

July 7, 2021

Submitted via email to HFTORFI@ee.doe.gov

Re: **Request for Information on DOE's Hydrogen Energy Earthshot Initiative (DE-FOA-0002529)**

To Whom It May Concern:

The National Rural Electric Cooperative Association (NRECA) respectfully submits the following comments in response to the Department of Energy's (DOE) Request for Information (RFI) on its Hydrogen Energy Earthshot Initiative.

NRECA is the national trade association representing nearly 900 local electric cooperatives and other rural electric utilities. America's electric cooperatives are owned by the people that they serve and comprise a unique sector of the electric industry. From growing regions to remote farming communities, electric cooperatives power 1 in 8 Americans and serve as engines of economic development for 42 million Americans across 56 percent of the nation's landscape.

Electric cooperatives operate at cost and without a profit incentive. NRECA's member cooperatives include 62 generation and transmission (G&T) cooperatives and 831 distribution cooperatives. The G&Ts generate and transmit power to distribution cooperatives that provide it to the end of line co-op consumer-members. Collectively, cooperative G&Ts generate and transmit power to nearly 80 percent of the distribution cooperatives in the nation. The remaining distribution cooperatives receive power directly from other generation sources within the electric utility sector. Both distribution and G&T cooperatives share an obligation to serve their members by providing safe, reliable, and affordable electric service.

We appreciate the opportunity to provide NRECA's perspective in response to the RFI on DOE's Hydrogen Energy Earthshot Initiative. We view hydrogen as one generation technology option among several that could be used by electric cooperatives to provide affordable, reliable power to their consumer-members in the years ahead, provided key challenges surrounding costs, efficiencies, and logistics can be addressed. We support DOE's Hydrogen Energy Earthshot Initiative as a way to move hydrogen toward commercial viability through increased technical efficiency and by driving down the cost for deployment. Lowering the cost to deploy hydrogen technologies as envisioned in the Earthshot Initiative is critical if it is to be a viable generating resource for electric cooperatives in the future. As there are still many unanswered questions regarding the cost effectiveness of hydrogen, we support DOE moving forward with demonstration projects which may address those cost, efficiency, and logistical barriers that currently exist for electric cooperatives. Given their critical role in providing affordable, reliable, and universally accessible electric service, electric co-ops are vital to the economic health of the communities they serve, and the technology solutions developed through this hydrogen program may provide a new opportunity to help support that mission.

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Rural communities are important stakeholders in the future role of hydrogen in the power sector.

We understand DOE's interest in the RFI in how the hydrogen program can be structured to impact diversity, equity and inclusion (DEI), environmental justice, and the potential to positively impact underserved communities. Many consumers in rural communities are less affluent than those in other parts of the U.S. In 2019, the median household income for electric cooperative consumer-members was 11% below the national average. Electric cooperatives serve 92% (364 of 395) of the persistent poverty counties in the United States, and cooperatives serve an average of eight customers per mile of line and collect annual revenue of approximately \$19,000 per mile; the other utility sectors average 32 customers and \$79,000 in annual revenue per mile. Electric cooperatives are consumer-owned so any new costs imposed on the co-op are ultimately passed on to their consumer-members. Oftentimes these are low and middle income (LMI) consumers, who can least afford cost increases. Consulting with electric cooperatives as the hydrogen program proceeds will help ensure DOE is developing these technologies in such a way as they can benefit these rural and underserved communities.

It is critical that DOE consult with and include electric cooperatives as part of any stakeholder engagement as its hydrogen program evolves. Demonstration projects sited in rural areas as part of the Earthshot Initiative should ensure the unique needs and challenges facing rural America are accounted for during implementation. Electric cooperatives can and should be considered as potential partners in this effort. Electric cooperatives make excellent partners in consortia that could come together under this program to develop and implement demonstration projects. Again, electric co-ops are consumer-owned and governed not-for-profit electric utility companies. They are by their very nature consumer-centric utilities. They are also the trusted local energy advisors in their communities and have longstanding relationships with other local officials. For example, about 250 co-ops across the country have reservation lands in their service territories, and frequently consult with tribal leaders or officials to satisfy the unique needs and concerns that can arise on tribal lands.

Projects funded by the hydrogen program should incorporate community engagement at the outset, with a specific focus on efforts to engage with LMI communities. Without direct engagement, it will be difficult to understand their specific needs and how a funded project may implement solutions that will have a meaningful impact to the community and their consumers' lives. Incentives to develop projects that serve persistent poverty counties could help to ensure the program supports one or more of the hydrogen program's objectives in impacting DEI, environmental justice and/or underserved communities.

DOE should keep in mind that LMI communities may have less access to communications channels such as through broadband access at home. Efforts to communicate with LMI communities should account for these barriers and incorporate strategies to reach out to them via other channels, such as community spaces that are frequently used, to ensure the widest awareness and participation rate possible.

To successfully site hydrogen demonstration projects and eventually commercial scale projects, community buy-in will be necessary so that permitting challenges do not prevent the projects from moving forward. Cooperatives can be helpful partners in this process as trusted energy advisors in their communities. Further, cooperatives can partner with DOE in the workforce training that may be necessary to ensure long term successful deployment of hydrogen technologies in their communities.

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As a potential technology option for economy-wide decarbonization, DOE should be aware of and prepared to address the ongoing challenges related to power sector adoption, including adoption by electric cooperatives.

The Biden administration's goal of achieving carbon-free electricity by 2035, coupled with economy wide "net-zero" carbon by 2050, may drive significant changes to how electricity is generated, distributed, and used by customers. NRECA believes such a transition must be accomplished through a just and reasonable approach over a reasonable and realistic period of time, account for regional differences in energy resource availability and support funding for a range of energy technologies that will be needed to achieve these goals. Multiple options need to be commercially available and cost effective to electric cooperatives if they are to meet the Biden administration's targets for decarbonization in the power sector. It would be premature to lock electric cooperatives into just one path or strategy to meet decarbonization targets. Every cooperative's resource mix is unique and will continue to vary greatly depending on existing resources and assets, the impact on rates for consumer-members, reliability implications, the availability of alternative electric generation, geographic location, and other local circumstances.

As the power sector evolves, cooperatives are taking proactive steps to prepare and driving innovation in areas such as community solar, battery storage, microgrids, and carbon capture, use and storage. We also see a potential role for hydrogen in the future if the technology can be advanced in a cost-effective manner. Continued commitment to the research, development, and demonstration (RD&D) of hydrogen technologies and their applications with the objective of driving down the cost for widescale deployment across many industries is necessary to make this a reality.

Low-income households spend a disproportionately higher percentage of their income on energy bills, and rural households throughout the U.S. spend a higher share of household income on energy bills than others in their region and urban/suburban households. Therefore, it is critical that cost-effective solutions be developed as the power sector decarbonizes to not disproportionately impact the consumers who can least afford energy cost increases. While hydrogen is unlikely to be one such solution at a significant scale for utility scale power production, unless and until significant barriers related to cost, efficiencies, and logistics are addressed, we agree that DOE should focus its near-term research related to hydrogen on hard-to-abate sectors such as aviation, shipping, cement, and steel where clean hydrogen can be a valuable asset in decarbonization, and as a potential energy storage option for the power sector. This is due to the modest reductions of only 11% CO₂ emissions from substituting 30% hydrogen into the combustion turbine fuel mix for a natural gas combined cycle (NGCC) plant and the need to consume 60 kWh of electricity to produce 1 kg of hydrogen with current technology. Even substantial improvements in production efficiency are unlikely to push round trip efficiency of hydrogen production and consumption in combustion turbine applications past 40%.

It is critical that federal investments made in the hydrogen program factor in how to use technologies and solutions that will be interoperable with future technologies. Successful results achieved in this hydrogen program will more easily scale for widespread deployment if they can be operated with other technologies that will be widely deployed in industries which can reap the most benefit in terms of lowest cost per ton of CO₂ abated.

Major investments will be needed for upgrades to demonstrate the viability of hydrogen in multiple applications. Funding support and stakeholder engagement and education will be needed to enable the

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benefits of hydrogen to be realized. Direct grants, cooperative agreements, and other similar mechanisms would help to encourage the development and deployment of hydrogen technologies and solutions through programs. Any program should require a very limited cost-share – for example, no more than 25 percent – in order to solicit the widest participation possible and should vary based on the community’s need. There is no one-size-fits-all solution so DOE should make multiple types of assistance available through its program.

The organizations closest to the communities they serve will be best suited to develop solutions that will meet their needs. Electric cooperatives make excellent partners in consortia that could come together under this program to develop and implement demonstration projects. By their very nature, electric cooperatives find innovative ways to provide low-cost solutions for their consumer-members and have lean, agile processes for decision-making.

In conclusion, electric cooperatives are important stakeholders in the future outlook for hydrogen technologies and as such should be viewed as partners to DOE as it pursues the goals of the Hydrogen Earthshot Initiative. With ongoing input from key stakeholders such as electric cooperatives, the Earthshot Initiative may play a key role in RD&D efforts to bring down the cost of hydrogen technologies, address technical challenges, and overcome other significant barriers to deployment so that hydrogen can be one of many viable generating options for electric cooperatives in the future.

Thank you for considering our comments. Please contact me at stephanie.crawford@nreca.coop or 703-907-5732 if you have any questions regarding these comments. We welcome an opportunity to discuss our recommendations further with your team.

Sincerely,

Stephanie Crawford

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National Rural Electric Cooperative Association