



December 9, 2022

Submitted via CThydrogentaskforce@strategen.com

RE: Special Act No. 22-8
Public Request for Written Comments

To the Connecticut Green Bank:

This letter provides comments of Eversource Energy (Eversource) in response to the Connecticut Green Bank's Public Request for Written Comments dated November 8, 2022 to inform the final legislative report of the Task Force to study hydrogen.¹

Defining Clean Hydrogen

1. Based on Federal guidance in the Infrastructure Investment and Jobs Act and the Inflation Reduction Act, clean hydrogen is defined as hydrogen that is produced through a process that results in a lifecycle greenhouse gas emissions rate of not greater than 4 kilograms of CO₂e per kilogram of hydrogen and with less than 2 kilograms of CO₂e per kilogram of hydrogen at the point of production. Do you believe that Connecticut should pursue a more stringent definition for clean hydrogen than the one that has been established by the Federal government? If so, why? If not, why not?

The most logical approach for the State would be to align with Federal guidance in order to facilitate the development of the clean hydrogen market in Connecticut. It would also be advantageous to advocate for other states to adopt the same standard definitions, which would facilitate multi-state and interregional clean hydrogen supplies, while simplifying many regional Hub planning challenges pertaining to the production, storage and delivery of hydrogen to diverse industrial, commercial and institutional customers in Connecticut and neighboring states. The guidance set forth by the Federal government is reasonable. Absent other compelling studies or evidence to support a different approach, alignment with Federal guidance represents a sensible path going forward in Connecticut at this juncture. Developing standards that differ from other states could have inadvertent consequences that slacken the pace of the transition to hydrogen while undermining the viability of otherwise worthwhile clean hydrogen projects in Connecticut.

¹ Please note that we are not providing input on Question 11.

Stakeholder Engagement and Equity

2. When and how should the state of Connecticut engage with environmental justice and disadvantaged communities throughout the clean hydrogen planning and development process? What steps can the state take to support EJ and disadvantaged communities' engagement in these processes?

Connecticut should prioritize engagement with disadvantaged communities as early as possible in pursuit of environmental justice goals. This process is presently underway on a variety of green energy procurement initiatives and can therefore be an integral and timely complement to existing environmental justice outreach initiatives. Obtaining feedback from all stakeholders will help to ensure that disadvantaged communities are not adversely impacted by the transition to clean energy.

Some important focus points in this engagement should include soliciting feedback from the communities, educating residents on technology, and communicating the State's plans to transition to a clean energy future. As part of those transition plans, developing a stakeholder outreach plan will be critical to ensure information is communicated in a timely manner. Holding public information sessions and engaging with local leaders, and ensuring information is translated where needed, are effective ways to facilitate this process. Emphasis on safety and environmental benefits should be highlighted. As clean energy projects proliferate in Connecticut, New England and neighboring regions, the outreach could also include training or learning from demonstration projects elsewhere in the U.S. The groups directly involved in project implementation will be in a good position to apply that experience in order to sustain meaningful stakeholder exchange.

While the State will have a lead role in such engagement, the outreach plan should also leverage the strong, existing relationships local distribution companies have with environmental justice and disadvantaged communities. While planning and execution hinges on the State's leadership, Connecticut's local distribution companies can accelerate the transition to hydrogen, address stakeholder concerns, and craft informed solutions to legitimate concerns and grievances expressed by disadvantaged communities.

3. What steps should the state of Connecticut take to ensure that the clean hydrogen economy provides equitable benefits for environmental justice and disadvantaged communities?

The State can ensure that the clean hydrogen economy provides equitable benefits for environmental justice and disadvantaged communities in a number of ways. Primarily, financial incentives to develop and supply hydrogen within those communities will encourage developers to prioritize the development of projects in these areas. A number of concrete financial incentives could be implemented to enable community acceptance, including tax credits, grants, PILOT agreements, along with other mechanisms that have supported the deployment of various technologies in Connecticut. Incentives could be structured to promote the advancement of projects, as well as incentivize end-use customers to adopt the technology. A stable regulatory structure that enables the siting and development of clean hydrogen projects will also be a key aspect in ensuring that projects can be developed within a reasonable timeline in response to the

many (high) hurdles that must be crossed to satisfy the legitimate environmental, safety and economic concerns voiced by disadvantaged communities.

Training and workforce development will foster equitable benefits in disadvantaged communities. By promoting the development and use of hydrogen projects in these communities, both residents and workers can leverage existing skills while developing new core competencies through apprenticeship and workforce development programs. Such projects will also support job growth in each segment of the clean hydrogen value chain from equipment manufacturing through construction, operation and maintenance.

In pursuit of a more equitable transition, Connecticut could utilize existing programs, such as financing via the Green Bank. Ultimately, if policies are instituted in a way that promotes the development of a clean hydrogen economy rather than attempting to pre-determine any particular end use or overburdening the development and execution economics, it can be developed in a way that is beneficial to the community at large.

Hydrogen End-Uses

4. The Hydrogen Task Force has been exploring hydrogen end uses including: critical facilities, aviation, cargo ships, material handling equipment, long-haul heavy duty trucks, fuel cells for peak power generation, high heat industrial processes, buses, ferries, rail, hydrogen blending in pipelines, and light-duty vehicles. How should the state address differing stakeholder perspectives about hydrogen end use prioritization? Which specific end uses are of greatest concern, and why? What actions can or should the state take to continue to solicit stakeholder feedback?

Reconciling Perspectives

The State should facilitate, including through legislation and policy initiatives, market-based solutions to reconcile differing stakeholder perspectives about hydrogen end use prioritization.

The State will play an important role in supporting the development of the clean hydrogen industry. It can educate consumers, establish stable regulatory structures to expedite the development and delivery of clean hydrogen, and ensure that markets have an appropriate level of oversight and ultimately allow customers to drive specific end use applications. Instead of prioritizing or supporting one end use to the detriment of others, the State should rely, in part, on market forces to deliver the greatest environmental benefit of clean hydrogen based on cost and other economic considerations.

The market may not be presently poised to deliver all desired benefits. Reliance on the “invisible hand of the market” may be noble, but such deference might be misplaced in light of the enormous challenge diverse stakeholders presently face. The State may therefore need to establish policies that incentivize emission reductions and other clean energy goals. However laudable, electrification goals and objectives should be realistically considered for hard to electrify segments, including requisite T&D infrastructure to support New England’s transition from a summer peaking to winter peaking system.

Market demand can send signals to the State regarding the effectiveness of its support of the clean hydrogen industry and allow the State to appropriately respond. The State's goal in enacting legislation and establishing and implementing policy should be to support the transition to a market-based hydrogen economy, which will confer economic and environmental benefits to Connecticut's consumers, strengthen Connecticut's economy, promote environmental justice, and add new jobs for the 21st century energy economy.

Specific End Uses of Concern:

The building sector and portions of the transportation sector could be near-term focus areas for hydrogen use. Uncertainties about the economics about grid reliability associated with an electrification future should be addressed. Specific end user concerns related to the creation of potential stranded costs should be considered. Because of those challenges, these segments also may be the most economically viable opportunity for the initial application of hydrogen use.

The building sector, specifically, large commercial, industrial and other hard to electrify applications, should be initially prioritized. Hydrogen is an ideal alternative fuel for large commercial and industrial end users as it provides a green molecule that can displace or completely substitute for traditional methane and/or oil products for building sector uses. This is especially true when it is difficult to electrify customers. There may be system and other infrastructure improvements required to ensure reliability after electrification, the costs of which are not presently understood fully, but may constitute a barrier to entry for the building sector. The State should actively engage stakeholders to improve the information base supporting the cost of the electrification transition. In certain instances, customers may have recently made significant upgrades to their existing systems. Replacing such upgrades with electrification may trigger customer resistance until such time that a mechanism exists through statutory legislation to securitize the cost of the transition, thereby avoiding or limiting the creation of a stranded cost at the customer level. Hydrogen can serve as an attractive solution to transition from energy production technology that presently uses natural gas and/or oil, thereby avoiding the inadvertent creation of a stranded cost. Prioritizing these customers will give them a responsible – and economic – clean energy option and help reach emissions reduction targets.

Technology and market factors have set the conditions necessary to begin electrification of a large portion of transportation applications, including the expected mass adoption of passenger electric vehicles, last mile/local delivery vehicles, transit and school buses, and fixed route industrial applications like refuse trucks. There remains a select group of transportation applications that are considered difficult to electrify, including Long-Haul Trucking, Aviation and Marine. These difficult to electrify sectors share common inherent challenges toward decarbonized market development. The nature of their duty cycles (which include high mileage, interstate travel, and flexible routing) and the longer-term regional coordination necessary for planning a decarbonized transition make these applications good candidates for alternative fuel use. Hydrogen in certain heavy-duty applications represents an ideal use. The adoption of hydrogen in transportation applications such as Long-Haul Trucking, Aviation and Marine requires the development of an interstate network of refueling stations.

In addition to the Long-Haul Trucking, Aviation and Marine sectors, individual heavy-duty applications that include higher mileage, interstate travel, auxiliary power for non-transportation functions, critical/emergency function, or limited downtime requirements, may be good candidates for clean hydrogen use. These may include vehicles such as transit buses with daily mileage requirements exceeding 200 miles, plowing/snow removal equipment, heavy-duty construction equipment, or large commercial vehicles with a common beginning and ending depot or garage.

Soliciting Stakeholder Feedback

The State should continue its existing policy and collaboration efforts to solicit stakeholder feedback, but this should not necessarily be used to determine specific end use applications. Forums such as those used in developing the Comprehensive Energy Strategy and Integrated Resource Planning provide valuable opportunities for stakeholder participation.

As a general rule, the State should support stakeholder engagement designed to inform policy on a real-time basis as the market develops. The State should educate the community on an ongoing basis. In certain circumstances, such as environmental justice and disadvantaged communities (see Question 2 above), it may be appropriate for the State to proactively develop engagement plans designed to ensure the realization of the benefits ascribable to the transition to a clean hydrogen economy. The engagement process should by design be oriented around new ideas. Flexibility is key. The avoidance of undue administrative bureaucracy is encouraged.

Hydrogen Supply

5. If local (in-state) hydrogen supply is expected to limit in-state hydrogen end use applications, should the state consider the role of hydrogen imports in meeting supply needs?

Hydrogen imports can make a meaningful contribution to satisfying the State's hydrogen end use applications, especially in light of the proposed regional Hydrogen hub.

The success of the clean hydrogen economy will depend on both local, regional and national activities. The formation of hydrogen hubs coupled with interconnected distribution and storage networks will lower the levelized cost of hydrogen as well as ensuring a reliable level of supply. Eventually, pricing and availability will drive the market as the industry matures. While in-state hydrogen supply should be encouraged, the natural preference for local supply should take a back seat to the overarching objective of enabling early adoption even if hydrogen production means regionally sourced imports. What is paramount is the timely realization of clean energy benefits in the State.

The State should not only consider the role of regional hydrogen imports, but also advocate for the removal of barriers and other impediments in regional and national discussions. It will be important for the clean hydrogen industry in Connecticut for the State to adopt a broad view. A broad view will accelerate early adoption, thereby contributing to the formation and strength of the clean hydrogen economy. This could also have the additional benefit of making any Hydrogen produced in Connecticut competitive for use in other states.

Hydrogen Infrastructure

6. What additional processes should the state consider to ensure that use of pipeline infrastructure for hydrogen transport is implemented safely, and supports community and climate goals?

Research and development should be performed by pipeline infrastructure owners and operators to ensure that existing infrastructure can be safely used to transport hydrogen. This will serve as a foundation for pipelines to support community and climate goals (including reduced emissions). As there are already existing hydrogen pipelines within the country, experience from those operators could be valuable as a resource. Outside industry groups such as AIChE also have detailed knowledge on hydrogen systems and could be leveraged to provide additional input on safety topics. Operational and safety concerns about blending will require the appropriate scientific inquiry that pipelines and local distribution companies are best positioned to perform.

Those currently involved in existing pipeline infrastructure, including local distribution companies, should actively lead and coordinate the research and development. Their knowledge of existing infrastructure can be leveraged to ensure new technologies are implemented safely. Local distribution companies also continually perform strategic planning and are therefore able to define the cost and other benefits from joint planning efforts, including identification of risk factors affecting the transition to a hydrogen economy. The State will continue to have a vital and central role in establishing the policy and framework for a regional and national assessment of the role hydrogen may play in supplanting natural gas from Marcellus or Canada through the interconnected pipeline network in New England.

It may be appropriate to start with a proof of concept and then take a phased approach. Confidence must be earned on multiple levels. The pipeline owners must be confident that their infrastructure can deliver clean hydrogen safely and reliably, without sacrificing the integrity of the system. Customers must be comfortable with the technology in order to drive adoption. Worker safety must be paramount. The State can take the lead in educating regulators about the technology to streamline a process for implementing proper oversight. Taking a measured, regulated approach will capture efficiencies (e.g., transitioning the existing workforce to support delivery of the clean hydrogen) and will yield a fully functional and reliable delivery system to support the clean hydrogen industry.

The State may need to assess the need for amendments to existing laws and regulations in order to implement hydrogen solutions. For example, New York recently amended its energy-related legislation to allow local distribution companies to play a key role in alternative fuels. In Connecticut, it may be appropriate to take similar steps to allow local gas distribution companies to deliver clean hydrogen and other alternative, decarbonization technologies, as they have safely and reliably – on a cost-effective basis – for decades.

The State should also foster a holistic approach to the infrastructure needed to support the clean hydrogen economy. While pipelines present a near-term opportunity for research and development, a variety of existing infrastructure (e.g., road, rail, barge) can also handle the distribution of clean hydrogen. There are risks if the State adopts a model similar to the deregulation of the electric industry (e.g., gas-fired generation without appropriate supporting

gas infrastructure). To support community and climate goals, the State should consider all forms of infrastructure, starting with pipelines and understanding (and planning for) the roles of other delivery systems.

7. What enabling infrastructure do you believe is highest priority for the state to pursue to support the development of Connecticut's hydrogen economy, and why?

As outlined in response 6, State policy should facilitate the development and consumption of clean hydrogen, rather than specify infrastructure. The hydrogen market – when developed through State policy – will drive the development of infrastructure needs. Taking this approach helps to ensure that infrastructure assets are not developed without the appropriate demand to support them. The State should not prioritize certain infrastructure unless and until market signals clearly indicate that the infrastructure is needed and not otherwise being developed. Rather, an incentive based approach to promote the production and adoption of clean hydrogen will allow the industry to develop in a balanced way.

Hydrogen Funding and Policy Activities

8. What portions of the hydrogen value chain (uses, sources, transport, storage) would be most benefited by further development of additional policy or regulatory guidance? Why, and what gaps should these policies be seeking to address?

Please see above responses. The State policies should be directed at fostering the clean hydrogen market in general, rather than providing prescriptive solutions for specific parts of the value chain. The State should avoid promoting specific elements of the value chain at the expense of others, especially in a manner that could potentially disrupt how the hydrogen market functions. Rather, State regulation should focus on enabling hydrogen to be effectively developed and delivered to customers in order to reach the State's climate goals.

9. Federal funding is hoped to represent a significant portion of hydrogen funding but is not expected to meet all funding needs. Which hydrogen investments (infrastructure, manufacturing, end use equipment, workforce training, etc.) would be the most important for the state to consider funding? Why?

Since most of the federal funding would support the production of clean hydrogen, the State could focus on removing barriers to customer adoption including workforce training, as well as, options and fostering the end use of clean hydrogen in low-income and EJ communities, which would help to further drive the development of clean hydrogen production in the state by ensuring a broad-based demand.

Another logical first step could be to promote the development of demonstration/pilot projects. While portions of such projects may be eligible for Federal funding, the State's support will be critical in getting such projects underway and ultimately developing the workforce that will be needed to support the hydrogen economy.

The State should consider the need to support other hydrogen investments given the potential market impacts. For example, the State could leverage existing facilities and workforce

resources of local gas distribution companies for mid-stream and down-stream transport, rather than make significant investments in new infrastructure. The State also could wait to make investments based on needs demonstrated by the market, ensuring that funding will have the desired impact.

10. What are the best mechanisms for state agencies to gain visibility into federal funding opportunities pursued by individual commercial actors or other organizations? What actions can the state take to support these applications?

Ensuring appropriate regulatory oversight of the clean hydrogen industry will be critical to the development in Connecticut. The State has undertaken this role for similar industries, so the same approach could be used as a basis for hydrogen. This could be done in part by promoting visibility and providing a framework to confirm that funding is properly and responsibly deployed for its intended purpose. Regular engagement between the State agencies and groups undertaking hydrogen projects will also be an important tool. These touchpoints could be used to ensure that there is visibility into the opportunities that are available and any potential support that could be provided.

11. What federal funding opportunities have stakeholders applied to? Are these formula grants or competitive? Are these opportunities hydrogen-related? Do stakeholders have lessons learned to share based on the application or implementation process?

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Thank you for allowing us to participate in informing the final legislative report of the Task Force. We hope that this contributes to the success of the activities of the Task Force. Please do not hesitate to contact the undersigned if our comments require clarification or if additional input would be helpful.

Respectfully submitted,



Nikki Bruno
Vice President, Clean Technologies, Gas