



National Association of  
State Energy Officials

## National Association of State Energy Officials (NASEO) Summary of the U.S. Department of Energy (DOE) Office of Clean Energy Demonstration’s (OCED) Regional Clean Hydrogen Hubs Funding Opportunity Announcement (FOA) (Section 40314 of the Infrastructure, Investment, and Jobs Act (IIJA))

The document below is a NASEO prepared summary to assist State Energy Offices and their private sector partners in navigating the Regional Clean Hydrogen Hubs FOA. For complete information, please review the full [DOE prepared FOA](#) and the relevant [IIJA statute, section 40314](#). Please email Kelsey Jones ([kjones@naseo.org](mailto:kjones@naseo.org)) with any questions.

<b>FOA Issue Date:</b>	9/22/2022
<b>Submission Deadline for Concept Papers:</b>	11/7/2022 5:00pm ET
<b>Concept Paper Encourage/Discourage Notifications:</b>	December 2022
<b>Submission Deadline for Full Applications:</b>	4/7/2023 5:00pm ET
<b>Expected Submission Deadline for Replies to Reviewer Comments:</b>	5/31/2023 5:00pm ET
<b>Pre-Selection Interviews:</b>	Summer 2023
<b>Expected Date for DOE Selection Notifications:</b>	Fall 2023
<b>Expected Timeframe for Award Negotiations:</b>	Winter 2023-2024

### Key Background

- DOE will be selecting six to ten hydrogen hubs (H2Hubs) for a combined total of \$6-7 billion in federal funding.
- Tools to explore when developing applications:
  - [DOE National Clean Hydrogen Strategy and Roadmap Draft](#)
    - This is a comprehensive overview of the potential for hydrogen production, transport, storage, and use in the United States and outlines how clean hydrogen can support decarbonization and economic development goals.
  - [H2Matchmaker](#)
    - This is an online information resource to assist hydrogen suppliers and users with self-identifying collaborators and opportunities to expand development toward realizing regional hydrogen hubs.
  - [Clean Hydrogen Production Standard Draft Guidance](#)

- The Clean Hydrogen Production Standard (CHPS) will establish a target of 4.0 kgCO<sub>2</sub>e/kgH<sub>2</sub> for lifecycle greenhouse gas emissions associated with hydrogen production and will account for multiple requirements within the Infrastructure, Investment, and Jobs Act (IIJA) and the Inflation Reduction Act (IRA).
- DOE requires that each H2Hub be led by a single entity (prime applicant) and envisions that each H2Hub will likely include multiple partners that will bring together diverse technologies producing, transporting, and utilizing large amounts of hydrogen in different ways.
- Each H2Hub should focus on commercial-scale demonstrations of clean hydrogen that include production, delivery, storage, and end-uses in a specific geographic region (e.g., metropolitan area, state, or several states in close proximity) within the United States.
- Each H2Hub should demonstrate balanced hydrogen supply and demand, connective infrastructure, and achieve continuous financial and operational viability during the award and sustained viability beyond DOE funding.
- In addition, each H2Hub will quantitatively estimate and measure societal impacts including community benefits as well as life cycle environmental impacts of the H2Hub technologies on the region.
- H2Hubs should include substantial engagement of local and regional stakeholders to ensure that they generate local, regional, and national benefits.
- ***Applicants will be required to follow two phases: the concept paper phase and then the application phase. Only applicants who submit a concept paper can submit a full application.***
- Following the submission of a concept paper, the application process will follow four key phases:
  1. **First phase:** Initial planning and analysis activities.
    - This will help ensure the concept of H2Hubs is technologically and financially viable. There will also be input requested from various local stakeholders
  2. **Second phase:** Finalize engineering designs and business development, site access, labor agreements, permitting, offtake agreements, and community engagement activities needed for installation, integration, and construction
  3. **Third phase:** Installation, Integration, and construction
  4. **Fourth phase:** Data collection to analyze operations performance, and financial viability

## Concept Paper Requirements

Example forms and templates, including the concept page cover page, can be found [here](#).

Section	Page Limit	Description
Cover Page	1 page maximum	See an example cover page in Appendix I (also provided under the application documents section on the OCED Exchange website). Applicants should provide all of the information requested on the example cover page including any statements regarding confidentiality, if applicable.
H2Hub Description & Project Team Description	19 pages maximum	Applicants should succinctly describe: <ul style="list-style-type: none"> <li>• The proposed integrated H2Hub; including the key production to connective infrastructure to hydrogen end-use technologies and systems to be deployed, and how the H2Hub will advance the infrastructure for hydrogen production and consumption in the U.S.</li> <li>• A preliminary development plan and timeline, including any key risks and challenges, showing the impact that the proposed project would have on the hydrogen production and consumption infrastructure in the U.S.</li> <li>• The impact that DOE funding would have on the proposed project.</li> </ul>

	<ul style="list-style-type: none"> <li>How the proposed work, if successful, would meet the FOA objectives, including how the H2Hub will achieve long term financial and operational viability, market liftoff, and follow-on funding from the private sector to build out a national clean hydrogen network.</li> </ul> <p>Applicants are required to describe succinctly the approach to be taken with the Community Benefits Plan, addressing the four core elements:</p> <ul style="list-style-type: none"> <li>Carrying out meaningful community and labor engagement;</li> <li>Investing in the American workforce;</li> <li>Advancing diversity, equity, inclusion, and accessibility; and</li> <li>Contributing to the Justice40 Initiative goal that 40% of the overall climate and clean energy investments flow to disadvantaged communities.</li> </ul> <p>Applicants should succinctly describe the qualifications, experience, and capabilities of the proposed Project Team, including:</p> <ul style="list-style-type: none"> <li>Whether the Project Team and senior/key personnel have the skill and expertise needed to successfully design, develop, and operate the proposed H2Hub.</li> <li>Whether the applicant has prior experience which demonstrates an ability to perform tasks of similar risk and complexity.</li> <li>Whether the applicant has worked together with its teaming partners on prior projects or programs.</li> <li>Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how it intends to obtain access to the necessary equipment and facilities.</li> <li>A summary organization chart of the team should be provided.</li> <li>Applicants may provide other graphs, charts, or data to supplement their H2Hub and Project Team Descriptions.</li> </ul>
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## FOA Details

- Eligible prime recipient and sub-recipients include institutions for higher education, for-profit entities, non-profit entities; and state and local government entities; and Tribal nations.
- The FOA will solicit plans for all the phases, but DOE will only authorize funding for Phase 1 at this time.
- The FOA references the updated definition of “regional clean hydrogen hub” as “a network of clean hydrogen producers, potential clean hydrogen consumers, and connective infrastructure located in close proximity” that:
  - Demonstrably aid the achievement of the clean hydrogen production standard developed under section 822(a) of the Energy Policy Act of 2005 (EPA 2005), as amended by Section 40315 of BIL;
  - Demonstrate the production, processing, delivery, storage, and end-use of clean hydrogen; and
  - Can be developed into a national clean hydrogen network to facilitate a clean hydrogen economy.
- The FOA is looking for applications for the planning, construction, and operation of the hubs. The proposals will be selected based on:
  - Feedstock diversity** – at least one H2Hub shall demonstrate the production of clean hydrogen from fossil fuels, one H2Hub from renewable energy, and one H2Hub from nuclear energy.
  - End-use diversity** – at least one H2Hub shall demonstrate the end-use of clean hydrogen in the electric power generation sector, one in the industrial sector, one in the residential and commercial heating sector, and one in the transportation sector.
  - Geographic diversity** – each H2Hub shall be located in a different region of the United States and shall use energy resources that are abundant in that region, including at least two H2Hubs in regions with abundant natural gas resources.

## Project Considerations

- Employment – DOE shall give priority to regional clean hydrogen hubs that are likely to create opportunities for skilled training and long-term employment to the greatest number of residents in the region.
- A Community Benefits Plan must also be included in the application. This should include letters of support from established labor unions and community-based organizations.
- H2Hubs should leverage energy resources prevalent in the region and existing facilities and infrastructure.
- H2Hubs sourcing domestic resources and components are considered favorably and they are encouraged to use existing infrastructure (i.e., CO2 pipelines)
- Funds are not allowed for anything outside of clean hydrogen production, connective infrastructure, and consumers.
- Hydrogen should be produced at a rate of at least 50 -100 metrics tons per day. More will be viewed favorably.
- Utilization of the hydrogen in the region is preferred but a portion may be exported.
- H2Hubs also need to aid achievement of but not necessarily meet the clean hydrogen production standard (CHPS) meaning that applicants will be evaluated on the degree to which they reduce emissions across the full life cycle, and not necessarily based on whether they achieve the CHPS target.
  - The CHPS defines clean hydrogen as hydrogen produced with a carbon intensity equal to or less than 2 kilograms of carbon dioxide-equivalent produced at the site of production per kilogram of hydrogen produced and the target for lifecycle greenhouse gas emissions of 4.0 kgCO<sub>2</sub>e/kgH<sub>2</sub>
- Applicants need to conduct a detailed life cycle analysis (LCA)
  - Any emissions or criteria pollutants associated with transport delivery and distribution will factor into the LCA
- DOE is developing sensor technologies to test for leaks, and when they are developed, H2Hubs might be required to install them.
- While DOE prefers a funding range from \$500 million to \$1 billion for each H2Hub, applications that propose a DOE share as low as \$400 million or as high as \$1.25 billion will be considered responsive to the FOA.
- Each H2Hub is required to provide a minimum of 50% non-federal cost share to be executed over 8-12 years.
  - Cost share may be provided in the form of cash or cash equivalents or in-kind contributions. Cost share must come from non-federal sources.

## Phase Overview

### Phase 1:

- Preliminary engineering, construction, and commercial-scale designs
- Developing skilled labor pool through workforce and community agreements
- Developing project management plan, risk management plan, and intellectual property management plans are needed along with an initial financial model and final site selection. Working on environmental and regulatory plans.
- Up to \$20M will be available.
- Phase 1 is envisioned to be completed in 12-18 months.

### Phase 2:

- Finalizing project development plans, commercial agreements, financial structure, and complete the necessary permitting and approval activities required for construction.
- Third party financing agreements, and relevant hydrogen offtake or feedstock agreements in place
- Finalizing safety and security plans

- Up to 15% of the total DOE funding for the H2Hub will be available from DOE for this phase.
- Phase 2 is envisioned to be completed in 2-3 years.

**Phase 3:**

- Longest and most cost intensive.
- Revise and update plans.
- Track and mitigate risks.
- There is no defined funding range yet.
- The suggested timeline for completion is 2 to 4 years but cannot go over 12 years.

**Phase 4:**

- Mechanical completion or production capacity demonstration.
- Substantial financial, socio-economic, environmental, and operational data collection and reporting to DOE
- No defined funding range
- There will be a suggested amount of time of 2-4 years available to complete this phase.

***A Go/No Go review will be completed after every stage to determine if additional funding will be dispersed and H2Hubs can be discontinued at any point if the go/no go criteria are not met.***

**Projects that are funded under all four phases are expected to reach technical and commercial viability under the FOA.**

**Application Requirements**

For full details, review the FOA [here](#). Application forms and templates can also be found linked with the FOA.

The table below outlines the components that need to be included in the application, along with information on the file format and page limit. If applicants exceed the maximum page lengths indicated below, DOE will review only the authorized number of pages and disregard any additional pages. Additional details on certain components of the application are provided below the table.

Component	File Format	Page Limit	File Name
Technical Volume	PDF	100	ControlNumber_LeadOrganization_TechnicalVolume
H2Hub TEA and LCA Projections	MS Excel	n/a	ControlNumber_LeadOrganization_TEA_LCA
Community Benefits Plan	PDF	25	ControlNumber_LeadOrganization_CBP
Environmental Considerations Summary	PDF	n/a	ControlNumber_LeadOrganization_EnvInfo
Resumes	PDF	2 pages each	ControlNumber_LeadOrganization_Resumes
Letters of Commitment	PDF	2 pages each	ControlNumber_LeadOrganization_LOCs
Community Partnership Documentation	PDF	10	ControlNumber_LeadOrganization_PartnerDocs
SF-424	PDF	n/a	ControlNumber_LeadOrganization_App424
Budget Justification Workbook	MS Excel	n/a	ControlNumber_LeadOrganization_Budget_Justification
Summary for Public Release	PDF	3	ControlNumber_LeadOrganization_Summary
Summary Slides	MS PowerPoint	6	ControlNumber_LeadOrganization_Slides

Subrecipient Budget Justification(s)	MS Excel	n/a	ControlNumber_LeadOrganization_Subrecipient_Budget_Justification
DOE Work Proposal for FFRDC(s), if applicable (see DOE O 412.1A, Attachment 3), if applicable	PDF	n/a	ControlNumber_LeadOrganization_WP
Authorization from cognizant Contracting Officer for FFRDC, if applicable	PDF	n/a	ControlNumber_LeadOrganization_FFRDCAuth
SF-LLL Disclosure of Lobbying Activities	PDF	n/a	ControlNumber_LeadOrganization_SF-LLL
Foreign Entity Waiver Requests and Foreign Work Waiver Requests, if applicable	PDF	n/a	ControlNumber_LeadOrganization_Waiver
Potentially Duplicative Funding Notice (if applicable)	PDF	n/a	ControlNumber_LeadOrganization_PDFN
Locations of Work	MS Excel	n/a	Control Number_LeadOrganization_LOW

- **Technical Volume**

- Summary of the H2Hub, Business Plan, Management Plan, Financial Plan
  - The summary should describe the overall team, scope, and objectives of the H2Hub
  - The business plan should include key success metrics and high-level milestones to be completed during each phase
  - The management plan should describe 1) the prime applicant’s and project partners’ organizational structure, capabilities, and operations plan; 2) the financial strength of the prime recipient and any major project partners in the H2Hub; and 3) prior experience of the senior/key personnel in similar or related undertakings to the proposed H2Hub.
  - The financial plan should cover areas such as how to achieve long-term financial liability, expected debt funding, etc.
- Engineering, procurement, construction and operations project documents
- Safety, security, and regulatory requirements
  - A cybersecurity plan is not required as part of the application, but applications should include an assessment of potential cybersecurity threats or vulnerabilities and address challenges in their work scope. A cybersecurity plan will be required if an applicant is selected for award negotiations.
- Risk analysis and mitigation
  - This should provide a narrative that analyzes the commercial, technical, construction, schedule, regulatory, permitting, safety, scale-up, infrastructure, financial, management, organizational, and market related risks.
- Technical data and analysis
  - Each H2Hub must perform techno-economic analysis (TEA) and life cycle analysis (LCA) at an integrated systems level when the design is sufficiently advanced and then collect data to further refine and validate those analyses. The key TEA and LCA components include energy feedstock, connective infrastructure, end-uses, and more.

- **Community Benefits Plan**

- **DOE anticipates that the Community Benefits Plan guidance will be posted in the next several weeks**
- Community and labor engagement, investing in the American workforce, advancing diversity, equity, inclusion and accessibility, and how the project will contribute to Justice40 goals

- Propose metrics to measure success of the plan
- Letters of support from CBO and labor unions