

Tribal Webinar Follow-Up Q&A

The Pacific Northwest Hydrogen Association's Community Benefits team hosted a webinar on Monday, October 21, 2024, from 11 a.m. to 12 p.m. PST to share details of the Hub's plans for Phase 1 and engagement efforts with tribes and Tribal leaders. To view the webinar recording, please visit our [YouTube page](#).

During the webinar registration process and throughout the live webinar, we received 12 questions from attendees. We were only able to answer a few select questions in the webinar presentation. This Webinar Follow-Up Q&A includes responses to the remaining questions we received.

For any further questions, please contact us at info@pnwh2.com.

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Tribal Impact & Interests

- **Q: Have you identified any Marine H2 Tribal interests? Is there Tribal interest in taking on H2 distribution?**

A: We are now in the process of gathering and addressing Tribal interests. Currently, we have not received specific Tribal interest in Marine H2 or H2 distribution. If this is of interest, Tribes are encouraged to reach out to the PNWH2 team via the [contact form](#) or by emailing tribal.relations@wsu.edu.

- **Q: Education heavy in environmental STEM for Tribal Nations would be nice to see.**

A: Education is a central facet of the PNWH2 Hub. The Hub will be developing STEM-based education programs from K-12 through college to ensure a pipeline of trained and qualified workers to build, then operate and maintain the Hub’s hydrogen projects. The Hub plans to foster a diverse workforce through an Education & Training Coalition, which includes MSIs and Tribal Colleges.

Project partners, who have been engaging with local communities for many months, will build on this groundwork with extensive community engagement in Phase 1.

Each project is continuing to pursue commitments supporting student education, fair wages, and hiring practices with an emphasis on local labor and materials, as well as robust stakeholder engagement to keep groups apprised of project development status.

Community Benefits Plan

- **Q: Will County Public Health Officers be on the Community Advisory Boards (CABs)?**

A: The PNWH2 Hub Nodes/projects will be reaching out to their respective communities for nominations of people to serve on the Community Advisory Boards (CABs). The board's membership will be representative of the host's (node) community location. The CAB membership will be identified publicly for the community, including at a minimum on the PNWH2 Hub website. Membership should be revised as further project details are finalized or developed. More information on how to submit nominations will be forthcoming.

- **Q: Please discuss health risk analysis (separate, above, beyond NEPA) to be conducted, by whom, to assess the risks to H2 workers and communities living nearby.**

A: Throughout the life of the Hub, several actions will be taken to protect workforce and local community health. Phase 1 actions include: outlining plans to engage workers in design, implementation, and execution of workplace safety and health plans; developing a plan for how projects will conduct citizen science, third-party, or project-led baseline air quality monitoring (e.g., criteria air pollutants) in Phase 2 and share the results; and conducting a preliminary Justice40 assessment that initially identifies potential benefits and burdens, including economic, environmental, health, and social impacts and proposes initial strategies to maximize benefits and avoid, minimize, and mitigate the negative impacts on disadvantaged communities.

In addition to the NEPA and SEPA processes, key Hub deliverables include a comprehensive safety plan that specifically addresses hydrogen safety, to be reviewed by the Center for Hydrogen Safety's Hydrogen Safety Panel. Any potential adverse environmental impacts will also be addressed through environmental permitting actions that will occur as the projects approach construction approval.

Projects & Partners

- **Q: Will the Hub projects use significant amounts of water?**

A: Around 18 kilograms, or a little less than 5 gallons of water is needed to produce one kilogram of hydrogen. Producing green hydrogen via electrolysis requires additional water for cooling and maintenance. The electrolyzer technology that will be

used to produce hydrogen in the PNWH2 Hub can use recycled water from wastewater treatment plants or desalinated seawater hydrogen, reducing the need for freshwater.

The entire PNWH2 Hub would use roughly 3 Olympic swimming pools' worth of water a day, which is about the same as 200 acres of typical irrigated farmland in the Pacific Northwest region. So, while it's significant water use, it's not inconsistent with other existing uses. Each project in the Hub is working to secure water rights and will comply with relevant regulations on water use.

- **Q: What is your timeline to bringing H2 service stations online?**

A: Based on the timeline outlined by the U.S. Department of Energy for the H2Hubs, we expect to have H2 ready for purchase as early as 2028.

- **Q: Please discuss advantages of rail locomotive H2 use.**

A: There are many pros to hydrogen for rail for reducing emissions, but presently the cons include cost and availability of fuel which will take some time to impact. The Regional Clean Hydrogen Hubs program is the first part of accelerating this new hydrogen market which will alleviate those issues.

Specific pros are that hydrogen trains:

- Produce zero emissions and are highly productive – longer range than batteries, faster refueling than re-charging batteries.
- Would fall under technologies that use liquid hydrogen carriers, such as methylcyclohexane, formic acid, potassium formate, ammonia and methanol rather than compressed or liquid hydrogen that are being developed. These solutions can address some of the challenges associated with cryo-compressed or liquid hydrogen for inter-city transport, or compressed hydrogen for transit.

- **Q: Any wind and hydroelectric hydrogen plans?**

A: The PNWH2 Hub will use all aspects of the PNW's clean power grid capacity, including electricity generated by wind and hydroelectric sources.

- **Q: How can we learn more about partnership opportunities with the Hub?**

A: All open RFP opportunities with the PNWH2 Hub will be posted on our [Careers & Opportunities](#) page as well as shared via our [LinkedIn page](#) and through our PNWH2 newsletter, which you can sign up for on our website at <http://www.pnwh2.com/>.

Hydrogen Production & Transmission

- **Q: How much water vapor is emitted by the H2 electrolysis processes?**

A: When 1 kilogram of H₂ (the amount that has the approximate energy level of 1 gallon of gasoline) is oxidized (burned or recombined to recover its electrical energy), 18 kilogram of H₂O is created. Not all of this will be in the form of water vapor; it depends on the process used, and what downstream treatments may occur (e.g., condensers to convert water vapor to liquid).

- **Q: Electrolysis requires lot of new electricity. From where?**

A: Access to electricity and transmission capability is a key issue that needs to be addressed by our projects as they move forward through the development phases.

While it does take significant energy inputs to produce green hydrogen, the PNWH₂ Hub will take advantage of the abundant renewable energy in the Pacific Northwest to power our projects. We expect that the growth in hydrogen production and use will be accompanied by growth in new renewable capacity and transmission systems across the region. Our projects are working closely with renewable electricity project developers to ensure a stable, growing supply of clean energy is available to meet hydrogen production needs.

- **Q: Can you discuss H2 distribution via trucking?**

A: We are still determining the transportation logistics for each project. Some projects will produce hydrogen on-site for immediate use, so no transportation is required. At other projects, the hydrogen will be moved to point of use. For that, we currently plan on using various methods. Primarily we will use compressed hydrogen in tube trailers, but we also plan on short new hydrogen pipelines as well as possibly doing hydrogen liquefaction. We will not be blending hydrogen into any natural gas pipelines.