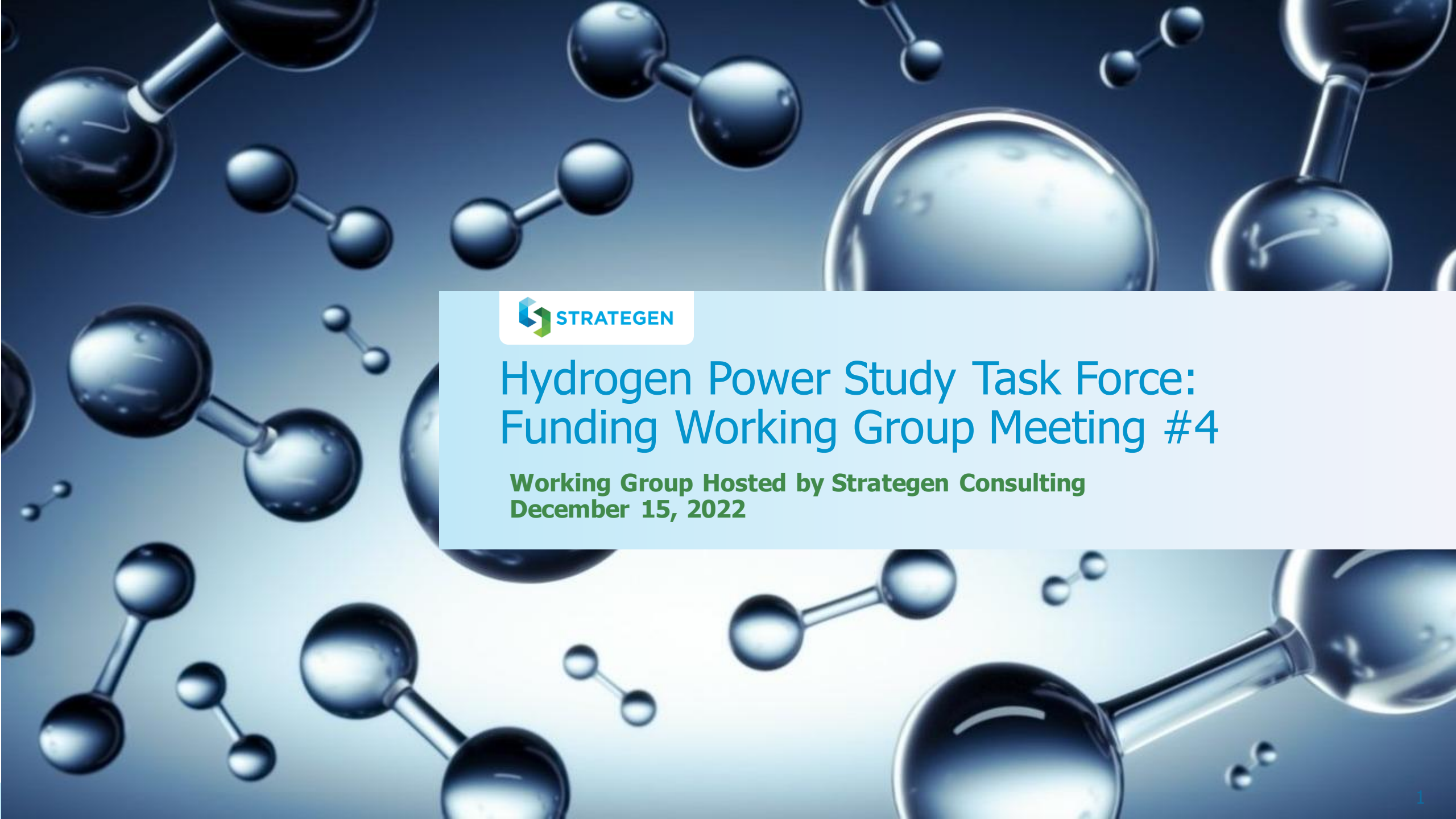

Hydrogen Power Study Task Force: Funding Working Group Meeting #4

Working Group Hosted by Strategen Consulting
December 15, 2022

Meeting Logistics

- **Mute Microphone** – in order to prevent background noise that disturbs the meeting, if you aren't talking, please mute your microphone or phone.

- **Chat Box** – if you aren't being heard, please use the chat box or raise your hand to ask a question. Please try to limit comments in the chat as these may not be officially captured in the record.

- **Recording Meeting** – we will record and post the meetings at www.ctgreenbank.com/hydrogentaskforce and you can also access meeting dates and dial-in information through Secretary of State.

- **State Your Name** – for those talking, please state your name for the record.

Agenda

- Welcome and Introductions – 10 minutes
- Review of Report Format and Next Steps – 10 minutes
- Review of Findings and Recommendations – 30 minutes
- Stakeholder Comments – 15 minutes
- Opportunities for Further Engagement – 10 minutes
- Stakeholder Discussion and Next Steps – 15 minutes
- Adjourn

Introductions

Structure of Report

Each mandated item from Special Act 22-8 will have a section showing the following:

+ **Findings** – Summary of research
+ **Recommendations** – Specific, actionable next steps based on findings
+ **Stakeholder Feedback** – Captured feedback from Working Groups, Task Force Meetings, and Written Comments

Reminder – the Funding Working Group covers the following areas of 22-8:

1. An examination of how to position the state to take advantage of competitive incentives and programs created by the federal Infrastructure Investment and Jobs Act;
2. Recommendations for funding and tax preferences for building hydrogen-fueled energy facilities at brownfield sites through the Targeted Brownfield Development Loan program;
3. Recommendations regarding funding sources for developing hydrogen-fueled energy programs and infrastructure.

Next Steps

Date	Description
Dec. 15 – 20, 2022	Final Working Group Meetings • **Policy & Workforce Development:** Dec. 15 from Noon to 1 pm • **Infrastructure:** Dec 19 from 3 pm to 4 pm • **Sources & Uses:** Dec 20 from 1 to 2:30 pm
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Review of Funding WG Findings and Recommendations

Recommendations for funding and tax preferences for building hydrogen-fueled energy facilities at brownfield sites through the Targeted Brownfield Development Loan Program

Grant Program

- Eligible Entities: Municipalities, municipal entities, and land banks.
- The program has a focus on public-private partnerships such as projects where a developer partners with a municipality or municipal-like entity.
- Funding Amount: Remediation grants are limited to $2 million and assessment-only grants are limited to $200,000.
- Selection Criteria:
  - Projects must go through a competitive selection round
  - Projects should demonstrate that the land is being put to the highest and best end use.
  - The proposals are scored competitively based on a rubric that is defined in each funding cycle. In the most recent grant cycles, renewable energy projects are given additional scoring credit.

Loans Program

- Eligible Entities: Potential brownfield purchasers and current brownfield owners (including municipalities and economic development agencies provided that a current owner did not contribute to any existing environmental contamination)
- Funding Amount: Previously, the program has provided loans of up to $4 million with the following terms:
  - 3% interest
  - Allows for flexible deferred repayment to match projected cash flow with a maximum 30-year term
  - Minimum developer equity of 10%

- The end use of remediated and repurposed land is not designated by the programs – projects should exhibit highest and best end use
- No additional clarification would be needed to ensure hydrogen-fueled energy facilities are eligible for funding from these programs
- Projects must be economically viable to secure this funding

Recs

The Targeted Brownfield Development Loan Program and other brownfield programs represent an excellent source of supplemental funding for developers seeking to advance hydrogen-fueled energy facilities, the State could pursue specific steps to improve accessibility and use, including:

DEEP and DECD should continue maintaining the Connecticut Brownfields Inventory as a resource for potential developers to identify prospective project sites.

DEEP and DECD should continue supporting development of clean energy projects on brownfields and projects that have community support and/or have completed community benefits agreements.

DECD should evaluate the need for additional funding for this program to help meet the clean energy needs of the state and its subsequent land requirements.

Stakeholder Feedback

- Environmental Advocates noted that many brownfields are located in EJ communities and distressed municipalities, where residents are burdened by environmental harms from former and existing uses and infrastructure. Connecticut should avoid siting hydrogen infrastructure on these brownfields.
    - In addition to EJ concerns, there are size constraints on using brownfields for hydrogen projects. Most of the state's brownfields are less than five acres, too small for siting most hydrogen infrastructure.
- Alternatively, DECD noted that Brownfields are often in industrial areas which are utility connected, so these areas could be well-primed to serve some of the highest priority end-uses (ex: ports, industrial facilities, heavy-duty trucking).
- DECD also noted that, if the program is running effectively, enabling these programs for hydrogen facilities may require marketing and education.

An examination of how to position the state to take advantage of competitive incentives and programs created by the federal Infrastructure Investment and Jobs Act

Justice40

- Many programs within the IIJA are covered by the Biden Administration's Justice40 Executive Order (EO 14008) - 40% of the overall climate and clean energy investments flow to disadvantaged communities.
- CT has a strong commitment to community benefits and very engaged community members. Some highlighted examples include:
  - S.B. 999
  - Communities LEAP Program
  - CT DEEP Environmental Justice Advisory Council

Match Requirement

- Many competitive IIJA grants require varying levels of match funding
- Qualified sources of match funding includes:
  - Third-party financing;
  - State or local government funding or property donations;
  - Project participant funding; or
  - Donation of space or equipment.

Recs

To position the state to take advantage of competitive incentives and programs in the IIJA, Connecticut should consider the following actions:

- **DEEP should lead interagency and interstate coordination on hydrogen policy development and funding, potentially including the development of a Connecticut hydrogen roadmap and research strategy.**
- **The Legislature should create a transparent source for municipalities, cities, and other local applicants to access relevant resources, such as match funding and/or application guidance.**
- **The Legislature should consider appropriating grant funding to support federal match requirements and multi-sector enabling infrastructure, such as public-access fueling stations for trucks, commuter buses, ports, and material handling equipment, etc.**
- **The Legislature should provide funding to increase community engagement and decrease burden of engagement on communities.**
- **Relatedly, DEEP and PURA should consider implementing an intervener compensation program to increase community participation in hydrogen-related proceedings.**
- NEW for Disc. **Eligible entities (academia, industry) should pursue federal funding for manufacturing capabilities for electrolyzers and fuel cells, to further advance development in the state.**

Stakeholder Feedback

- Nature Conservancy

  To increase transparency and public awareness of federal funding opportunities, the state should create a publicly accessible, searchable database with

  By providing information about hydrogen funding opportunities and transparency around projects, stakeholders and the public can better engage in the development of clean hydrogen projects in Connecticut. This will reflect the states commitment to DEIJ and alignment with state climate goals.

- CCAT

  To attract long standing support for federal funding, CT must clearly show interagency commitment to develop and maintain an integrated clean energy ecology with state policy and incentives

- Working Group Feedback

  Stakeholders would like to know more about the scale of state level programs and the gaps from federal programs (how much is likely to be awarded federally, how much is the match requirement, and how much do we currently have available as match funding at the state level)

Recommendations regarding funding sources for developing hydrogen fueled energy programs and infrastructure

In addition to the IIJA, there is significant funding available for hydrogen in the IRA and other federal opportunities

Category	Federal Funding Component/Program	IIJA/IRA/Othe	Administra	Sub-Admin	Total Funding ($)	Description	Funding Type	Non-Federal Match Requirement	Notes
Manfuacturing	Advanced Energy Project Tax Credit	IRA	Treasury	IRS	$10 million available, 30% of amount invested	Tax credits for the cost of new or upgraded factories to build specified renewable energy components (fuel cells qualify)	Tax Credits (competitive application)		
Manufacturing	Advanced Technology Vehicle Manufacturing	IRA	DOE	Loan Programs Office	$3 billion	Expands authorities to lend under this program, which aims to produce advanced technology for medium and heavy-duty vehicles, trains or locomotives, maritime vessels, aircraft, or hyperloop technology	Loans	None	Available through 2028
Aviation	Airport Infrastructure Grant Program	IIJA	DOT	Federal Aviation Administration	$15 billion	Grants for airport infrastructure projects that increase safety and expand capacity	Competitive Grants	None	
Aviation	Airport Terminal Program	IIJA	DOT	Federal Aviation Administration	$5 billion	Grants for airport terminals including replacing aging terminals and airport-owned control towers	Competitive Grants	None	
Aviation	Alternative Fuel and Low-Emission Aviation Technology Program	IRA	DOT		$46.5 million	Support projects related to low-emission aviation technologies, a broadly defined term that encompasses any technologies that improve fuel efficiency, increase the utilization of SAF, or reduce aircraft emissions	Competitive Grants	None	Available through 2027
Heavy Duty Trucks Buses	Alternative Fuel Refueling Property Tax Credit	IRA	Treasury	IRS	6% base, 30% with added requirements	Tax credits for the cost of an alternative fuel vehicle refueling property. Property must be sited within a low-income or rural censust tract area	Tax Credits		Valid for any property placed in service before 2033; includes direct payment
Cargo Ships Materials Handling	America's Marine Highway Program Grants	IIJA	DOT	Maritime Administration	$25 million	Develop and expand marine highway service options and facilitate their further integration into the current U.S. surface transportation system	Competitive Grants	20%	Private sector can receive grants with a public sponsor
Critical Facilities	Building Resilient Infrastructure and Communities	IIJA	DHS	FEMA	$1 billion	Pre-disaster mitigation program supporting states, local communities, tribes and territories undertaking hazard mitigation projects to reduce the risks they face from disasters and natural hazards.	Competitive Grants	25% typically, 10% for small and impoverished communities	
Workfoce Development	Building, Training, And Assessment Centers	IIJA	DOE	Energy Programs	$10 million	Grants to institutions of higher education to establish building training and assessment centers to educate and train building technicians and engineers on implementing modern building technologies.	Grants - Unknown	Unknown	Available until expended, estimated application opening date, 4th quarter 2022, in RFI
Heavy Duty Trucks	Carbon Reduction Program	IIJA	DOT	Federal Highway Administration	$6.4 billion	Supports the development of alternative fuel vehicles, including: publicly accessible H2 fueling and zero-emission construction equipment and vehicles (incl. supporting facilities).	Formula Grants	20% typically, 10% for interstate	Available through 2026
Heavy Duty Trucks Light Duty Vehicles	Charging and Fueling Infrastructure Grants	IIJA	DOT	Federal Highway Administration	$2.5 billion	Support development of alternative fueled infrastructure, including hydrogen fueling stations, along designated corridors.	Competitive Grants	20%	
Heavy Duty Trucks Light Duty Vehicles	Congestion Mitigation & Air Quality Improvement Program	IIJA	DOT	Federal Highway Administration	$13.2 billion	Continues the existing Congestion Mitigation and Air Quality Improvement Program to provide a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act in nonattainment areas and for former nonattainment areas that are now in compliance (maintenance areas).			
						Supports the replacement of existing Class 6 and Class 7 trucks			

Robust stakeholder participation has helped to highlight highest priority hydrogen end uses

Highest Priority for Additional Investigation

- Critical facilities (24-hour backup need)
- Aviation (long- and medium-haul)
- Transoceanic cargo ships
- Material handling equipment with long uptimes and charging space constraints
- Long-haul heavy duty trucks
- Fuel cells for peak power generation
- High heat industrial processes

End uses that have high potential to drive demand over long term due to scale and/or underlying economics

Included in demand analysis

High Priority for Additional Investigation

- Long-distance buses
- Harbor craft (e.g. ferries)
- Freight rail
- Fleet vehicles with long uptimes and specific refueling locations
- Heavy duty vehicles with charging constraints (e.g. drayage trucks, some commuter buses)
- Hydrogen blending for non-core customer (i.e. power generation and industrial heat)

Smaller-scale end uses that can provide first-mover projects and/or be integrated into larger hydrogen hubs

Not included in demand analysis

Other Potentially Valuable Applications

- Hydrogen blending for core customers (e.g. commercial and residential)
- Buses and other heavy-duty vehicles with shorter driving ranges and no charging constraints
- Privately-owned light-duty vehicles
- Low heat industrial processes
- Short-haul aviation

End uses that can be kept "in view" as economics for at-scale hydrogen delivery change over time

Not included in demand analysis

Recs

Connecticut should consider the following to best support the development of hydrogen fueled energy programs and infrastructure

- DEEP and PURA may wish to consider promoting the use of hydrogen end uses that are currently commercially viable through the existing clean energy programs. PURA's consideration should include how any changes would affect the programs' existing objectives and cost-effectiveness.
- Legislature should consider tax exemptions for hydrogen vehicles and critical facilities that produce or use clean hydrogen.
- DEEP should identify and potentially expand clean transportation incentives to include on-site port handling equipment, harbor crafts, and ocean-going vessels in collaboration with other state and federal agencies.
- Consider amending requirements for community benefit agreements, through Public Act 21-43, to lower the minimum project size from 2 MW to 1 MW.
- NEW for Disc. UCONN should identify opportunities to support development of the hydrogen workforce and advance early hydrogen technology innovation, and should identify resources and funding needs to implement.
- NEW for Disc. DECD should identify opportunities for tax incentives or programs to support CT's leading fuel cell manufacturing industry (not yet discussed with DECD).
- NEW for Disc. Eligible entities should pursue opportunities under the Inflation Reduction Act.

Stakeholder Feedback

- Working Group Feedback

  Some stakeholders suggested considering increases in caps on existing clean energy programs, which already support fuel cell projects, as these changes could enable deployment to meet decarbonization policy objectives.

  Although additional tax credits are available for siting facilities in "energy communities" and low-income communities to create economic opportunity and enable adoption of clean energy, Connecticut should ensure robust community engagement to ensure input on whether communities would like to host these facilities.

  Participants commented that they would like to understand how confident fuel cell manufacturers feel in their ability to meet domestic content requirements.

  Shared the idea that include the potential of a future bond issuance from the legislature, which could provide matching grant funds to a project if awarded, paid for through taxpayers.

- Continued interagency coordination and clear policy commitments will be key to obtain competitive federal funding and demonstrate Connecticut's demonstrated commitment to hydrogen deployments.

Stakeholder Feedback

- Eversource:
  - 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.
  - Much of federal funding goes towards the production of clean H2. The state can work to remove barriers to customer adoption including workforce training and foster 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.
- Fuel Cell Energy
  - State should consider how it can support manufacturing of hydrogen generating technologies up to and including incentives to expand in-state manufacturing, transport, fueling and storage infrastructure, and how to incentivize end users
  - Fund pilots & Beyond pilots, the state should implement commercial applications at state owned/funded facilities to spur manufacturing scaleup and drive down cost.
  - If the state is successful in securing a DOE hydrogen hub or hubs, the state should consider assisting local manufacturing companies with their portion of the cost share in deploying their technologies in support of the hydrogen hub(s).

Opportunities for Further Engagement

Reminder: Next Steps

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Other recommendations can be discussed in other Working Groups

Items Discussed by Funding WG Highlighted in Yellow

Actions to be taken by the Legislature

- Community Engagement and Resources
  - Create a transparent source for municipalities, cities, and other local applicants to access resources, such as match funding and/or application guidance.
  - Provide funding to increase community engagement and decrease burden of engagement on communities.
  - Consider amending requirements for community benefit agreements, through Public Act 21-43, to lower the minimum project size from 2 MW to 1 MW.

- Support for High Value End-Uses
  - Consider appropriating grant funding to support federal match requirements and multi-sector enabling infrastructure, such as public-access fueling stations for trucks, commuter buses, ports, and material handling equipment, etc.
  - Consider tax exemptions for hydrogen vehicles and critical facilities that produce or use clean hydrogen.
  - Evaluate broader policies that would ensure the decarbonization of hard-to-electrify sectors, including aviation, shipping, and industrial processes.

DEEP's role in energy and environmental planning will be a key enabler for a state-wide vision for clean hydrogen

- Hydrogen Production
  - Conduct further investigation to ultimately establish a definition of clean hydrogen that would be most appropriate for Connecticut.
  - Continue to evaluate the sufficiency of zero-emission electricity sources to meet both electric sector decarbonization goals and hydrogen production targets.
  - Consider accounting mechanisms that encourage hydrogen producers to certify the carbon intensity of produced hydrogen.

- Hydrogen End Uses
  - Consider further investigation and the possibility of focused policy and market development support for clean hydrogen production and use in the highest priority end uses.
  - Consider further investigation into high priority hydrogen end uses and the possibility of coordinating support measures with other hydrogen efforts.
  - Explore market-based approaches to incent reductions in the carbon intensity of fuels.
  - Identify and potentially expand clean transportation incentives to include on-site port handling equipment, harbor crafts, and ocean-going vessels in collaboration with other state and federal agencies.

- Ecosystem Engagement
  - Lead interagency and interstate coordination on hydrogen policy development and funding, potentially including the development of a Connecticut hydrogen roadmap and research strategy.
  - Solicit feedback and guidance from the Connecticut Equity and Environmental Justice Advisory Council (CEEJAC) to advance community impact, environmental justice, and energy equity discussions on hydrogen and to support the development of a framework that outlines both a vision and goals for CT's clean hydrogen policies.
  - Develop a state-wide vision for a clean hydrogen backbone and infrastructure development plan in Connecticut, through consultation and engagement with ecosystem stakeholders.

State government agency action is required to determine how to incorporate hydrogen into appropriate planning venues coordinate hydrogen funding and workforce development

PURA

- Evaluate the role of stationary fuel cells for critical backup power and peak power generation and identify approaches to incorporate recommendations into appropriate planning venues.
- Consider whether existing renewable energy, flexible and/or interruptible load tariffs could be applied to electrolytic hydrogen production and determine if a specific electrolytic tariff would be required.

DECD

- Evaluate the need for additional funding for Brownfield Loan and Grant programs to help meet the clean energy needs of the state and its subsequent land requirements.

OWS

- Lead coordination between existing entities to establish a comprehensive program for engagement with local experts to understand workforce development needs and potential specific to hydrogen.
- Partner with local universities with expertise in hydrogen technologies to further advance the development of a skilled hydrogen workforce.

Interagency coordination will be required to address hydrogen infrastructure, safety, and community protection

Infrastructure

- DEEP and PURA may wish to consider promoting the use of hydrogen end uses that are currently commercially viable through the existing clean energy programs. Consideration should include how any changes would affect the programs' existing objectives and cost-effectiveness.
- DEEP and DECD should continue maintaining the Connecticut Brownfields Inventory as a resource for potential developers to identify prospective project sites.

Permitting and Safety

- DEEP should clarify and work with relevant agencies and stakeholders to explore the acceleration of permitting for hydrogen infrastructure.
- State agencies should identify appropriate leads to coordinate on hydrogen safety with local and federal organizations to allow for alignment and clear flow on best practices, policy developments, trainings, and certifications.

Community Protection

- DEEP and PURA should consider implementing an intervener compensation program to increase community participation in hydrogen-related proceedings.
- DEEP and DECD should continue supporting development of clean energy projects on brownfields and projects that have community support and/or have completed community benefits agreements.

Industry and academia will play a key role in developing the hydrogen workforce and supporting ecosystem development

- Eligible entities should pursue federal funding for manufacturing capabilities for electrolyzers and fuel cells, to further advance development in the state.
- Regarding hydrogen infrastructure insurance, steps should be taken to ensure clear rules and policies for hydrogen infrastructure to support insurance industry workforce opportunities.
- UCONN should identify opportunities to support development of the hydrogen workforce and advance research and development in hydrogen electrolyzers and fuel cells, and should identify resources and funding needs to implement

Thank You!

Feel free to reach out with any questions!
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