hydrogen produced with a well-to-gate assessment.
- Exhibit a minimum TRL of 6 for the proposed system, which includes hydrogen feedstock, production system, storage, and end use, at the start of the project.
- Advance the TRL of the proposed hydrogen production system by at least one TRL by the end of the project.
- Demonstrate the system for a minimum of 10 cumulative months. The time starts accruing after the system has reached stable operation.
- Implement hydrogen safety measures, including, but not limited to, job training and leakage detection and monitoring.
- Actively seek community input and engagement and create tangible benefits to local communities.
- Minimize or eliminate any negative impact on the surrounding communities' exposure to pollutants or access to renewable energy sources.

To ensure funded projects meet objectives and requirements listed above, CEC staff will review solicitation applications for detailed information and plans, including but not limited to:

- M&V plan to track project performance metrics such as:
 - Expected and actual hydrogen production capacity (metric tons per day).
 - Hydrogen purity.
 - Hydrogen production and customer costs.
 - Feedstock procurement estimates (including quantity and source), if applicable.
 - Water consumption estimates (including quantity and source) and methodology.
 - Carbon intensity, well-to-gate³ greenhouse gas emissions assessments, and methodology (recommended method for monitoring and reporting is the Argonne Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) model).⁴
 - Criteria air pollutant emissions.
 - System performance under normal operating conditions.
 - Hydrogen production, storage, and end-use system leakage.
 - System payback.

³ The well-to-gate system boundary refers to all upstream activities for fuel and feedstock procurement plus the processes used to produce hydrogen, as determined under the most recent Greenhouse gases, Regulated Emissions, and Energy use in Transportation model (commonly referred to as the "GREET model") developed by Argonne National Laboratory. Argonne National Laboratory, "GREET Model" 2022 <https://greet.es.anl.gov/>

- Lifetime (hours of operation) of the project's system.
- Local workforce development.
- Decrease in region's GHG emissions.
- System TRL and technical project performance compared to existing state-of-the-art technologies.
- Life cycle assessment (LCA) evaluating GHG emissions from fuel and feedstock procurement and hydrogen production facility operations, storage, and end-use.
- TRL of the proposed technology/production system design, including backup materials and explanation of accomplished TRL milestones prior to the application process.
- Approach to:
 - Solicit, consider, and integrate input from local communities through a community engagement plan that aims to inform, educate, and involve local community members in the clean hydrogen project's development and deployment.
 - Identify specific community benefits and impacts that are expected and result from the project. This includes workforce development, jobs created or retained, community investments, and local health impacts.
 - Ensure broad and diverse participation from underrepresented groups – including minority-, women-, and LGBT-owned businesses and disadvantaged communities.
 - A safety plan that addresses hydrogen leakage monitoring and quantification plans; establishes emergency plans and procedures; and complies with federal, state, and local codes and standards for hazardous materials, material embrittlement, and setback distances.
 - A business and market plan, including identifying market trends; growth potential; demand projections; replicability of the project; and contracts, plans, or agreements for deployment beyond the term of the proposed project.
 - An O&M plan, including key system operating parameters and limits, maintenance procedures and schedules, and necessary documentation methods.

B. California Environmental Quality Act

Prior to CEC approval and encumbrance, the CEC must comply with the California Environmental Quality Act (CEQA). To comply with CEQA, the CEC must have CEQA-related information from applicants and sometimes other entities, such as local governments, in a timely manner. Unfortunately, even with this information, the CEC may not be able to complete its CEQA review prior to the encumbrance deadline for every project. For example, if a project requires an Environmental Impact Report, the process to complete it can take many months. For these reasons, it is critical that applicants organize project proposals and provide all CEQA-related information in a manner that minimizes the time required for the CEC to comply with CEQA and enables the CEC to complete its review in time to meet its encumbrance deadline.

In addition to any other right reserved to it under this solicitation or that it otherwise has, if the CEC determines, in its sole and absolute discretion, that the CEQA review associated with a proposed project would not likely be completed prior to the encumbrance deadline referenced above, and that the CEC's ability to meet its encumbrance deadline may thereby be jeopardized, the CEC may cancel a proposed award and award funds to the next highest scoring applicant, regardless of the originally proposed applicant's diligence in submitting information and materials for CEQA review.

C. Critical Milestones

Time is of the essence, so to incentivize and ensure timely project completion, in addition to meeting other agreement requirements, the Recipient must complete certain activities by determined dates to receive payment by the CEC under any agreement resulting from this solicitation. Recipients will be required to submit quarterly progress reports containing updates on Critical Milestones and project costs. Recipients will also be required to hold Critical Project Report meetings with CEC staff after completing each Critical Milestone. Without limitation to any other of the CEC's rights or remedies, failure to submit accurate or timely quarterly progress reports may be grounds for agreement termination.

Example critical milestones are as follows:

Critical Milestone 1: The Recipient shall complete pre-installation community engagement, permitting, safety, zoning, and engineering & design tasks. Also, Recipients shall complete feasibility studies for each project site, comply with CEQA, and establish a project timeline.

Critical Milestone 2: The Recipient shall demonstrate control and possession of the site at which each proposed clean hydrogen project is to be constructed.

Critical Milestone 3: The recipient shall establish end-use agreements and partnerships to secure a revenue stream for the hydrogen production plant and end use.

Critical Milestone 4: The Recipient shall complete mid-project community engagement and hold meetings to establish an agreement with contractors and/or developers for renewable energy build-out onsite or a PPA, as well as onsite storage and onsite use.

Critical Milestone 5: The Recipient shall hold meetings to develop and execute a construction, O&M, and risk mitigation plan; staff the facility; and acquire and install equipment and technology.

Critical Milestone 6: The Recipient shall complete post-installation community engagement, provide a third-party M&V report, and present project findings in public

webinars and to CEC staff.

CEC staff will determine whether the documentation submitted by the Recipient is sufficient to show that the Critical Milestone has been met.

V. HOW AWARDS ARE DETERMINED

Applicants will apply for funding in two phases: the Pre-Application Abstract and the Full Application. Applicants will be given one month to submit abstracts, and CEC staff will review and post results within 2 months of the abstract submission deadline. Applicants will have 3 months to submit full applications after the CEC has published abstract review results. The Pre-Application Abstract will include the project summary, project readiness, implementation schedule, and a list of proposed project partners, including end use(s). Pre-Application Abstracts that score well and are encouraged will be able to submit Full Applications, which will include commitment letters, site locations, and additional details relevant to the project.

Applicants passing administrative and technical screening will compete based on evaluation criteria and will be scored and ranked based on those criteria. Unless the CEC exercises any of its other rights regarding this solicitation (e.g., to cancel the solicitation or reduce funding), applications obtaining at least the minimum passing score will be recommended for funding in ranked order until all funds available under this solicitation are exhausted.

If the funds available under this solicitation are insufficient to fully fund a grant proposal, the CEC reserves the right to recommend partially funding that proposal. In this event, the applicant/proposed awardee and Commission Agreement Manager shall meet and attempt to reach an agreement on a reduced scope of work commensurate with the level of available funding.

The Pre-Application Abstract and Full Application will each be evaluated in two stages: administrative and completeness screening, and technical and cost evaluation of proposals.

VI. STAGE ONE: ADMINISTRATIVE AND COMPLETENESS SCREENING

The Contracts, Grants, and Loans Branch will review Proposals for compliance with administrative requirements and completeness. Proposals that fail Stage One shall be disqualified and eliminated from further evaluation.

VII. STAGE TWO: TECHNICAL AND COST EVALUATION OF PROPOSALS

Proposals passing Stage One will be submitted to the Evaluation Committee to review and score based on the Evaluation Criteria in this solicitation. As an example, potential Evaluation Criteria for the solicitation could include the following (note that these could change when the CEC solicitation is released):

- Technical Merit
- Technical Approach
- Impacts and Benefits to California
- Team Qualifications, Capabilities, and Resources
- Budget and Cost-Effectiveness
- Funds Spent in California
- Benefits to Disadvantaged, Low-Income Communities, and/or Tribes and Localized Health Impacts.

During the evaluation and selection process, the Evaluation Committee may schedule a clarification interview with an applicant that will be held by telephone, videoconference, or in person at the Energy Commission for the purpose of clarification and verification of information provided in the proposal. However, these interviews may not be used to change or add to the contents of the original Proposal.

The total score for each Proposal will be the average of the combined scores of all Evaluation Committee members.

After scoring is completed, Proposals not attaining a score of 70 percent of the total possible points will be eliminated from further competition.

All applicable Preferences will be applied to all Proposals attaining a minimum of 70 percent of the total possible points. The agreement shall be awarded to the applicant meeting the requirements outlined above and achieving the highest score after the application of Preferences.

VIII. QUESTIONS FOR STAKEHOLDERS

CEC staff are seeking responses and comments to the following to shape the direction and scope of this solicitation:

1. Are the Project Elements in Section IV of this document realistic, reasonable, and feasible?
2. What would be the appropriate level of project funding that would leverage private investments associated with the work proposed in this draft concept, and why?
 - a. How would limiting the use of grant funds to Eligible Project Costs in Section III impact the project? What changes do you recommend if any, and why?
3. Provide any feedback on the two-phase solicitation approach. Are the 1-month abstract deadline and 3-month full application deadline realistic?
4. To ensure that funded projects and their impacts can inform future deployment of hydrogen in California, should the CEC consider additional performance metrics beyond those proposed for the M&V plan in Section IV?
5. What type of technical assistance is needed to ensure equitable participation and project success, if any?

6. Are there specific end uses we should target with the one to five metric ton hydrogen capacity? If so, why?
7. Are there any concerns with this solicitation allowing the use of CCUS for a project to be carbon neutral? If so, why?
8. Please provide relevant comments regarding other considerations not explicitly listed above.

IX. WRITTEN COMMENTS

Comments on this “draft solicitation concept” document are due by **Friday, October 27, 2023, at 5:00 p.m.**

Please submit comments to the CEC using the e-commenting feature by accessing the comment page for this docket at

<https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=22-ERDD-03>.

A full name, e-mail address, comment title, and either a comment or an attached document (.doc, .docx, or .pdf format) is mandatory. Please include “Onsite Distributed Hydrogen Production and End Use Solicitation Concept” in the comment title. After a challenge-response test is used by the system to ensure that responses are generated by a human user and not a computer, click on the “Agree & Submit Your Comment” button to submit the comment to the CEC’s Docket Unit.

Please note that written comments, attachments, and associated contact information included within the documents and attachments (e.g., your address, phone, email, etc.) become part of the viewable public record. This information may become available via Google, Yahoo, and any other search engines.

Interested stakeholders are encouraged to use the electronic filing system described above to submit comments. If you are unable to submit electronically, you may email your comments to: DOCKET@energy.ca.gov and include “Distributed Hydrogen Solicitation Concept 22-ERDD-03” in the subject line.