# State of Oregon
# House Committee on Energy and Environment
# Public Hearing – HB 2535

3/24/2021

Kris Nelson, Oregon Policy Subcommittee chair

Renewable Hydrogen Alliance

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# Our Mission

Renewable Hydrogen Alliance promotes using renewable electricity to produce climate-neutral hydrogen and other energy-intensive products that reduce dependence on fossil fuels.

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# RHA is an Oregon-based trade association with 70+ members from diverse industries in multiple Western US States & Canada:

Utilities (gas and/or electric)

Manufacturers

Clean Energy & Clean Transportation Advocacy Groups

Native American Tribe

Project Developers

Law Firms

Consultants & many more

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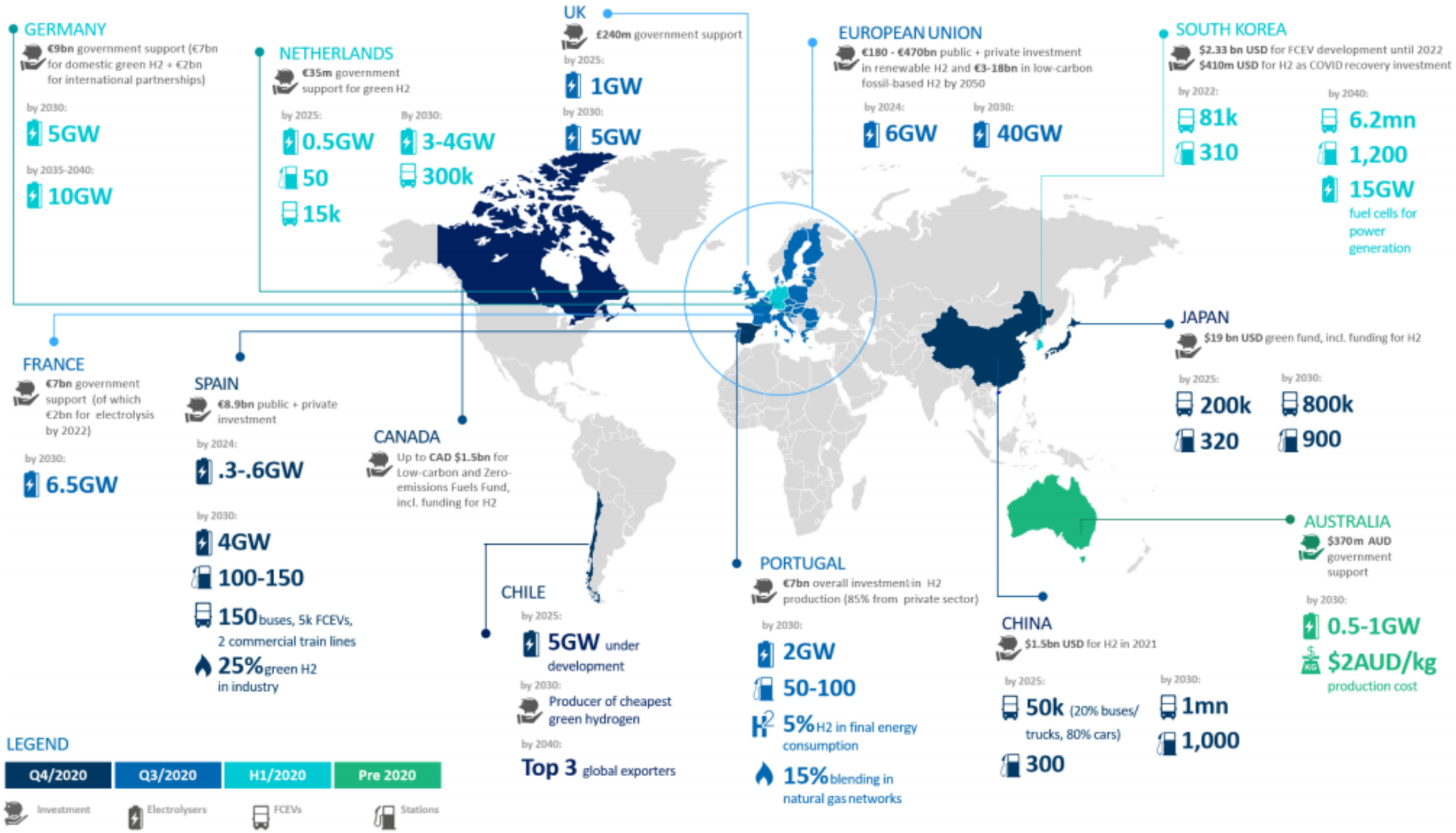
# Global Hydrogen Industry Profile

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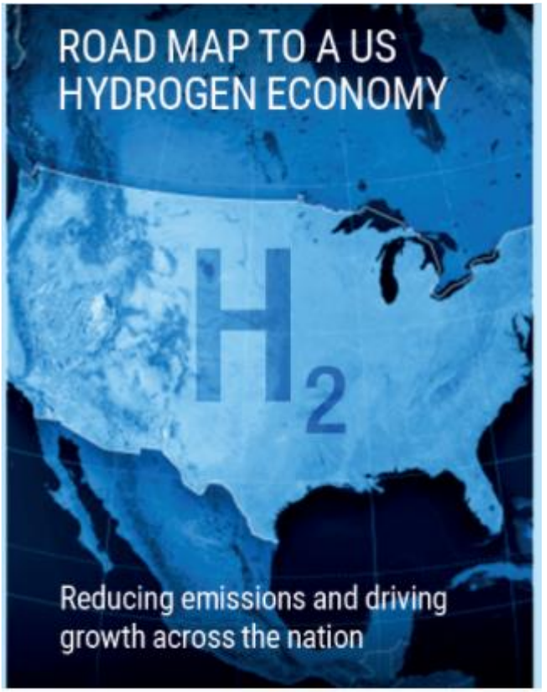
Source: FTI Consulting, Dec 2020

# National (Renewable) Hydrogen Industry Profile

- Biden's climate plan includes developing green hydrogen cheap enough to fuel power plants within a decade.
- Hydrogen could enable a market of $750 billion per year with 3.4 million new jobs ("Road Map to a US Hydrogen Economy," McKinsey & Co.).
- About 3 GW in hydrogen-fueled gas plants are under Mitsubishi Power contracts in Utah, New York, Ohio, and Virginia and use 30% renewable hydrogen with storage.

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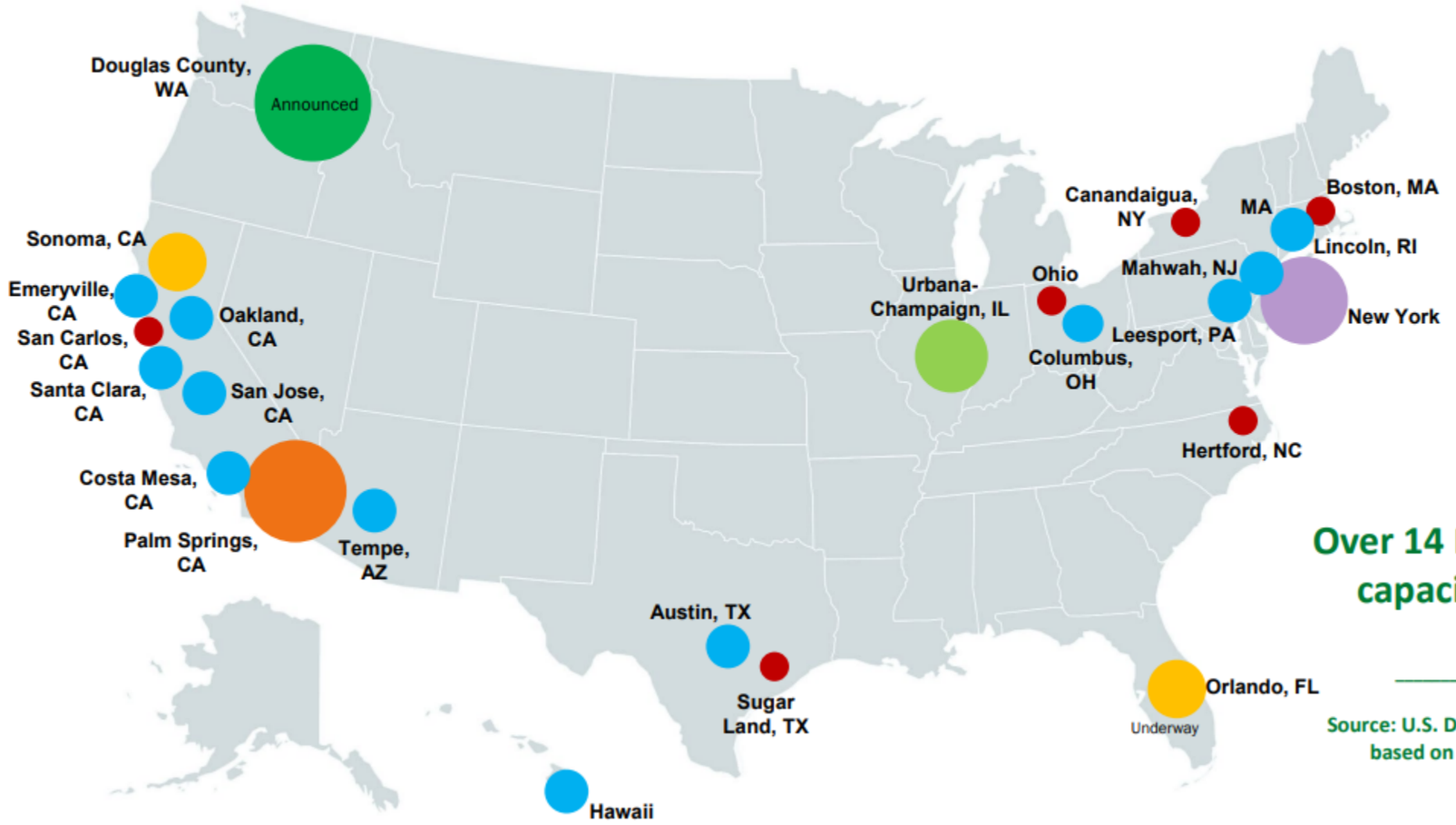
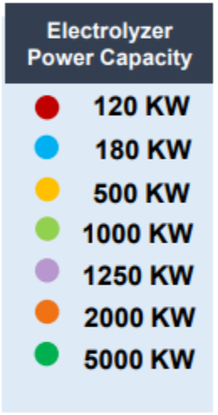
# U.S. Hydrogen Electrolyzer Locations and Capacity (KW)




**Over 14 MW in PEM* electrolyzer capacity installed/underway across the U.S.**

Source: U.S. DOE Hydrogen and Fuel Cell Technologies Office based on manufacturer input and publicly available information – October 2020

* Polymer electrolyte membrane

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# Oregon's Predicament:  Power Storage

- Oregon is endowed with a rare mix of renewable energy resources:  abundant wind, solar, wave, biomass, geothermal. Surplus renewable energy is wasted.
- As we strive to achieve our Renewable Portfolio Standard (RPS), the need for utility-scale, long-term power storage rises:  generation times don't match demand.
- Battery storage is only cost-effective for short-term load balancing.
- Other renewables-driven economies are investing heavily in renewable hydrogen production for storage: California, Japan, Germany, Spain, China, Australia, Chile, etc.
- If Oregon produces renewable hydrogen from 10 percent of its renewable portfolio, we can probably replace fossil fuel generation. Potential to export ren. hydrogen.

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# How does renewable hydrogen fit into a clean environment?

- To achieve Oregon's greenhouse gas reduction (GHG) targets and its renewable portfolio standards (RPS), renewable hydrogen would bridge gaps in renewable power generation and fossil fuel replacement.
- An additional build-out of renewable energy sources is not required to create renewable hydrogen due to existing untapped renewable energy surpluses. However, as Oregon is on a path to expand renewable energy sources, Oregon will have even more unused renewable energy surpluses that could be turned into renewable hydrogen.
- Renewable hydrogen can be used as a replacement fuel for gas plants, as a fuel for fuel cell electric vehicles (FCEVs), heating, and manufacturing:  cross-sector carbon cuts.
- Renewable hydrogen deployment enables climate justice:

→fixes toxic emissions in disproportionately impacted areas.


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# Hydrogen System

**Production**

- Electrolysis → Electrolyzer

**Transportation/ Delivery**

- On-site production + use
- Existing gas pipelines
- Mobile delivery (trucks)

**Use**

- Transportation and fuel cells
- Vehicles, H2 fueling stations, materials handling
- Chemical feedstock (fertilizer, cement, steel manufacturing)
- Grid electricity/ energy storage


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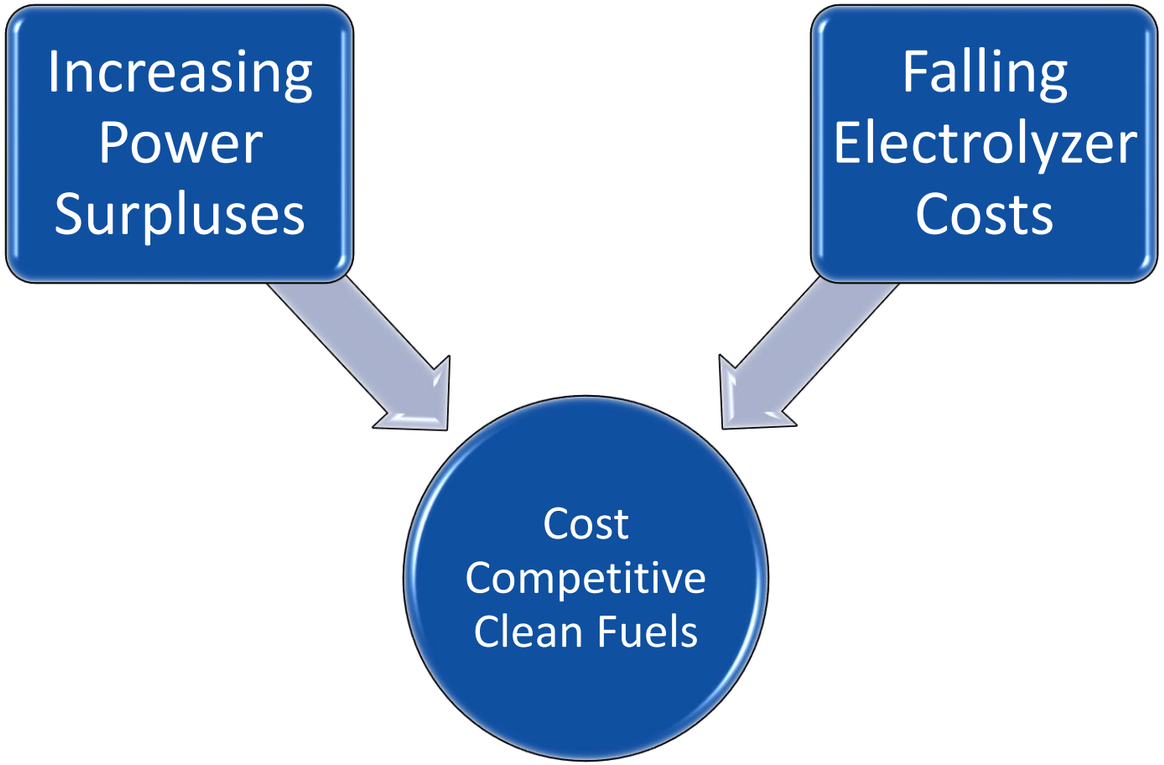
# What's all the hype about it?




**Increasing Power Surpluses**

Increasing dependence on variable resources (wind and solar) is causing large energy surpluses in the wholesale market.

**Falling Electrolyzer costs**

The technology to make clean fuels from electricity is well-established, but recent industrial-scale development in Europe is slashing the cost, making it an attractive option for the US.

**What do investors say?**

*Morgan Stanley*: "As renewable energy capacity demand increases and prices drop, the cost of hydrogen production by 2030 could **drop by 70%** from current levels."

*Bloomberg New Energy Finance*: Green hydrogen costs' can hit **$2/kg** benchmark ' by 2030.

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# HB 2535 – Temporary Property Tax Exemption for Hydrogen Systems

"Exempts from ad valorem property taxation property constituting hydrogen system used to produce hydrogen by electrolysis or from renewable natural gas. Sunsets on January 2, 2027."

- → A temporary property tax exemption will help spur the development of this industry.
- → A commitment to jobs and payroll in the state.
- → Similar incentive as already provided to other renewable energy developers in the State of Oregon. For example, ORS 307.175 provides a property tax exemption for various renewable energy systems but excludes electrolytic hydrogen and renewable natural gas systems.
- → Ensures reliability and resilience of our regional system.
- → Provides an opportunity for Oregon to become the hub for renewable hydrogen across the nation, and therefore, attract greater investment and opportunities from affiliated industries.
- → Provides the State of Oregon a competitive advantage as developers are evaluating investment sites across the West Coast. Washington and California have recently passed favorable legislation to help the renewable hydrogen industry succeed.
- → Aligned with the governor's executive order EO 20-04. Such deployments will accelerate the transition to clean energy and fuels, reduce greenhouse gas emissions, and position Oregon as a regional leader of a clean fuels sector.

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# -2 Amendment

The Renewable Hydrogen Alliance proposes the following substantive revisions:

- (1)(a) ‘Low-carbon fuel or electricity’ means fuel or electricity produced in a process emitting not more than 10 percent of the average annual tons of carbon gases that were emitted by combined cycle natural gas plants first placed in service in Oregon on or after January 1, 2016….
- (1)(b) ‘Low-carbon hydrogen’ means hydrogen produced using renewable or low-carbon fuel or electricity for at least 60 percent of the energy used in the primary production process.
- “(2)(a) Property constituting a system used to produce low-carbon hydrogen by electrolysis or from renewable natural gas is exempt from ad valorem property taxation.
- “(b) Such property includes, but is not limited to:
- “(C) Equipment used to transport the low-carbon hydrogen by vehicle or trailer, provided such use of the equipment exceeds 80 percent of the total use of the equipment, as measured by hours of use; and
- “(D) Equipment used to transport the low-carbon hydrogen by pipeline directly from the electrolyzer to a customer over a total distance of less than 10 miles, as measured by the length of the pipeline.

# RHA welcomes your questions and comments.

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