



July 21, 2023

Acting Director Cummins
Office of Clean Energy Demonstrations
U.S. Department of Energy
1000 Independence Ave SW
Washington, D.C. 20585

RE: DEPARTMENT OF ENERGY REQUEST FOR COMMENTS ON POTENTIAL DEMAND-SIDE SUPPORT MECHANISM TO SUPPORT RELIABLE DEMAND FOR HYDROGEN AT DOE-SUPPORTED REGIONAL CLEAN HYDROGEN HUBS (H2HUBS)

These comments are being submitted by:
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Center for Resource Solutions (CRS) appreciates this opportunity to submit comments in response to select questions within the Department of Energy (DOE) Office of Clean Energy's Demonstration Notice of Intent to issue a Broad Agency Announcement (BAA) entitled "Implementing Entity (or Entities) for Demand-side Support Mechanism for Clean Hydrogen Hub Projects".

BACKGROUND ON CRS AND GREEN-E®

CRS is a 501(c)(3) nonprofit organization that creates policy and market solutions to advance sustainable energy. CRS provides technical guidance to policymakers and regulators at different levels on renewable energy policy design, accounting, tracking and verification, market interactions, and consumer protection. CRS also administers the Green-e® programs. For over 20 years, the Green-e® program has been the leading independent certification for voluntary renewable electricity products in North America. In 2021, the Green-e® Energy program certified retail sales of over 110 million megawatt-hours (MWh), serving over 1.3 million retail purchasers of Green-e® certified

renewable energy, including over 309,000 businesses.¹ The Green-e® Renewable Fuels program was launched in 2021, initially as a standard and certification for biomethane products and associated environmental attributes. This program is in the process of expanding to certify green hydrogen transactions and programs and can serve as a guide for DOE as it helps accelerate the adoption of green hydrogen, while ensuring that they are from sustainable renewable resources and meet the highest environmental standards, and that customers are protected in their purchase and ability to make verified usage claims.

CRS's responses to Category A, Questions 2 and 4 and Category B, Question 1 are provided below.

RESPONSES TO REQUEST FOR COMMENTS

Category A Question 2:

For eligible projects, what competitive process should be used to select projects that will receive demand-side support?

- a. **Reverse auction** in which projects compete to bid the lowest level of support they need to make their project viable*
- b. **Request for proposal-like process** in which projects apply and are selected based on a variety of factors*
- c. **Eligibility-based process** in which all projects that meet certain threshold requirements receive some form of support*
- d. **Other (please specify)***

CRS Response:

Demand for electricity and fuels is often driven by multiple factors, of which price can be one. To facilitate the largest amount of demand and demand for preferred hydrogen processes, DOE should not use a selection process that only addresses cost, as a reverse auction might. Instead, a request for proposal (RFP), eligibility-based process, or a hybrid of the two should be used. Criteria within these competitive processes should be crafted to support demand for fuel attributes that align with demonstrated demand for other energy resources, such as electricity and biomethane. These should include hydrogen production processes that utilize renewable electricity generation

¹ See the 2022 (2021 Data) Green-e® Verification Report (soon to be published) here for more information: <https://www.green-e.org/verification-reports>

resources² and biogenic waste, the carbon intensity (CI) rating of a particular hydrogen product, social impact, and environmental justice considerations.

There are two common pathways for producing hydrogen; electrolysis and steam methane reforming (SMR). Each has their own environmental and social considerations. Many of the same factors that are relevant to producing high quality renewable electricity and fuel, such as accounting for fuel delivery, using sustainable resources, credit vintage requirements, and facility age have bearing on hydrogen production as well.

The Green-e[®] programs for certified electricity products and renewable fuels verify eligible Renewable Energy Certificates (RECs) and Renewable Fuel Certificates (RFCs),³ respectively. A seller of a Green-e[®] certified product is required to disclose the quantity, type, vintage, and geographic source of each certificate. RFC products must additionally disclose carbon intensity. CRS verifies that the RECs and RFCs are not sold more than once or claimed by more than one party.

Green-e[®] programs can be used to demonstrate that eligible projects are meeting specified criteria as part of an RFP or eligibility-based selection process to ensure that electricity and renewable fuels used in hydrogen production meets the highest standards and has positive impacts.

As described in the EPA's *Guide to Purchasing Green Power*, certification and verification programs serve an important role in the voluntary market by providing oversight.⁴ The Green-e[®] programs do this by setting sustainability requirements for green power products and ensuring environmental attributes are not claimed by multiple entities.

The Green-e[®] programs are developed by working and advisory groups comprised of environmental nonprofit organizations, academic experts, and industry stakeholders to provide environmental, technical, and market input. CRS has recently begun a process to determine the rules for these factors for green hydrogen in our Green-e[®] Renewable Fuels certification program. As the administrator of the Green-e[®] programs, CRS staff

² Renewable Energy Certificates (RECs) are required to substantiate delivery and use claims of the specified carbon intensity of a renewable generation unit. They are the legal and most precise means of tracking renewable electricity and therefore the appropriate tool to verify that renewable electricity is being used to produce clean hydrogen from an electrolyzer.

³ For each dekatherm of renewable fuel produced, an equivalent RFC is produced. Purchasing and pairing RFCs with gas supply substantiates claims of using and receiving the benefits of that renewable fuel. RFC purchases also help build a market for renewable fuels.

⁴ For further discussion see EPA's Guide to Purchasing Green Power (pg. 2-5). Available at: https://www.epa.gov/sites/default/files/2016-01/documents/purchasing_guide_for_web.pdf.

would be happy to set up a call to discuss best practices and the appropriate verification measures for renewable electricity and RNG usage and hydrogen project eligibility or recognition criteria. CRS has extensive experience developing reporting and verification processes, and has advised state, national, and international agencies on verification approaches and procedures.

Category A Question 4:

How can DOE structure demand-side support for H2Hubs to best catalyze the formation of a mature commodity market for clean hydrogen?

- a. How can DOE structure demand-side support for H2Hubs to best catalyze the development of standard contract terms for clean hydrogen?*
- b. How can DOE structure demand-side support for H2Hubs to best catalyze the development of price transparency for clean hydrogen?*

CRS Response

In the mature U.S. renewable electricity market, compliance programs and voluntary efforts both contribute to demand for the same commodity. When utilities deliver renewable electricity to their customers in a standard delivery product to comply with a regulatory mandate, they are engaging in a compliance market. Some electricity customers choose to additionally participate in a voluntary market that exists alongside compliance markets where they exist and any standard delivery renewable electricity where they don't. The voluntary market has been shown to be a driver of new renewable generation and is an effective source of demand, especially when compliance programs are uncommon or have low minimum threshold requirements.

DOE should support both compliance and voluntary market demand through its demand-side support mechanism for hydrogen. Because voluntary markets are by nature unregulated, they benefit significantly from independent certification programs that verify that generation delivered through retail products meets established criteria and are not double counted. Compliance programs can also benefit from these same certification programs where certification criteria align, or compliance program criteria are a subset of the certification program's minimum criteria. Certification is a tool that helps instrument markets grow larger faster.

Standard contract terms are an effective tool to streamline project development. These contracts can include opportunities to utilize existing certification programs where certification program criteria are consistent with a buyer's objectives. Providing the

option to do so in a standard contract template removes hurdles to delivering the types of projects that can support market demand. CRS's Green-e® programs, as introduced above, can be included as an option in a standard contract to achieve this purpose. Both the Green-e® Energy and Green-e® Renewable Fuels certification can be required to verify the use of voluntary renewable resources to produce green hydrogen. In the future, Green-e® Hydrogen certification may be a desirable addition. Another option well suited for this purpose would be a requirement that the project be or become a CRS listed facility. CRS listed facilities are those that have demonstrated that any output could be certified by a Green-e® program.⁵

Broadly, DOE should include opportunities for third parties to develop market support programs consistent with those in the renewable electricity space. Additional examples of this could include expansion of the U.S. Environmental Protection Agency's Green Power Partnership program, which encourages organizations to use green power voluntarily, to include green hydrogen, or the development of a program that sets and verified rules for hydrogen certificate tracking systems to support market credibility.⁶

Category B: Question 1:

If DOE were to establish a demand-side support mechanism for H2Hubs with an independent implementing entity or entities, what capabilities and qualifications should DOE prioritize when selecting an entity or entities? Should DOE seek a single entity with national scope or several entities with regional scopes?

CRS Response

CRS recommends that DOE select multiple entities to implement the demand-side support mechanism for H2Hubs. Allowing for multiple entities will better facilitate initiatives that support multiple aspects of demand and any regional differences that may present across selected H2Hub locations. It may be that implementing entities operate in the same regions or across regions if focused on mechanisms with different objectives. Entity capabilities should be evaluated in relation to the specific mechanism that is being implemented.

We thank you for this opportunity to provide comments on the Notice of Intent to issue a Broad Agency Announcement (BAA) entitled "Implementing Entity (or Entities) for

⁵ See <https://www.green-e.org/sfdc/reports-data.php> for mor information about CRS listed facilities.

⁶ For more information on the Green Power Partnership, see <https://www.epa.gov/greenpower/about-green-power-partnership>.

Demand-side Support Mechanism for Clean Hydrogen Hub Projects”. Please feel free to reach out with any questions or comments.

Sincerely,

_____/s/_____
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