Meeting Minutes[1]

Tuesday, November 8th, 2022
10:00 a.m. – 12:00 p.m.

The fifth meeting of the Hydrogen Study Task Force was held on November 8th, 2022.

Several participants joined in person at Dominion Energy's Millstone facility. The majority of participants joined via the Teams conference call.

Task Force Members Present: Katherine Ayers (Nel Hydrogen), Nikki Bruno (Eversource), Enrique Bosch Naval (Avangrid), Christopher Capuano (Designee – FuelCell Energy), Digaunto Chatterjee (Eversource Energy), Julia Dumaine (Designee – PURA), Samantha Dynowski (Sierra Club), Bryan Garcia (CT Green Bank), Sara Harari (CT Green Bank), Sridhar Kanuri (HyAxiom), Shannon Laun (Conservation Law Foundation), Tony Leo (FuelCell Energy), Mary Nuara (Dominion), Ugur Pasogullari (Designee – UCONN), Frank Reynolds (Avangrid), Lidia Ruppert (Designee – CT DEEP), William Smith (Infinity Fuel), Becca Trietch (Designee – CT DEEP)

Task Force Members Absent: Keith Brothers (AFL-CIO), Commissioner Katie Dykes (DEEP), Chair Marissa Gillett (PURA), Joel Rinebold (CCAT), Adolfo Rivera (Avangrid), Jennifer Schilling (Dominion)

Other Attendees: Eliasid Animas, Paul Aresta, Lily Backer, Ben Butterworth, Teresa Chen, Erin Childs, Donald Conley, Aziz Dehkan, Margo Fagan, Jonathan Feinstein, David Giordano, Joe Goodenbery, Jennifer Gorman, Alex Issac, Alex Judd, Chris LaFleur, Arshiah Yusuf Mirza, Carmen Molina-Rios, Tim Shea, Collin Smith, Sarah Wall

1. **Call to Order**
   - Bryan Garcia, Chair of the Task Force called the meeting to order at 10:11 a.m.
   - Mr. Garcia thanked Mary Nuara, Dominion Energy's State Policy Director for New England, for helping to coordinate in-person attendance at Dominion Energy's Millstone nuclear plant.

2. **Introduction by Dominion**
   - Ms. Nuara introduced the members of her team who provided in person logistics support.
   - Ms. Nuara emphasized that at the Millstone Power Station, safety comes first. She explained facility are licensed by the independent U.S. Nuclear Regulatory Commission (NRC) and spend 20% of their time in a continuous training regimen that includes sessions in full-scale control room simulators. She explained that Millstone has been recognized by the nuclear industry for its exemplary performance.

[1] For access to the meeting recording – https://www.ctgreenbank.com/hydrogentaskforce/

- Ms. Nuara explained that Millstone is a 2,100 MW nuclear power station that produces 16 to 17 million megawatt-hours of carbon-free electricity each year. Millstone represents the largest carbon-free resource in New England and accounts for more than 90 percent of the carbon-free power produced in Connecticut.
- Ms. Nuara noted that Millstone is interconnected to New England's high-voltage transmission system which is composed of more than 9,000 miles of high-voltage transmission lines. She explained that 13 transmission lines connect New England to neighboring power systems in New York, Québec, and New Brunswick.
- Ms. Nuara explained that carbon-free nuclear power is an important part of the resource mix in New England which is composed of 46% natural gas, 23% nuclear, 10% renewables, 6% hydro, less than 1% coal and oil, and 16% from imports.
- Ms. Nuara explained that after a competitive procurement process for zero-carbon resources, Dominion Energy executed long-term power purchase agreements with Connecticut's investor-owned utilities for nine million megawatt-hours of Millstone's energy each year which is about 55% of its output. She noted that as a result of this power purchase agreement, Millstone's carbon-free energy and 100% of the plant's environmental attributes are locked in at a low, fixed price of 4.999 cents per kilowatt-hour (cents/kWh) for 10 years.
- Ms. Nuara emphasized that Millstone continues to be one of the lowest-cost, carbon-free resources procured by Connecticut to date and Dominion Energy wants to secure Millstone's future and expand its role as the clean energy hub of Connecticut and New England.

3. Approval of Meeting Minutes of October 11, 2022

- Mr. Garcia noted a minor edit to the meeting minutes. He noted that in one of the first lines of the October 11 meeting minutes, the meeting was referred to as the third Task Force meeting but, in actuality, it was the fourth meeting.
    - This has since been corrected.
- Ms. Nuara moved to approve the Meeting Minutes of October 11, 2022. This motion was seconded by Ugur Pasogullari.
- The Task Force members moved to approve the motion.

4. Task Force Logistics

- Mr. Garcia noted that 14 of 16 Task Force members had been appointed to date. Mr. Garcia explained that the Task Force has two empty seats still to be appointed by the Minority Leader of the Senate.
- Mr. Garcia emphasized that only two Task Force meetings are remaining prior to the January 15, 2023 legislative report deadline noted in Special Act 22-8. He provided a brief overview of upcoming meeting topics noting that the Task Force would continue to work towards final recommendations for the legislative report.
- Erin Childs included that the Task Force meetings are critical for the Task Force to develop conclusions and recommendations.

5. Environmental Justice and Equity – A Discussion with the Connecticut Roundtable on Climate and Jobs

- Ms. Childs introduced Joe Goodenbery and Aziz Dehkan to discuss hydrogen and its relationship to workforce development.
- Mr. Garcia emphasized the importance of environmental justice, workforce development, and community benefit agreements when considering hydrogen.

- Mr. Dehkan, the Executive Director of the Connecticut Roundtable on Climate and Jobs, noted that the mission of the Roundtable is to implement a just transition from fossil fuels to renewables. He explained that labor is a critical stakeholder when thinking about the clean energy transition. Mr. Dehkan noted that if it can be demonstrated to stakeholder groups such as labor that hydrogen will lead to sustainable jobs, it will be easier to move projects forward.
- Mr. Goodenbery inquired how the Connecticut Roundtable has been approaching the topics of equity, workforce development, and environmental justice related to energy.
    - Mr. Dehkan noted Senate Bill 999 also known as Special Act 21-43 “An Act Concerning a Just Transition to Climate-Protective Energy Production and Community Investment” which emphasizes the importance of community investment and engagement. He noted that this legislation emerged due to experiences with a project in East Windsor that did not include a community benefits agreement or prevailing wages. He emphasized that such an approach does not create a level playing field for local labor. Mr. Dehkan noted that groups attempted engagement with the developer at hand but noted that this approach did not have success and emphasized that engaging on a project by project basis would not be sustainable. This experience led to the creation of Senate Bill 999.
    - Senate Bill 999 states that “The developer of a covered project shall (1) take all reasonable actions to ensure that a community benefits agreement is entered into with appropriate community organizations representing residents of the community in which the project is or will be located if the nameplate capacity of the project is five megawatts or more, and (2) take appropriate actions to ensure a workforce development program is established.” A "covered project" means a renewable energy project that is situated on land in this state, commences construction on or after July 1, 2021, and has a total nameplate capacity of two megawatts or more. A "covered project" does not include any renewable energy project (A) selected in a competitive solicitation conducted by (i) the Department of Energy and Environmental Protection, or (ii) an electric distribution company, as defined in section 16-1 of the general statutes, and (B) approved by the Public Utilities Regulatory Authority prior to January 1, 2022.
- Mr. Goodenbery asked Mr. Dehkan to provide more information on community benefits agreements.
    - Mr. Dehkan noted that the majority of polluting infrastructure is located in disadvantaged communities, such as Bridgeport. Mr. Dehkan noted that the concept of a community benefits agreements is about constructive dialogue with communities to understand whether projects provide benefits for the community.
    - Mr. Dehkan noted that there are barriers to community engagement. For example, hosting meetings at 9am prevent the layperson from attending due to work. Mr. Dehkan also emphasized that enforcing these agreements is as important, if not more, than the development of the agreement itself. He noted that while SB 999 applies to 2 MW facilities, but folks may take advantage of loopholes like submitting two separate 1 MW projects, which are not covered by SB 999.
- Mr. Goodenbery inquired about the key provisions that should be included in a community benefits agreement.
    - Mr. Dehkan explained that community benefits agreements should include a commitment to use local individuals and a commitment to create a local, trained workforce. Mr. Dehkan noted that workforce development and training programs

help to put people from local communities into sustainable jobs. Mr. Dehkan noted that there is a misnomer about the trades themselves not wanting to incorporate marginalized groups but emphasized that a critical focus of the trade programs is diversity and inclusion.
    - Mr. Dehkan included that a key challenge regarding workforce development is getting individuals to a workplace who may not have personal transportation options such as cars.
    - Mr. Goodenbery noted that the topic of transportation was also emphasized by Joe Toner in the second Policy and Workforce Development Working Group.
- Mr. Goodenbery inquired about the biggest gaps in terms of community engagement are that Mr. Dehkan could identify.
    - Mr. Dehkan explained that many groups are still learning about hydrogen. He emphasized that hydrogen is not unlike any other fuel source and the focus should be on how we can push developers to create benefits for communities. Mr. Dehkan explained that there is no blueprint for this and the needs of every community are different. He explained that communities are typically open to engagement but there is critical work that must be done with developers to create a transparent dialogue and emphasize the community from the start.
- Mr. Goodenbery asked where there are opportunities for effective partnerships to further advance workforce development and sustainable job creation in Connecticut during a clean energy transition.
    - Mr. Dehkan explained that a key step is identifying stakeholders. He explained that there is a need to look at the communities that are directly involved in a process, which may not always be easy. He emphasized the need to provide as many opportunities as possible for communities to be lifted up and heard and clarified that not everyone knows how to participate in these processes because they haven't been asked to in the past.
    - Mr. Dehkan explained that in a former role he had to take a class called Listening 101 which reminded him that listening is a critical step in this process.
- Mr. Goodenbery noted that The Biden Administration has established some clear policy priorities in terms of an imperative to address equity and environmental justice to access federal funding. He inquired how the Roundtable do you defines "equity" and "environmental justice" and how the Task Force and the Northeast Regional Hub should be approaching community engagement to ensure that state and regional leadership are appropriately reflecting community needs.
    - Mr. Dehkan explained that the Roundtable has been the roundtable has been involved in justice, equity, diversity, and inclusion training. He noted that equity has a lot to do with equal access to decision making. He explained that it is challenging to define equity, this the conversation about equity should be kept open to continue to improve how equity is considered.
- Mr. Goodenbery inquired about how Mr. Dehkan would advise developers of hydrogen and fuel cell projects about the importance of community engagement and local workforce development.
    - Mr. Dehkan emphasized that the community needs to be heard and a clear process with transparency should be undertaken on the part of the developer. He emphasized the importance of opening a dialogue and emphasized that most communities want this involvement, but this needs to be enforceable on the part of the developer.
- Mr. Goodenbery noted that the objective of this Task Force is to develop recommendations for actions that the legislature can take to advance clean hydrogen in Connecticut. He inquired whether Mr. Dehkan had any specific recommendations that

the Task Force might consider in terms of how to better enable workforce development in consideration of environmental justice issues.
    - Mr. Dehkan emphasized the need for enforcement of community benefits agreements, likely on a state level. He noted that it is important to create protocols that allow the state to enforce these policies. Mr. Dehkan noted that during the creation of SB 999, Commissioner Katie Dykes worked with the Roundtable to ensure the inclusion of provisions needed for enforcement.
- Mr. Goodenbery asked Mr. Dehkan to share any final thoughts.
    - Mr. Dehkan emphasized the importance of local participation and economic development. He included that stakeholders in marginalized communities have been promised economic development in the past, but this hasn't been delivered. He mentioned that this Task Force has the unique opportunity to create benefits for communities that haven't seen this before. He emphasized the need for workforce development that works for the people and included that the state will need to heavily depend on the trades for this.
    - Mr. Dehkan emphasized his thanks for his inclusion in this conversation.
- Mr. Garcia emphasized the importance of foundational conversations like this one on equity and workforce development. He emphasized that at the federal government these topics have also been a key consideration for funding. Mr. Garcia noted Ms. Granholm's key focus on community benefit agreements and emphasized that if Connecticut expects to compete and win federal resources, we need to listen to the experts like Mr. Dehkan and Adrienne Farar Houel of Greater Bridgeport, who spoke at the prior Task Force meeting.

6. Working Group Updates

- Ms. Childs emphasized the importance of developing recommendations that incorporate Task Force feedback and hopefully drive toward consensus.
- Ms. Childs reminded the Task Force of the Working Group structure. She noted that the Strategen team has been directly working with Working Group co-chairs to provide guidance and technical support. Ms. Childs noted that Working Groups are publicly hosted monthly.
- Ms. Childs reminded the Task Force of the Special Act 22-8 mandate which requires the Task Force to:
    1. Provide a review of regulations and legislation needed to guide the development and achievement of hydrogen economies of scale
    2. Provide recommendations for workforce initiatives to prepare the state for hydrogen-fueled energy-related jobs
    3. Examine how to position the state to take advantage of competitive incentives and programs created by the federal Infrastructure Investment and Jobs Act
    4. Identify funding and tax preferences for building hydrogen-fueled energy facilities at brownfield sites through the Targeted Brownfield Development Grant and Loan program.
    5. Recommend funding sources for developing hydrogen-fueled energy programs and infrastructure.
    6. Examine the sources of potential clean hydrogen, including, but not limited to, wind, solar, biogas and nuclear.
    7. Recommend potential end uses of hydrogen-fueled energy.
- Mr. Garcia noted that it is important that the Task Force is responsive to the key tasks in Special Act 22-8.

- Ms. Childs provided an overview of the key research activities that the Working Groups have been performing to ensure that the Task Force is responsive to Special Act 22-8. These activities, the working group that is addressing them, and the Special Act 22-8 objectives that they are meeting is as follows:
    - Policy Guiding Principles (Policy & Workforce Development): establish a common approach to policy recommendations that ensures findings are aligned with existing state statute and goals (Supports Objective 1)
    - Hydrogen Policy Assessment (Policy & Workforce Development): provide an overview of existing CT policy and policy needs that can be informed by the activities of other states (Supports Objective 1, 2)
    - Assessment of the Brownfield Grants and Loan Program (Funding): develop an understanding of incentives for hydrogen developments on brownfields (Supports Objective 4)
    - Toolkit of Hydrogen Incentives (Funding): understand the suite of federal and state level funding that is available to support hydrogen development (Supports Objective 3, 5)
    - Clean Hydrogen Production and End Use Potential Analysis (Sources & Uses): assess gaps in hydrogen supply and demand needs (Objective 6, 7)
    - Geographic Analysis of Infrastructure (Infrastructure): provide an understanding of infrastructure needs and proximity of existing infrastructure to hydrogen supply and demand sources (Supports Objective 5)
    - End Use Prioritization Framework (Uses): assess the feasibility and relative importance of hydrogen end uses (Supports Objective 7)
- Ms. Childs explained that the Uses, Sources, and Infrastructure Working Groups have been doing extensive analysis to inform and prioritize the work of the Policy and Workforce Development and the Funding Working Group. Ms. Childs expressed that the Uses, Sources, and Infrastructure Working Groups have developed a high-level framework for prioritizing end uses applications that warrant additional consideration, created preliminary estimates of hydrogen production costs from different types of renewable energy, and provided comparisons to fossil fuel costs, and have started to assess levels of clean hydrogen supply, as well as demand from potential end uses for hydrogen. The Policy and Funding Working Groups will leverage these findings to evaluate actions needed to enable cost-effective and scaled deployment.
- Ms. Childs emphasized that a high-level prioritization of opportunities will be helpful to ensure appropriate focus and attention. She explained that state and regional efforts will have resource and time constraints impacting their engagement on deployment activities, so the ability to identify areas of highest interest for near-term action will help to enable targeted engagement in priority areas. She emphasized that lower prioritization should not be taken as a lack of opportunity as hydrogen strategy and deployment will be a multi-year process.
- Collin Smith, the Strategen lead of the Sources, Uses, and Infrastructure Working Groups discussed the use case evaluation framework.
    - Mr. Smith explained that use cases were evaluated against multiple criteria – cost-competitiveness, greenhouse gas reduction, commercial readiness, infrastructure requirements, environmental justice, workforce development, resilience value, and safety regulations – as well as stakeholder feedback.
    - Mr. Smith explained that end uses have been categorized into three buckets: highest priority, high priority, and other valuable applications. The highest priority applications are very likely to use hydrogen due to the underlying economics and create substantial societal benefits. These applications include 24 hour backup

needs for critical facilities, long and medium haul aviation, cargo ships, martial handling equipment with long uptimes and charging space constraints, long-haul heavy duty trucks, fuel cells for peak power generation, and high heat industrial processes. The high priority applications have a strong financial case for hydrogen and do create societal benefit, but on a smaller scale than the highest priority applications. These applications include long distance bus routes, ferries, freight rail, fleet vehicles with long uptimes and specific refueling locations, and hydrogen blending in natural gas pipelines for non-core customers. Other valuable applications can be kept in view as the economics of hydrogen versus alternatives develops. These applications include hydrogen blending for commercial and residential customers, commuter buses, heavy duty trucks with lower daily driving ranges, privately owned light duty vehicles, low heat industrial processes, and short haul aviation.

- Mr. Smith provided an overview of preliminary sources analysis that provides insight into hydrogen's cost competitiveness against fossil fuels. Mr. Smith explained that over time, the levelized cost of renewable energy is expected to decrease, supported by the production tax credit (PTC) and investment tax credit (ITC) which begin to phase out in 2032. Mr. Smith explained that around 2032, hydrogen produced from solar becomes lower cost than hydrogen produced from offshore wind due to the PTC phase out and relative electrolyzer utilization.
    - Ms. Childs noted that hydrogen produced from biogas and nuclear will be discussed at the next Sources Working Group.
- Mr. Smith explained that the Infrastructure Working Group has focused on the role of enabling storage and transport infrastructure. He explained that salt cavern storage is expected to provide the lowest cost bulk hydrogen storage and can take advantage of existing natural gas right of ways for pipeline-based hydrogen transport. Salt cavern storage is not located in Connecticut but can be found in New York which is part of the Northeast Hydrogen Hub. Further, existing right of ways for natural gas distribution may be leveraged for hydrogen. Mr. Smith also explained that a growing body of research shows hydrogen can have an indirect climate warming impact. He noted that analysis shows that hydrogen leakage rates are lower than natural gas, but strong regulation is needed to minimize leakage and maximize climate benefits.[2]
- Lily Backer, the Strategen lead of the Funding Working Group, explained that to date, the Funding Working Group has been focusing on relevant federal funding sources and state opportunities that may be considered to provide incentives for hydrogen. Ms. Backer explained that this research will be used to make recommendations both related to the Infrastructure Investment and Jobs Act (IIJA) hydrogen hubs solicitation and beyond. These recommendations will also be incorporated into the Policy and Workforce Development Working Group as needed.
- Mr. Goodenbery, the Strategen lead of the Policy and Workforce Development Working Group, explained that the Policy and Workforce Development Working Group will incorporate the findings of other Working Groups to identify where policy action can jump-start cost effective adoption of hydrogen for the highest priority use cases and provide recommendations for Connecticut to advance these policies.
- Ms. Backer emphasized that the efforts of the Working Groups are still underway.
    - Carmen Molina-Rios emphasized this point.

[2] RMI (2022), https://rmi.org/hydrogen-reality-check-1-hydrogen-is-not-a-significant-warming-risk/

- Ms. Childs explained that to date, stakeholders have shared important perspectives that will be incorporated into the final report findings. She noted that the Strategen team has heard thematic areas of feedback from stakeholders around the following topics:
    - The hydrogen economy is nascent; it is important to support a wide portfolio of potential hydrogen end uses and sources.
    - Hydrogen could be an important part of our decarbonization toolkit, but we need to be careful not to invest in harmful or low-value end uses; or to slow the deployment of other necessary decarbonization investments.
    - There is an imperative to ensure that hydrogen is truly a decarbonization solution, and we must focus on non-fossil sources for hydrogen production and minimizing reliance on carbon-based electric sources.
    - Hydrogen investment represents a significant opportunity for our communities; a significant focus on workforce and environmental impacts is critical to ensure that these investments create benefits across the state.
    - The legislation establishing the Task Force calls out the study of hydrogen in the state's "economy and energy infrastructure," so workforce development and compatibility with existing infrastructure should be primary areas of focus when prioritizing end uses for additional consideration.
    - There is a lot that we're still learning about hydrogen, and we don't want to rush into any major investment or policy decisions without understanding the broader ramifications, especially for large interconnected systems like the natural gas pipeline system.
- Mr. Bosch noted that you cannot drive fuel cell buses under tunnels New York. He emphasized the need to ensure that legislation in Connecticut does not prevent certain hydrogen end uses.
    - Ms. Dumaine explained that while policy decisions should not be rushed into, it is also important to not prevent hydrogen development based on a lack of policy action.
    - Alex Issac noted that she has been involved in NYSERDA conversations about the Northeast Hydrogen Hub and proposed that the Task Force collaborate with NYSERDA to double check Connecticut policy conclusions.
    - Ms. Nuara added that the IIJA hydrogen hub concept papers were filed on November 7th and it may be useful for the Task Force to review the Northeast Hydrogen Hub application.
        - Sara Harari noted that those involved in the Northeast Hydrogen Hub process are bound by a MOU and an NDA which makes this process challenging to discuss.
        - Alex Issac added that the NYSERDA policy working group has statute references of roadblocks by state.
            - Ms. Harari inquired whether the DEEP team could connect the Task Force with relevant NYSERDA members to discuss this point.
                - Lidia Ruppert explained that while the concept paper was submitted, those involved in the hub process cannot share further details due to the MOU. She included that what the Task Force had discussed to date is consistent with the NYSERDA process.
- Mr. Garcia emphasized the need to prioritize Connecticut industry strengths. He explained that it is useful to consider whether Connecticut groups had filed responses to any federal IIJA RFIs.

    - Ms. Molina-Rios agreed with the need to optimize Connecticut's competitive advantage.
- Sridhar Kanuri noted that as Connecticut develops a policy framework related to hydrogen, local fire chiefs and safety organizations should be included to develop an understanding of needs related to hydrogen and to develop associated training.
    - Mr. Garcia agreed that this is an important consideration in terms of permitting and training as the market develops.
    - Ms. Harari inquired whether the Uses Working Group included consideration of fire safety within its safety criterion used for the End Use Evaluation Framework.
        - Mr. Smith clarified that the safety criterion was focused on the potential need for additional safety regulations as compared to incumbent fuel use. He included that fire safety for fuel cell vehicles was considered as additional safety protocols would be needed.
        - Ms. Childs added that the research for the End Use Evaluation Framework was based on the current state. She emphasized the importance of engaging with engaging relevant emergency response and safety organizations as a future piece of work that the Task Force can recommend.
        - Sarah Wall noted that other states with advanced fuel cell vehicle markets, such as California, could provide guidance for policy and safety needs so Connecticut does not have to reinvent the wheel.
        - Chris Capuano emphasized that consideration of fire safety could be a longer term recommendation. He noted that the hydrogen market will not be developed overnight, rather existing infrastructure could be used in the near term and gaps should be identified and addressed over time.
- Mr. Garcia included that the insurance industry is a Connecticut competitive advantage.
- Ms. Childs included that it is essential to the legislative mandate of the Task Force to understand and represent stakeholder feedback. She explained that the Task Force intends to issue a Request for Written Comments, due on December 9th, to better capture stakeholder feedback for the final report.
    - Ms. Harari emphasized that the intention of the final report is to provide legislative recommendations, and the Request for Written Comments will provide an opportunity to ensure that the Task Force present the diversity of opinions that stakeholders may have.

7. Public Comments

- Jonathan Feinstein noted that the Task Force discussion of safety codes should be included in the final report.

8. Adjourn

- The Hydrogen Study Task Force meeting was adjourned by Mr. Garcia at 11:56 a.m.

9. Tour of Dominion Millstone

- In-person attendees went on a tour of the Dominion Millstone facility.