



New Jersey Economic Development Authority

REQUEST FOR INFORMATION (“RFI”)

2023-RFI-177

for

Clean Hydrogen Demonstration Project

1. INTENT/SUMMARY OF SCOPE

The New Jersey Economic Development Authority (“Authority” or “NJEDA”), an independent authority of the State of New Jersey, is seeking information and ideas from qualified entities (“Respondents”) regarding the advancement of clean hydrogen technologies and potential use cases in New Jersey. For the purposes of this RFI, NJEDA is seeking information related to “clean hydrogen technologies” referring to both commercial-ready and pre-commercial technologies that fall within technology readiness levels 6 – 9 as defined by US Department of Energy¹ for the production, distribution, storage, and use of clean hydrogen². The state of New Jersey has identified priority uses for clean hydrogen in difficult-to-decarbonize sectors including heavy-duty hauling, medium- and heavy-duty transportation, long-term energy storage solutions, and industrial decarbonization. The information gathered through this RFI will inform the potential development of a program to fund the demonstration of clean hydrogen technologies. Up to \$10 million may be made available for this program.

The Authority is interested in receiving information (including but not limited to comments, questions, recommendations, white papers, tools, case studies, information, ideas, and references) that will help it to better understand:

1. The key opportunities and barriers (financial, policy, regulatory, and logistical) around the deployment and/or adoption of clean hydrogen technologies in NJ;
2. Potential projects or solutions that demonstrate best opportunities for market adoption and development of a broader clean hydrogen ecosystem;

¹ See <https://www.directives.doe.gov/directives-documents/400-series/0413.3-EGuide-04-admchg1>

² Clean hydrogen is defined as hydrogen produced via water electrolysis using electricity derived from renewable energy (green hydrogen) and nuclear energy (pink or purple hydrogen).

3. Specific partnerships, funding, programs and/or other resources needed to develop a robust clean hydrogen ecosystem in New Jersey (supporting production, transportation and off-take).
4. How the Authority can best support businesses looking to adopt, deploy, or manufacture clean hydrogen technologies in New Jersey.

2. BACKGROUND

The New Jersey Economic Development Authority serves as the State’s principal agency for driving economic growth. The Authority is committed to making New Jersey a national model for inclusive and sustainable economic development by focusing on strategies that help build strong and dynamic communities, create good jobs for New Jersey residents, and provide pathways to a stronger and fairer economy. Through partnerships with a diverse range of stakeholders, the Authority creates and implements initiatives to enhance the economic vitality and quality of life in the State, and to strengthen New Jersey’s long-term economic competitiveness.

New Jersey’s Clean Energy and Climate Goals

Under the leadership of Governor Murphy, New Jersey has taken bold action to reduce climate pollutants and accelerate the transition to clean energy, while fostering growth of our clean energy economy. The State has set a number of key energy and climate targets including transitioning to 100% clean electricity by 2035³ and reducing greenhouse gas emissions to 50% below 2006 levels by 2030⁴ and 80% below 2006 levels by 2050⁵. In order to meet these goals, New Jersey is implementing a number of programs and initiatives to increase our clean energy production, maximize decarbonization – particularly in transportation and buildings, which constitute the two largest emissions sectors in our state, and make strategic investments that support equitable and sustainable growth and a strong innovation economy.

New Jersey has long been a national leader in the development of in-state solar renewable energy generation – in July of this year the New Jersey Board of Public Utilities (NJBPU) announced the state had reached a major milestone – 4,000 MW of solar energy developed – enough to power half a million homes. Last year, NJ announced a first-of-its-kind solution to offshore wind energy transmission, the State Agreement Approach with regional grid operator PJM, which enables the state’s clean energy priorities to be incorporated into the regional transmission planning process. Governor Murphy also announced the acceleration of our offshore wind target to 11,000 MW by 2040, indicating the success of our offshore wind

³ See Murphy E. O. 315 <https://nj.gov/infobank/eo/056murphy/pdf/EO-315.pdf>

⁴ See Murphy E.O. 274 <https://www.nj.gov/infobank/eo/056murphy/pdf/EO-274.pdf>

⁵ See Global Warming Response Act (P.L. 2007, c.112) <https://pub.njleg.gov/bills/2006/PL07/112 .HTM>

development to date and recognizing the opportunity presented by offshore wind to advance solutions across difficult to decarbonize sectors, including through green hydrogen.

New Jersey has also made significant strides to decarbonize our transportation sector, including \$70.37 million awarded since 2019 to support adoption, access to, and charging of light duty electric vehicles (EV's), and \$162M in funding awarded since 2019 to support purchase, access to, and charging of medium and heavy duty EV's.

On the buildings side, in November, Governor Murphy launched the Clean Buildings Working Group (CBWG), a cross-sector collaborative seeking to drive the adoption of carbon emissions reduction strategies in the residential and commercial building sectors. This first-of-its-kind public conversation on building decarbonization will develop a Roadmap to Building Decarbonization in New Jersey, with recommendations for specific policy, legislative, funding and programmatic actions to reduce our buildings-related emissions. The New Jersey Board of Public Utilities launched the NJ Whole House Pilot in 2022, in an effort to braid existing housing programs to improve energy efficiency, health and safety in low-to-moderate income housing, and provide critical repairs to make homes ready for transition to zero-emission space and water heating systems. NJEDA is launching Garden State C-PACE, a financing tool to help minimize up-front costs of making renewable energy, efficiency, and resiliency improvements to buildings. The state has also launched pilots to decarbonize state facilities and train the HVAC workforce in home heating electrification. In February, 2023, Governor Murphy announced the acceleration of the state's goal to achieve 100% clean electricity from 2050 to 2035, along with targets for beneficial building electrification, initiating a planning process for the future of our natural gas utilities as we transition from fossil fuel reliance, the next step in adoption of the Advanced Clean Cars II rules, and additional investment in zero-emission medium- and heavy-duty vehicles and charging infrastructure.

Exploring Hydrogen's Role in a Clean Energy Economy

Hydrogen has emerged as a key pillar in the US strategy towards net zero with policy support on several fronts. In 2021 the U.S. Department of Energy launched the Hydrogen Energy Earthshot, an effort to reduce the cost of clean hydrogen by 80% to \$1 per one kilogram in one decade. Progress toward the Earthshot was further bolstered by the passage of landmark federal legislation in 2022 – the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA). IIJA and IRA contain a number of incentives and policy tools intended to drive investment and deployment of clean hydrogen technology at scale, including a clean hydrogen production tax credit of up to \$3 per kilogram, which would make clean hydrogen cost competitive with hydrogen produced from fossil fuels (IRA), and \$9.5 billion toward clean hydrogen development (IIJA). Over \$8 billion in the IIJA funding will support the development of Regional Hydrogen Hubs, scalable networks of clean hydrogen production and consumption in regions around the country. New Jersey's partnership in the Northeast Regional Hydrogen Hub presents significant opportunities to develop a regional market for the production and consumption of clean hydrogen.

There is a growing focus in New Jersey on the role of clean hydrogen in our transition to clean energy and achievement of climate goals set forth in Executive Orders 274 and 315, the Energy Master Plan (EMP), and the Global Warming Response Act (80x50) report. This interest is in part due to research and development and economic growth opportunities associated with producing and deploying clean hydrogen. Given cost, technology, and availability considerations, it is important that New Jersey understand and articulate the most effective use cases for clean hydrogen in the state. In light of these opportunities, New Jersey is exploring uses for clean hydrogen that will accelerate the transition to a clean energy economy, complement electrification strategies, and promote energy resiliency. Clean hydrogen continues to show promise as a potential solution for the hardest to decarbonize sectors of the economy. Indeed, the 2019 Energy Master Plan highlights a role for hydrogen and other decarbonized fuels in meeting the state's clean energy targets. New Jersey is particularly interested in clean hydrogen applications for heavy duty transportation such as long-haul trucking, aviation, marine vessels, fuel cell applications, long-term energy storage, and industrial decarbonization, and its potential to alleviate environmental and health burdens and stimulate equitable economic development in environmental justice communities, particularly those surrounding busy ports.

3. ELIGIBILITY CRITERIA

The RFI is seeking responses from all interested stakeholders in innovative clean hydrogen technologies.

- Subject matter experts on new, innovative, or emerging clean energy technologies;
- Entities representing the interests of clean energy/clean technology manufacturing supply chain businesses and workers, including but not limited to industry associations, chambers of commerce, and unions;
- Environmental and other public policy-focused organizations;
- Organizations representing Environmental Justice communities, together with individual residents of these communities;
- Jurisdictional and regulatory representatives (from NJ, all other states and territories, and international sources);
- Entities with expertise in innovative clean technology matters, such as research institutions; and
- Institutions interested in the investment and financing of clean hydrogen related technologies.

Qualified entities do not need to be located within the State of New Jersey to provide a response.

4. RFI RESPONSE QUESTIONS

In submitting responses to this RFI, respondents are encouraged to answer any questions they consider relevant and to the best of their ability. Respondents do not need to answer all questions for their response to be considered. Answers are understood to be preliminary and non-binding. Respondents are free to go beyond the scope of the questions and/or structure responses as necessary to increase clarity and efficiency of responses. Respondents should also feel free to submit additional or alternate information as deemed necessary.

A. Background and General Questions

1. Please provide information on your company, group, organization or self and your involvement with, and/or interest in, clean hydrogen technologies.
2. Please describe any prior or ongoing case studies of clean hydrogen demonstrations or pilot-scale projects that the State should review, along with any related studies, evaluations, and/or life cycle assessments.
3. What production, distribution, storage, and/or end-use technologies should be prioritized in a demonstration or pilot project? Please describe specific commercial-ready or early-stage technologies and how the demonstration or pilot project would support the growth and adoption of clean hydrogen technology.
4. What are the key resource considerations for conducting a clean hydrogen demonstration or pilot project (e.g. funding amounts, types of infrastructure, regulatory environment, research partners, specific workforce skills, etc.)?
5. How would you evaluate the growth prospects for specific clean hydrogen technologies and/or the broader clean hydrogen industry? How do you see the industry evolving over the coming decade and beyond?
6. What are the specific workforce skills and training requirements needed to support the various elements of the clean hydrogen industry?

B. Clean Hydrogen Development in New Jersey

7. What are the biggest challenges/obstacles to adopting clean hydrogen technologies in NJ that a demonstration project could address?
8. What are the most challenging parts of the value chain or cost curve for clean hydrogen production in NJ? What solutions do you recommend to overcome those challenges or that a demonstration project could address?
9. What assets/advantages/infrastructure could New Jersey leverage for a demonstration of

clean hydrogen technology?

10. Are there specific geographic locations or areas in New Jersey that would be ideal for siting a clean hydrogen demonstration project?
11. What clean hydrogen transportation technologies (e.g. medium and heavy duty commercial vehicles, buses and jitneys, marine vessels, freight and passenger rail, aviation, material handling equipment, etc.) and use cases (e.g. long haul freight, drayage, public transit, port and warehouse operations, etc.) are most viable for adoption in NJ:
 - a. In the immediate term (1-2 years)
 - b. In the medium term (3-5 years)
 - c. In the long term (6+ years)
12. What clean hydrogen stationary technologies (e.g. electrolyzers and other production technologies, storage and distribution technology, fuel cell generators, fuel cell microgrids, etc.) and use cases (e.g. clean hydrogen production/distribution/storage, back-up power, distributed stationary power, combined heat and power, long-term energy storage, industrial and chemical processes, etc.) are most viable for adoption in NJ:
 - a. In the immediate term (1-2 years)
 - b. In the medium term (3-5 years)
 - c. In the long term (6+ years)
13. What are the greatest opportunities and/or challenges for growth of clean hydrogen technology supply chains in New Jersey in the coming decade?
14. How could a clean hydrogen demonstration project address the needs of environmental justice communities⁶ in NJ?

C. Market Adoption

15. How can demonstrations be best used to accelerate market adoption/consumer demand of clean hydrogen technologies?
16. How can demonstration projects be formulated to maximize community education and acceptance of clean hydrogen technologies?
17. What types of incentives or programs could accelerate or increase the likelihood of adoption of clean hydrogen technologies by NJ businesses and/or consumers?

⁶ See <https://dep.nj.gov/ej/communities-locations/>

18. Given NJ's Clean Energy goals and desire to explore options for clean hydrogen in the state are their other considerations you would recommend?

5. QUESTIONS AND ANSWERS (from Respondents to NJEDA)

All questions concerning this RFI must be submitted in writing no later than 5:00 PM E.D.T., on May 22, 2023 via e-mail to: **cleanhydrogen@njeda.gov**.

The subject line of the e-mail should state: **Questions-2023-RFI-177**

Answers to questions submitted will be publicly posted on the Authority's website on or about May 26, 2023 at: <https://www.njeda.com/bidding/#RFI> as Addendum.

IT IS THE RESPONDENT'S RESPONSIBILITY TO CHECK THIS URL REGULARLY FOR UPDATES.

6. RESPONSE DETAILS (Info Provided to Respondents Regarding Document Submission)

All RFI responses must be submitted in writing no later than **5:00 PM E.D.T. on June 5, 2023** via e-mail to: **cleanhydrogen@njeda.gov**.

The subject line of the e-mail should state: **RFI Response-2023-RFI-177**.

7. FOLLOW-UP QUESTIONS (from NJEDA) / ADDITIONAL INFORMATION

Respondents may be invited to provide additional information to allow the Authority to better understand information provided.

8. PROPRIETARY AND/OR CONFIDENTIAL INFORMATION

The Authority reserves the right to copy any information provided by the Respondents. The Authority reserves the right to use ideas that are provided by Respondents, applicants, stakeholders, or vendors. By submitting a Response, the submitter represents that such copying or use of information will not violate any copyrights, licenses, or other agreements with respect to information submitted or product solutions demonstrated, if applicable. Responses must clearly be marked for any information the Respondent deems Proprietary and/or Confidential.

The Authority further reserves the right to share information with the NJDEP, NJBPU, and the Governor's Office on Climate Action and the Green Economy.

9. DISCLAIMER / NO OBLIGATION

The Authority is under no obligation to contact Respondents to this RFI. If necessary, it may contact respondents through telephone calls, written or electronic communications, presentation requests and/or interviews to seek clarification on submissions. Please note that Respondents shall not be under any obligation to respond to any such request.

Information gathered from this RFI may be used to develop programs/actions aimed at supporting a clean hydrogen ecosystem in New Jersey.

This RFI is completely voluntary and will not affect scoring or consideration of any applications that may in the future be submitted to the Authority under programs or projects intended to strengthen New Jersey's cleantech innovation ecosystem.

This RFI is issued solely as a means of gathering information. Interested parties responding to this RFI do so at their own expense. There will be no monetary compensation from the Authority for the time and effort spent in preparing the response to this RFI. All expenses incurred are the sole responsibility of the Respondent.

This RFI is not a request for qualification/proposal. It may or may not result in further action. Should the Authority move forward and issue an RFQ/P or announce a program/product related to this RFI, Respondents need not have submitted a response to this RFI in order to be eligible to respond to the RFP. Should an RFQ/P be issued, responding to this RFI will not affect scoring or consideration for that process.

10. NEW JERSEY OPEN PUBLIC RECORDS ACT

Respondents should be aware that responses to this RFI are subject to the “New Jersey Open Public Records Act” (N.J.S.A. 47:1A-1 et seq.), as amended and including all applicable regulations and policies and applicable case law, including the New Jersey Right-to-Know law. All information submitted in response to the RFI is considered public information, notwithstanding any disclaimers to the contrary, except as may be exempted from public disclosure by OPRA and the common law.

Any proprietary and/or confidential information submitted in response to this RFI will be redacted by the Authority. A person or entity submitting a response to this RFI may designate specific information as not subject to disclosure pursuant to the exceptions to OPRA found at N.J.S.A. 47:1A-1.1, when such person or entity has a good faith legal and/or factual basis for such assertion (i.e. information that may be included in another ongoing public procurement or solicitation). The Authority reserves the right to make the determination as to what is proprietary or confidential and will advise the person or entity accordingly. The Authority will not honor any attempt to designate the entirety of a submission as proprietary, confidential and/or to claim copyright protection for the entire proposal. In the event of any challenge to the Respondent’s assertion of confidentiality with which the Authority does not concur, the Respondent shall be solely responsible for defending its designation.