



**HYDROGEN STUDY TASK FORCE**  
Policy & Workforce Development Working Group #3  
Meeting Minutes<sup>1</sup>

Tuesday November 29, 2022  
12:00 – 1:00 p.m.

The third Working Group meeting of the Hydrogen Study Task Force Policy & Workforce Development Working Group was held on November 29, 2022.

All the participants joined via the Teams conference call.

**Task Force Members Present:** Aziz Dehkan (CT Roundtable on Climate and Jobs), Julia Dumaine (Designee – PURA), Samantha Dynowski (Sierra Club), Sara Harari (CT Green Bank), Shannon Laun (Conservation Law Foundation) Taren O'Connor (Designee – PURA), Becca Trietch (Designee – DEEP)

**Others Present:** Paul Aresta (CCAT), Enrique Bosch Naval (Avangrid), Sophia Browning (Day Pitney), Evan Dantos, Brian Farnen (CT Green Bank), Joe Goodenbery (Strategen), Nina Hebel (Strategen), Kaiqi Hu (Strategen), Alex Judd (Day Pitney), Andrea Lubawy (Toyota), Ugur Pasaogullari (UCONN), Lidia Ruppert (DEEP)

**1. Call to Order**

- Joe Goodenbery, a Senior Manager at Strategen providing technical support for the Policy and Workforce Development Working Group, called the meeting to order at 12:03 p.m.

**2. Welcome and Introductions**

- Mr. Goodenbery provided an overview of the meeting agenda which includes welcome and introductions, overview of workforce development best practices, discussion of key findings & policy recommendations in alignment with other working groups, and overview of next steps.
- Mr. Goodenbery reminded participants of Strategen's role, which includes handling meeting logistics, developing meeting agendas, and providing technical support.
- Mr. Goodenbery prompted attendees to introduce themselves.
- Mr. Goodenbery reminded the participants of the Working Group Statutory Responsibilities.
- Mr. Goodenbery reminded participants of the objective of the Policy and Workforce Development Working Group and emphasized the statutory responsibilities and associated deliverables. He stressed that the efforts of the Hydrogen Power Study Task Force and associated Working Groups are not intended to replace the stakeholder engagement process used to develop and

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<sup>1</sup> For access to the meeting recording – <https://www.ctgreenbank.com/hydrogentaskforce/policy-workforce-development/>

vet updates to state policy; rather, these efforts are intended to surface new ideas for consideration regarding how to develop a clean hydrogen economy in Connecticut.

### **3. Overview of Workforce Development Best Practices**

- Mr. Goodenbery introduced some best practices developed by the team to help guide the processes. Those best practices include:
  - Local engagement:
    - Engagement with communities, groups, institutions should begin as early as possible.
    - Outreach efforts should be accessible for local stakeholders to enable participation.
    - Transparent and continued communication with local communities, including education on clean hydrogen.
  - Community benefit agreements:
    - Agreements should include commitments to use local workforce.
    - Projects should offer prevailing wages.
    - Agreements should include partnerships with apprenticeship and training programs for local labor.
    - There should be mechanisms in place to ensure accountability and/or enforceability of community benefit agreements.
  - Needs assessment:
    - Conduct an examination of workforce needs, gaps, and impacts.
    - Identify transferable skillsets from other local industries.
    - Ensure a just transition for displaced fossil fuel workers.
    - Enable opportunities in parallel sectors (e.g., insurance).
  - Workforce training:
    - Training should be developed specific to identified needs.
    - Identify key competencies and trade certifications for clean H2 industry.
    - Invest and partner with universities with H2 expertise.
    - Create opportunities to involve underrepresented populations.
- Mr. Goodenbery pointed out that under the legislative mandate, it is necessary to generate recommendations for workforce initiatives to prepare the state for hydrogen-fueled energy-related jobs. He shared that some of the above best practices helped inform the development of recommendations to enable workforce development. To prepare CT's hydrogen workforce, some key actions include:
  - Engagement with local experts including trade associations, universities, and local community groups to understand workforce development needs and potential.
  - Development of a skilled labor pool, in part by converting existing fossil fuel jobs to hydrogen-related ones.
  - Building on Connecticut's expertise in hydrogen technologies by investing in and partnering with local universities with existing experience in hydrogen technologies.
  - Understanding the key components of existing labor and workforce development programs and skills needed for a hydrogen economy.

- Establishing rules for the insurance of hydrogen infrastructure to enable standardized hydrogen insurance products that can be marketed nationally. Mr. Goodenbery noted that hydrogen infrastructure is still relatively new for the insurance industry so there could be an opportunity for CT to be a leader here.
- Samantha Dynowski, the Director of the Connecticut Chapter of the Sierra Club, proposed that there could be potential opportunities to strengthen these recommendations in terms of the equity component, such as a priority on training for members of underserved communities.
- Mr. Goodenbery showed a slide and briefly summarized the key findings from other Working Groups.
  - Sources: On-shore and off-shore wind, as well as solar, represent the most abundant and lowest cost sources for hydrogen production in Connecticut. However, compliance with the state's existing decarbonization policy may present competition for limited non-fossil fuel resources.
  - Uses: Highest priority applications for hydrogen include end uses that are very likely to use hydrogen due to underlying economics, have the potential to create substantial societal benefits, or where hydrogen is the only known zero-carbon energy source.
  - Infrastructure: Development of a cost-effective hydrogen economy will be dependent on the deployment of at-scale hydrogen infrastructure and offtake opportunities.
  - Funding: Significant federal funding is available for hydrogen. Connecticut should capitalize on its competitive advantages to maximize access to federal resources.
- Mr. Goodenbery pointed out that it is also required by the legislative mandate to review regulations and legislation needed to guide the development and achievement of hydrogen economies of scale. He concluded that Connecticut policy provides general ecosystem support for the development of clean hydrogen, and there are some existing policies or programs that specifically reference hydrogen, but these are limited.
- Mr. Goodenbery explained that the team has looked at what has been done in other jurisdictions to help guide our Task Force. He mentioned that one practice in other jurisdictions is a clean hydrogen definition and pointed out that definitions based on a carbon intensity range are emerging, as well as additional specifications focused on feedstock type. Regarding legislation, Mr. Goodenbery explained that hydrogen bills have typically been focused on a particular end uses, such as mobility, gas and electric generation, and industrial uses. Mr. Goodenbery also indicated that there has been great activity and market development across several hydrogen related topics, such as hydrogen production, transportation, and power generation.
- Mr. Goodenbery shared some actions Connecticut could explore to incorporate community engagement principles in hydrogen development, which include:
  - Considering funding to increase community engagement such as intervener compensation for community participation in hydrogen-related proceedings, and funding for development of community benefits agreements.
  - Including hydrogen within Public Act 21-43 and lower the required threshold to 1 MW to align with the Inflation Reduction Act (IRA)

Investment Tax Credit (ITC) prevailing wage requirements for projects above 1 MW.

- Establishing a working group of state and local government representatives, environmental justice groups, and community representatives to further address hydrogen related topics.
- Developing a community impacts framework that outlines both a vision and goals to be incorporated into hydrogen policy development.
- Mr. Goodenbery shared some enabling policy actions for Connecticut that would support hydrogen development and deployment across all end use applications, which include:
  - Developing a state-wide vision for establishing a Connecticut clean hydrogen backbone.
  - Expanding support for existing policies and programs that can enable hydrogen deployment and explore incorporation of hydrogen within relevant existing policies and programs.
  - Establishing a definition for clean hydrogen consistent with the federal guidance to enable eligibility and participation from a wide range of resources and feedstocks, as well as to enable import of hydrogen from other states within the Northeast Regional Hub.
  - Establishing a more rigorous definition for renewable hydrogen that acknowledges the reduced carbon footprint of specific production sources and encourages development of hydrogen production sources that are able to maximize hydrogen Production Tax Credit benefits.
  - Establishing a multi-agency workgroup of state and local government representatives with expertise in decarbonization, renewable energy, hydrogen, permitting and siting, transportation, and utility regulation, that can collaborate with one another and with other states in the region on addressing the multi-sectoral opportunities and barriers associated with renewable hydrogen.
- Julia Dumaine, Supervisor of Strategy & Operations at the Public Utilities Regulatory Authority (PURA), inquired whether there is any information on what other states are doing. She provided an example from previous work on appliance standards that demonstrated that when states have different standards, it can create a patchwork effect that inhibits industry and increases costs. She asked whether other states are creating their own definition or intending to align with the federal government.
  - Mr. Goodenbery answered that currently there is an underlying regional assumption that states will align with federal standard to allow for coordination. However, there have not been official definitions established in the region. In the rest of the country some have excluded fossil fuels, some are moving away from color definition and moving towards an intensity approach.
  - Erin Childs, a Director at Strategen Consulting, shared a table of different definitions from states and national governments for clean, renewable, or green hydrogen. She explained that the reason that the Strategen team has been proposing a two-tiered approach is so that there is a definition that aligns with federal standards, which allows for widespread participation, but also an opportunity to acknowledge and support people who are interested in pursuing some more robust standards.

- Lidia Ruppert, a Research Analyst at the Connecticut Department of Energy and Environmental Protection (CT DEEP), shared that DEEP has a different perspective regarding this topic of the clean hydrogen definition. She shared that they have a comprehensive energy process, and currently hydrogen is at the beginning stages of this process. Moreover, DEEP is onboarding a consultant to help them with this. She explained that DEEP is not in the position of supporting a clean hydrogen definition at this moment, but they think it would be best for the Task Force to recommend further investigation and engagement with stakeholders to research and analyze what type of definition would be the most valuable for Connecticut. She summarized that DEEP's position is that they support the Hydrogen Task Force recommending further investigation regarding the definition, and not immediately recommending any specific clean hydrogen definition.
- Ms. Childs followed up Ms. Ruppert's point and asked to clarify whether DEEP's position is that it would be best not to have the definition at all or just that it would be best not to rush to have the definition immediately.
  - Ms. Ruppert agreed to the latter.
- Ugur Pasaogullari, a Professor at the University of Connecticut, reminded the group that at the last Sources Working Group meeting, they concluded that it was necessary to have a good reason for Connecticut to create its own clean hydrogen definition. He also shared that the federal definition of clean hydrogen is not set yet. There are two definitions, one in the Infrastructure Bill that describes 2 kilograms of carbon dioxide per kilogram of hydrogen at the site of production. On the other hand, the IRA defines clean hydrogen as 4 kilograms of carbon dioxide per kilogram of hydrogen. He clarified that this is a well-to-gate definition.
- Andrea Lubawy, a Senior Engineer at Toyota North America, inquired whether Connecticut wants to create their own definition to spend their own grant money on projects.
  - Ms. Childs answered that in several states, to the extent that states have programs or incentives or are establishing any sort of state-based regulation and regulatory activity, it is important to have a definition of clean green renewable hydrogen.
  - Ms. Lubawy clarified her reason for the question by explaining that if the definition is for use in regulations, and primarily for the state to spend their own money, she did not see a reason for the definitions to align with the federal ones. She pointed out when it comes to incentivizing Connecticut's own projects, there does not seem to be a particular need for aligning the definition.
- Shannon Laun, an attorney at the Connecticut State Director for Conservation Law Foundation, asked whether the Working Group is looking to develop a working definition that could be updated, such as with technology advances, or to enshrine some definition in statute that then would require legislative changes. She stated that in the early stage, it might be more advantageous to have a more flexible working definition. Ms. Laun also asked Ms. Ruppert whether she could share more about the anticipated timeline of the process for DEEP that she just mentioned.
  - Becca Trietch, Senior Policy Advisor at CT DEEP, answered that in terms of timing and process, they are onboarding a hydrogen consultant right now. They committed to working on several white papers on

specific topics based on what they had heard from recent technical sessions. One of those white papers is expected to be focused on hydrogen, and they are hoping to have a first draft next January. She shared that they are hoping that this process might be the best place to continue this conversation beyond the Task Force.

- Sara Harari, Associate Director of Innovation & Strategic Advisor to the President at CT Green Bank, reminded the group that one of the directives is to examine the sources of potential clean hydrogen. So, to achieve that directive, she suggested that we will need a definition to work off. Whether we can do that with the federal definition or another definition is probably a good point of discussion.
- Brian Farnen, the General Counsel and Chief Legal Officer for the Connecticut Green Bank, suggested that it is OK to not reach a clear consensus, and feedback is always encouraged.
- Ms. Childs identified that many of the different perspectives are not necessarily in direct disagreement. She clarified that the team is not recommending a specific definition either for clean hydrogen or for renewable or green hydrogen. She stated that this aligns with some of the points that Ms. Laun has made about the need for the definition to be more flexible as opposed to a legislative mandate that requires legislation to change. She asked attendees whether the tiered framework make sense and could be helpful for some of the goals and policy activities that are ongoing. She also asked whether the approach of working on reaching a final definition makes sense to attendees.
  - Ms. Trietch suggested that there is still ongoing discussion about whether having a tiered structure is the best approach.
  - Ms. Ruppert indicated that there could be ample opportunity for future discussion on these topics.
  - Mr. Lubawy suggested in the group chat that the state can always consider incorporation of the federal definition by reference (once it is determined) and not copying the definition into their own statute. She also mentioned, as a model of an interagency work group, that California has an organization called Go Biz under the governor's office whose purpose is to make sure that targets are reached by aligning multiple organizations and addressing industry questions.
- Mr. Goodenbery reminded the participants of the Use Cases that have been prioritized by potential for societal benefits. He summarized the categories of use cases:
  - Highest priority for further investigation:
    - Focused on end uses that:
      - Are very likely to use hydrogen due to underlying economics.
      - Create substantial societal benefits (e.g. GHG reduction, workforce development).
    - Proposed end uses include:
      - Critical facilities (24-hour backup need)
      - Aviation (long- and medium-haul)
      - Cargo ships
      - Material handling equipment (w/ long uptimes and charging space constraints)
      - Long-haul heavy-duty vehicles
      - Fuel cells for peak power generation

- High heat industrial processes
- High priority for additional investigation:
  - Focused on end uses that:
    - Have a strong financial case for hydrogen use.
    - Create societal benefit, but on a smaller scale due to size of industry.
  - Proposed end uses include:
    - Long-distance bus routes
    - Commuter buses and other heavy-duty vehicles with lower daily driving ranges
    - Ferries
    - Freight rail
    - Fleet vehicles with long uptimes and specific refueling locations
    - Hydrogen blending in natural gas pipelines for non-core customer (i.e., power generation and industrial heat)
- Other potentially valuable applications:
  - Focused on end uses that:
    - Can be kept “in view” as economics of hydrogen vs. alternatives develop.
    - Could provide additional opportunities for market development.
  - Proposed end uses include:
    - Hydrogen blending for commercial and residential customers
    - Privately-owned light-duty vehicles
    - Low heat industrial processes
    - Short-haul aviation
- Ms. Dumaine questioned whether it is worth focusing on the role that different end uses play in achieving state policy goals, or in other words, specifically prioritizing or advocating for end uses that clearly support the state’s overall goals.
  - Ms. Childs shared that the Uses Group have some robust documentation on some of the items Ms. Dumaine was identifying, including emission reduction potential and local air quality. She explained that those documents could be shared among the Working Group.
- Ms. Lubawy pointed out that one thing that is conspicuously absent is light-duty transportation. She also stressed the importance of clarifying what prioritization means and what it does not mean. She explained that one of the goals of prioritization can be policy support, and not being prioritized does not mean that the state is not interested in decarbonizing or supporting transitions for an end use.
- Mr. Goodenbery demonstrated that Connecticut could consider the following enabling policy actions that would provide targeted support for highest priority end use applications:
  - Establishing a Low Carbon Fuels Standard (LCFS).

- Identifying and potentially expanding clean transportation incentives to include on-site port handling equipment, harbor crafts, and ocean-going vessels.
- Evaluating the potential of opening broader dockets to identify opportunities to decarbonize hard to decarbonize sectors, including aviation, shipping, industrial, etc.
- Implementing tax exemptions for hydrogen vehicles.
- Implementing tax exemptions for critical facilities that produce or use hydrogen.

#### **4. Overview of Next Steps**

- Mr. Goodenbery shared a table of Working Group meeting schedules to remind the attendees of the following meetings.
- Mr. Goodenbery shared a list of upcoming timelines and stressed that the public request for written comments will be due 12/9 at 5pm EST.
  - Ms. Laun inquired whether the public comments would be included in the appendix of the report.
    - Mr. Goodenbery suggested that the team would try to capture diverse comments from different key stakeholders.
    - Ms. Childs expressed that feedback on whether inclusion in the legislative report would make Working Group members feel uncomfortable is welcomed.
  - Mr. Goodenbery also emphasized that the draft final recommendations will be shared across all workstreams at the Task Force Meeting on December 13.

#### **5. Adjourn**

- The third Policy and Workforce Development Working Group was adjourned by Mr. Goodenbery at 1:03 p.m.