Meeting Minutes[1]

Monday, October 24, 2022
2:00 p.m. – 3:00 p.m.

The first meeting of the Infrastructure Working Group was held on October 24, 2022.

All participants joined via the Teams conference call.

Task Force Members Present: Samantha Dynowski (Sierra Club), Sara Harari (CT Green Bank), Adolfo Rivera (Avangrid), Lidia Ruppert (Designee - DEEP)

Others Present:
Jordan Ahern (Strategen), Tyler Anderson, Sam Cardwell (Conservation Law Foundation), Erin Childs (Strategen), Liam Daley (Eversoruce), Nina Hebel (Strategen), Andrea Lubawy (Toyota), Trent Molter (Skyre), Collin Smith (Strategen), June Wooding (Eversource)

1. **Call to Order**
   - Collin Smith, a Senior Consultant at Strategen providing technical support for the Infrastructure Working Group, called the meeting to order at 2:05 p.m.

2. **Welcome and Introductions**
   - Mr. Smith provided an overview of the meeting agenda. Mr. Smith prompted each participant to introduce their name and organization.

3. **Review of Working Group Schedule**
   - Mr. Smith provided an overview of the Working Group meeting schedule for the coming months. He noted that the next Infrastructure Working Group meeting would be held on November 17, 2022.

4. **Overview of Hydrogen Infrastructure**
   - Mr. Smith provided a general background regarding hydrogen pipelines. He noted common pipeline characteristics for the effective and safe transport of hydrogen. He also noted that only a small number of hydrogen pipelines are currently installed in the United States.
   - Mr. Smith outlined the importance of hydrogen pipelines, noting that they are the most economic delivery option for hydrogen. He noted that while pipelines are the most cost-effective means of transport, compared to alternatives such as liquification and trucking, initial capital costs are still high.
   - Mr. Smith noted the key considerations regarding pipeline installation, including safety and right of way permitting.

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

- Mr. Smith discussed introduced the concept of fugitive hydrogen emissions and discussed current research developments relating to fugitive emission concerns associated with hydrogen. He related this information to comparative emissions of different regulation scenarios and natural gas usage. Mr. Smith also discussed other regulation implications such as federal-level jurisdiction, in addition to best practices relating to hydrogen leakage rates.
- Samantha Dynowski requested additional information regarding the costs for the installation of hydrogen pipelines, citing large amounts of variability under different scenarios.
    - Mr. Smith confirmed that source information could be circulated after the presentation and that the presented assumptions are subject to change.
- Sara Harai asked if the installation process and workforce needs for hydrogen pipelines are similar to those of gas pipelines.
    - Mr. Smith responded that the skillsets associated with pipeline installation could be directly transferred to the hydrogen ecosystem and there are not additional training or workforce needs to his knowledge.
- Mr. Smith provided background regarding hydrogen storage. He provided an overview of geological storage options and noted various examples of geologic storage in operation nationwide. Mr. Smith presented a map of salt caverns in the country, noting potential options in New York for regional use.
- Mr. Smith discussed the cost structure of hydrogen storage, noting that like pipelines, storage has high upfront costs with minimal operational costs.
- Mr. Smith briefly discussed additional storage options, including aquafers and depleted oil and gas reservoirs. Mr. Smith noted that these options were less mature than geologic storage options and identified salt cavers as the primary medium for current hydrogen storage.

5. Discussion and Next Steps

- Adolfo Rivera raised a question regarding infrastructure needs at the electrical level. He cited the need for increased investment in electrical infrastructure to support the production of green hydrogen.
    - Mr. Smith noted that this is in the scope of the Working Group and could be investigated in future meetings.
    - Andrea Lubway noted that hydrogen has the ability to store intermittent renewables when being produced from curtailed renewable energy leading to reduced need for electrical infrastructure.
        - Mr. Rivera responded that there are applications in which additional infrastructure will be required, such as a grey-to-green transition, and mobility applications.
        - Mr. Smith added there are numerous different ways to utilize hydrogen in a renewable ecosystem, and an assortment of implications will be studied.
- Ms. Dynowski mentioned that co-location is a desirable approach to siting generation. Ms. Dynowski added that this configuration should be considered across Working Groups.
    - Erin Childs noted that currently hydrogen is primarily transported by trucking. She reiterated Ms. Dynowski's perspective regarding co-location, identifying it as a configuration that will enable lower delivered costs.

- Ms. Childs asked Mr. Smith to discuss the efforts of the Sources and Uses Working Groups to understand how these efforts were consistent with those of the Infrastructure Working Group.
    - Mr. Smith noted that the Uses Working Group is identifying priority end uses for hydrogen. He explained that these end uses will be tiered and infrastructure maps will reflect both where hydrogen can best be used in addition to how much hydrogen can be produced and used.
- Ms. Lubawy inquired where in the process the conclusions made in the analysis will be aligned with expectations and plans from local stakeholders.
    - Mr. Smith responded that while assessing demand, local stakeholders will be contacted to get a better sense of how much hydrogen they may expect to consume.
    - Ms. Childs responded noting the aim to identify offtakers who have an early interest in use of hydrogen to enable market development.

3. Adjourn

- Mr. Smith adjourned the meeting at 3:02 p.m.