



IPHE Country Update March 2024: United States

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1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

- In December, there were various developments at the federal government level related to the Clean Hydrogen Production Tax Credit (45V):
 - The Department of Treasury and Internal Revenue Service released a [notice of proposed rulemaking](#) (NPRM) for public comment.
 - The Department of Energy (DOE) released [resources](#) to support the determination of emissions rates including the 45VH2 GREET model, which uses lifecycle analysis to evaluate well-to-gate carbon intensities of selected hydrogen production technologies.

2. Hydrogen and Fuel Cell R&D Update

- DOE issued a [technical program record](#) documenting electrolyzer cost data gathered from applicants to the Regional Clean Hydrogen Hubs program. The report indicates an average estimated installed cost of ~\$2,100/kW across applicant projects (average size 350 MW).
- DOE hosted a [workshop](#) on R&D advances in electrolyzer installation technologies and methodologies, and in early March published a subsequent [detailed report](#) outlining the information gathered for stakeholder-sharing purposes.

3. Demonstration, Deployments, and Workforce Developments Update

- DOE [published](#) a 2023 recap that includes major clean hydrogen milestones achieved throughout the year. Highlights include the release of the first [National Clean Hydrogen Strategy and Roadmap](#), the [Regional Clean Hydrogen Hubs](#) launch, the [Hydrogen Interagency Task Force](#) creation, and progress on international collaboration activities including US support for a [declaration of intent](#) on mutual recognition for hydrogen certification as well as the rollout of the [H2 Twin Cities 2023](#) program.
- In October during a visit to Philadelphia, President Biden alongside Energy Secretary Jennifer Granholm [announced](#) \$7 billion in funding to support 7 clean hydrogen regional hubs (H2Hubs) to enable market lift off and to support the National Clean Hydrogen Strategy.
- In February, DOE [published](#) a spotlight feature on L’Innovator, a novel program that unites hydrogen fuel cell-focused commercial entities and national lab researchers around lab-



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generated inventions and related intellectual property to create demonstration products and manufacturing processes that accelerate commercial viability of new technologies.

4. Events and Solicitations

- In December at COP28 in Dubai, the U.S. joined over 30 countries in a declaration on mutual recognition for hydrogen certification. Deputy Secretary David Turk also announced the findings of a Hydrogen Shot report providing an assessment of the cost of producing clean hydrogen from thermal conversion of fossil and/or waste feedstocks (with carbon capture and storage).
- From October to March, DOE hosted monthly "H2IQ Hour" webinars on a range of stakeholder-focused topics, including the HyBlend initiative, the Hydrogen Safety Panel, SHASTA, 45VH2 GREET, and fuel cell backup generators.

5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

- More than \$8 billion in DOE investments and funding opportunities to support, development, demonstration and deployment (RDD&D) of clean hydrogen and fuel cell technologies, including:
 - \$7 billion via the Bipartisan Infrastructure Law (BIL) to support seven regional hydrogen hubs (H2Hubs) catalyzing more than \$40 billion in private investment and the creation of tens of thousands of new jobs. The H2Hubs are a key pillar in the National Clean Hydrogen Strategy.
 - Up to \$1 billion via BIL for a consortium to bridge early demand for clean, provide market certainty and unlock private sector investment. This effort is designed to support the H2Hubs and accelerate commercial lift off of clean hydrogen technologies.
 - \$750 million via BIL to support 52 projects across 24 states to accelerate research, development and demonstration (RD&D) in manufacturing for electrolyzers and fuel cells, as well as related components. These projects will directly support more than 1,500 new jobs.
 - Up to \$59 million to advance RD&D in technologies for hydrogen end-uses, including fueling infrastructure for medium- and heavy-duty transportation; address key challenges to siting, permitting, and installation; and focus on community engagement and an equitable deployment of clean hydrogen systems.
 - Up to \$35 million to support small biomass carbon removal storage pilots, including activities focusing on producing carbon-negative hydrogen from biomass. This was part of a larger DOE announcement of up to \$100 million to support technologies that can enable progress towards DOE's Carbon Negative Earthshot.
 - \$10 million for a hydrogen direct reduction project at a steel plant in Toledo, Ohio. This was part of a larger DOE announcement of \$171 million for 49 projects across 21 states to reduce industrial greenhouse gas emissions and accelerate the development of innovative decarbonization technologies.
 - \$10.5 million for three projects focused on RD&D of hydrogen combustion engines for medium- and heavy-duty transportation.
- Other agencies announced funding related to clean hydrogen and fuel cell technologies including:
 - More than \$90 million to support projects in California, Colorado, and Texas that will deploy clean hydrogen fueling infrastructure for medium- and heavy-duty



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transportation. This is part of a larger announcement of \$623 million by the White House in partnership with the Federal Highway Administration to help build hydrogen refueling and electric vehicle charging infrastructure across America.

- Up to \$2 billion from the Environmental Protection Agency to support projects in disadvantaged communities focusing on reducing pollution, increasing community climate resilience, and addressing environmental and climate justice issues. Hydrogen and fuel cells are a relevant area for this opportunity given their potential to offer zero emissions and resiliency in specific applications.

6. Regulations, Codes & Standards, and Safety Update

- DOE established an interagency agreement with the National Oceanic and Atmospheric Administration to advance climate modelling and measurements to better understand the impacts of hydrogen emissions.
- DOE issued a funding opportunity that included up to \$6 million to support permitting and safety activities for clean hydrogen technology deployment.
- In February, SAE published a technical report to establish high flow fuelling protocols for compressed gaseous hydrogen storage systems applicable to medium and heavy duty vehicles.