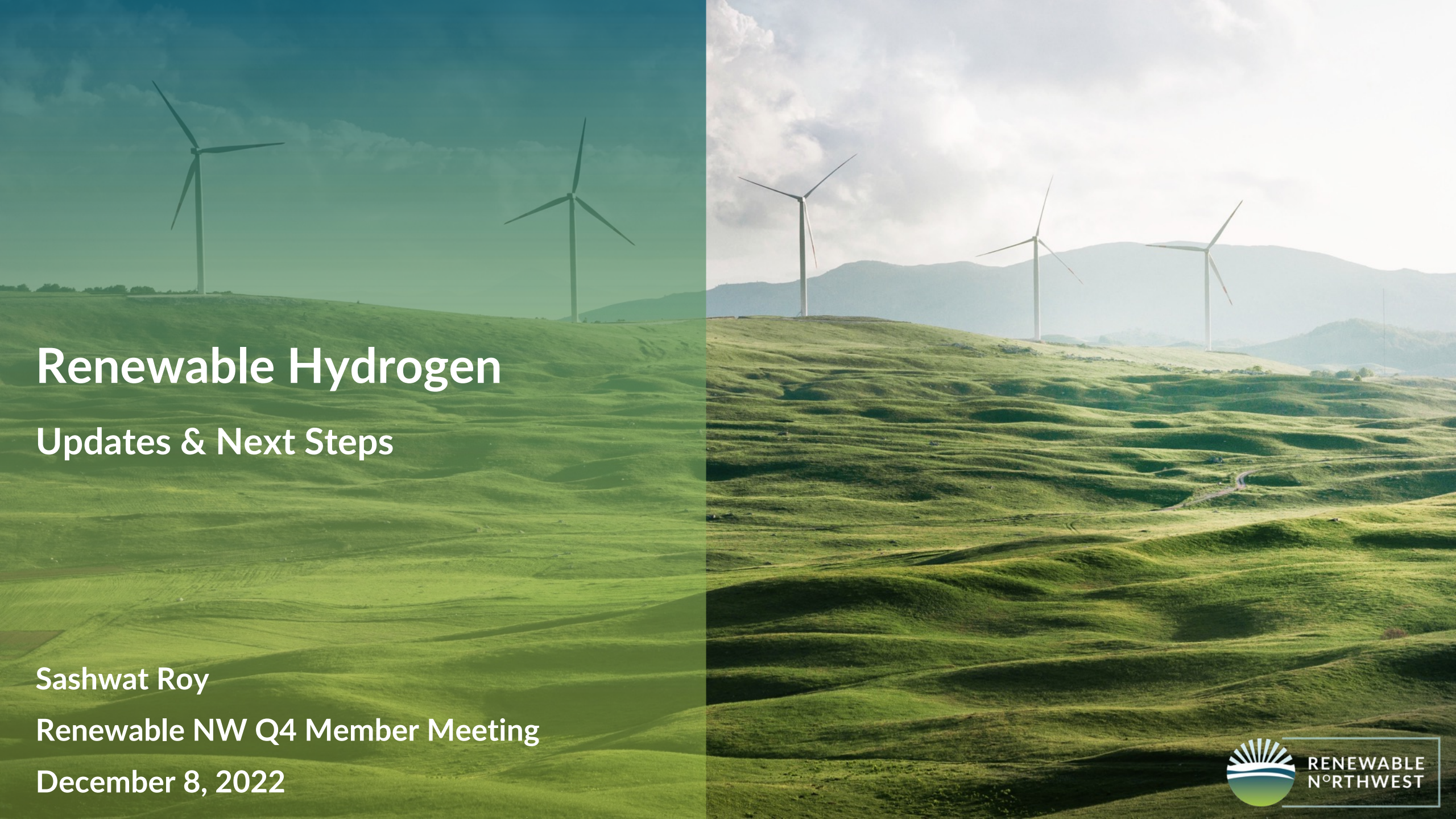

Renewable Hydrogen

Updates & Next Steps

Sashwat Roy

Renewable NW Q4 Member Meeting

December 8, 2022

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OR SB-333 RH2 REPORT TO LEGISLATURE

- Study and synthesize the opportunities and challenges associated with the production and consumption of renewable hydrogen in Oregon to inform the State Legislature and other interested parties.

"….likeliest end uses for renewable hydrogen in Oregon by 2030 will be, in relative order of value, as a substitute for fossil hydrogen, to create high-temperature heat for industry, medium- and heavy-duty transportation, production of chemicals (including fertilizer), energy storage, back-up power, electricity generation, and blending into the natural gas pipeline."

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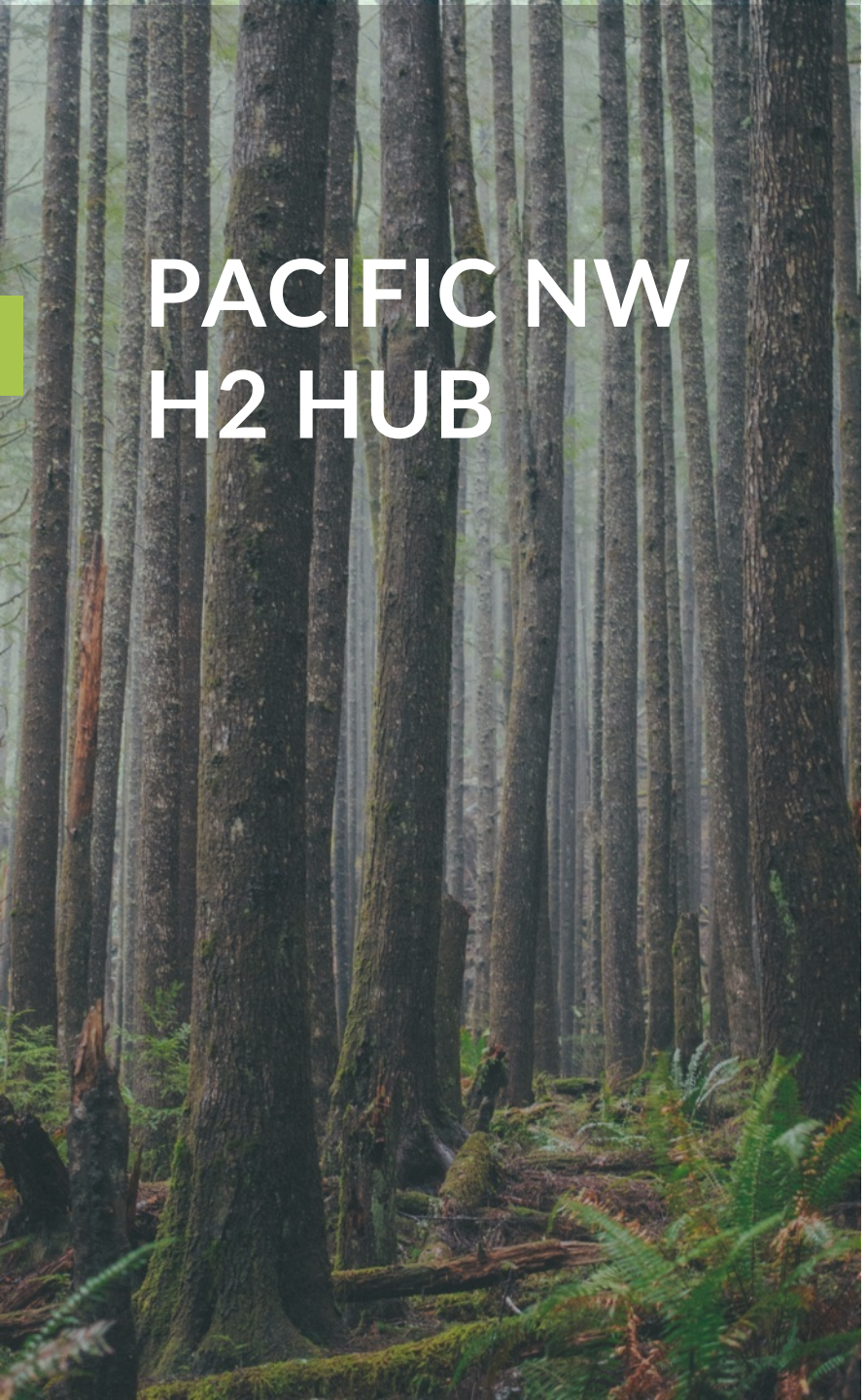

PACIFIC NW H2 HUB

Recap:

- $7B opportunity for 6-10 H2 hubs (IIJA)
- WA & OR collaboration (WA Dept. of Commerce leading)
- PNW H2 Association set up. RNW part of Advisory Committee.

Updates:

- Multiple RFIs on potential projects.
- Concept paper submitted on November 7
- Next step would be Advisory and Board meetings to discuss the final proposal.
- Developers are encouraged to participate in the Advisory Committee.
- Final Proposal due next March/April.

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HYDROGEN IN INTEGRATED RESOURCE PLANNING

- Mostly consider 5-10% hydrogen blending with natural gas in the near-term.
- Hydrogen-capable power plants have an increased CAPEX.
- Increase in O&M due to high fuel costs (will gradually ⬇ with IRA)
- Discussion of risks including combustibility and leakage risks.
- Not suitable for power generation applications in the near-term (might change in 2030s with tech. advancements + IRA credits)

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HOW DOES IRA CHANGE THE DYNAMICS?

- Section 45V PTC - The value of this credit varies depending on the clean hydrogen's lifecycle carbon intensity
  - $3.00 per kg of hydrogen for the least carbon-intensive hydrogen
  - $0.60 per kg of hydrogen for the most carbon-intensive, yet still qualifying, clean hydrogen.
- The credits previously available to the industry "were relatively small compared to the impact" of the new hydrogen production credit.
- The credit amount decreases the more lifecycle greenhouse gas emissions are emitted during production, with the credit cutting off once the facility produces four kilograms of carbon dioxide equivalent per kilogram of hydrogen.

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NEXT STEPS

- Continue to engage in the PNW H2 Hub effort (Advisory Committee)
- Convene a H2-focused group to work on updating RNW principles.
- Continue to engage in regulatory dockets and IRPs to ensure H2's cost and characteristics are appropriate to align with decarbonization goals.

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CONTACT

Sashwat Roy
Technology & Policy Manager
Renewable NW
sashwat@renewablenw.org