

Hydrogen Storage Cooperative Research and Development Agreement Authorization

Port of Seattle Commission
April 26, 2022



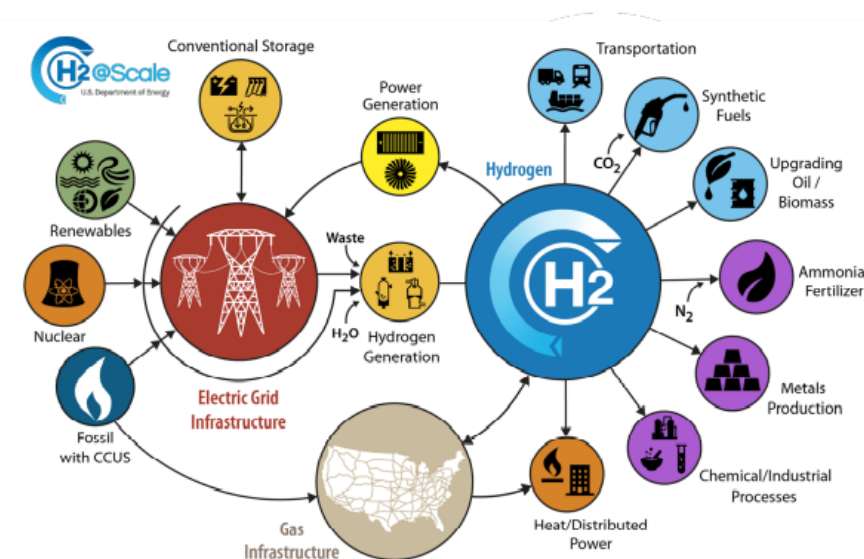
Request

Authorization for the Executive Director to enter into an inter-agency Cooperative Research and Development Agreement (CRADA) for a Hydrogen Storage Risk Assessment with Pacific Northwest National Laboratory (PNNL), Sandia National Laboratory, and Seattle City Light.

Cooperative Research & Development Agreement

- Funding through US Department of Energy – “Hydrogen at Scale” program and “Hydrogen Earthshot” initiative
- \$1.1 million total project cost
- Partner contributions to PNNL:
 - \$35,000 Port of Seattle
 - \$75,000 Seattle City Light
- Start Q2 2022, runs 24 months

H2@Scale: Enabler for Deep Decarbonization across Sectors and Jobs



Key Opportunities

- **Industry and Chemicals**
Steel, ammonia, cement, syn fuels (e.g., aviation), exports
- **Transportation**
Trucks, marine, buses, etc.
- **Power and Energy Storage**
Long duration storage, NG blending, turbines, fuel cells

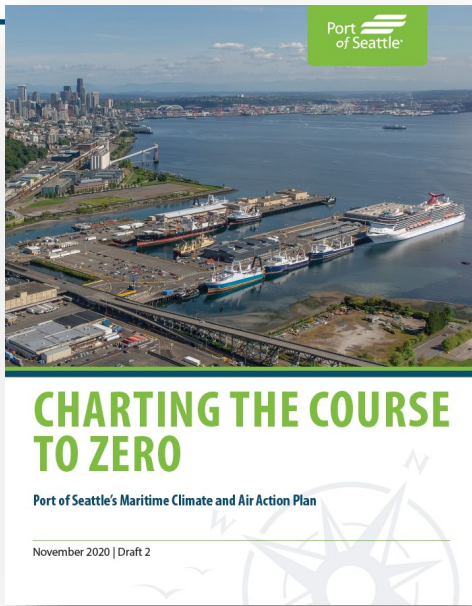
U.S. Snapshot

- 10 MMT of H₂/yr produced today with scenarios for 2-5X growth.
- +10 MMT H₂ would ~ double today's solar or wind deployment
- Potential for 700K jobs, \$140B by 2030

Context: Exploring Clean Fuels is Part of the Port's Climate Strategies

Maritime Climate and Air Action Plan (MCAAP)

- Port implementation plan to achieve NW Ports Clean Air Strategy and Century Agenda Goals



Seattle Waterfront Clean Energy Strategy

- Enabling infrastructure to facilitate Port & Industry transition to zero emissions fuels and technologies
- Optimize power grid resources
- Financial, policy and business models for successful implementation

Related National Lab Studies:

- Networked Microgrids
- Medium/Heavy Duty Fueling Hydrogen Node
- **Hydrogen Storage Risk Assessment**

Scope

- Energy storage at end-use locations
- Risk assessment of large volume storage in urban industrial setting
- Generation, conversion and storage technologies
- Operational use case analysis (widespread heavy-duty vehicles, energy storage, grid support, maritime fueling)
- Cyber security assessment
- Use of risk assessment products for education and stakeholder engagement



Schedule

Activity

Inter-agency Agreement Authorization

Data Collection, Risk Model Development

Participant Workshop

Preliminary Risk Analyses, Project Integration

Final Report to DOE

Timing

April 26, 2022

2022 Q2 -2023 Q1

2023 Q1

2023 Q2-Q4

2024 Q1