



OCTOBER 13, 2023

Biden-Harris Administration Announces Regional Clean Hydrogen Hubs to Drive Clean Manufacturing and Jobs

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Investing in American Infrastructure and Manufacturing is a key part of Bidenomics and the President's Investing in America agenda

Today, President Biden and Energy Secretary Jennifer Granholm are announcing seven regional clean hydrogen hubs that were selected to receive \$7 billion in Bipartisan Infrastructure Law funding to accelerate the domestic market for low-cost, clean hydrogen.

Advancing clean hydrogen is essential to achieving the President's vision of a strong clean energy economy that strengthens energy security, bolsters domestic manufacturing, creates healthier communities, and delivers new jobs and economic opportunities across the nation. The announcement is part of the third installment of the Investing in America tour, during which President Biden will travel to Philadelphia, Pennsylvania to announce the historic investment in manufacturing and jobs.

The seven selected regional clean hydrogen hubs will catalyze more than \$40 billion in private investment and create tens of thousands of good-paying jobs – bringing the total public and private investment in hydrogen hubs to nearly \$50 billion. Roughly two-thirds of total project investment are associated with green (electrolysis based)

production, within the hubs. Several of the hubs were developed in close partnerships with unions, with three requiring project labor agreements (PLAs). In addition to job creation and creating healthier air for communities, the selected hydrogen hubs are committed to robust Community Benefit Plans to ensure local priorities are at the forefront and all communities share in the benefits of the clean energy transition.

Collectively, the hubs aim to produce more than three million metric tons of clean hydrogen per year, thereby achieving nearly one third of the 2030 U.S. clean hydrogen production goal. Together, the seven Hydrogen Hubs will eliminate 25 million metric tons of carbon dioxide emissions from end uses each year—an amount roughly equivalent to combined annual emissions of over 5.5 million gasoline-powered cars. The nearly \$50 billion investment is one of the largest investments in clean manufacturing and jobs in history.

Clean hydrogen can reduce emissions in many sectors of the economy and is especially important for hard-to-decarbonize sectors and industrial processes, such as heavy-duty transportation and chemical, steel, and cement manufacturing. Targeted investments in these areas can help reduce costs, make new breakthroughs, and create jobs for American engineers, manufacturing workers, construction workers, and others.

In the fewer than three years since taking office, President Biden's leadership to reinvigorate the American economy and tackle the climate crisis has boosted U.S. manufacturing and deployment of cost-cutting clean energy technologies. The President is delivering on his day one promise by positioning the United States to achieve our ambitious goals of onshoring production of clean technologies and creating good-paying union jobs.

Regional Clean Hydrogen Hubs

Today, the President is in Philadelphia to announce seven regional clean hydrogen hubs nationwide.

The hubs selected for negotiation include:

- **Mid-Atlantic Hydrogen Hub** (Mid-Atlantic Clean Hydrogen Hub (MACH2); Pennsylvania, Delaware, New Jersey) — The Mid-Atlantic Hydrogen Hub will help unlock hydrogen-driven decarbonization in the Mid-Atlantic while repurposing historic oil infrastructure and using existing rights-of-way. It plans to develop renewable hydrogen production facilities from renewable and nuclear electricity using both established and innovative electrolyzer technologies, where it can help reduce costs and drive further technology adoption. As part of its labor and workforce commitments to the community, the Mid-Atlantic Hydrogen Hub plans to negotiate Project Labor Agreements for all projects and provide close to \$14 million for regional Workforce Development Boards that will serve as partners for community college training and pre-apprenticeships. This Hydrogen Hub anticipates creating 20,800 direct jobs—14,400 in construction jobs and 6,400 permanent jobs. (Amount: up to \$750 million)
- **Appalachian Hydrogen Hub** (Appalachian Regional Clean Hydrogen Hub (ARCH2); West Virginia, Ohio, Pennsylvania) — The Appalachian Hydrogen Hub will leverage the region's ample access to low-cost natural gas to produce low-cost clean hydrogen and permanently and safely store the associated carbon emissions. The strategic location of this Hydrogen Hub and the development of hydrogen pipelines, multiple hydrogen fueling stations, and permanent CO2 storage also have the potential to drive down the cost of hydrogen distribution and storage. The Appalachian Hydrogen Hub is anticipated to bring quality job opportunities to workers in coal communities and create more than 21,000 direct jobs—including more than 18,000 in construction and more than 3,000 permanent jobs,

helping ensure the Appalachian community benefits from the development and operation of the Hub. (Amount: up to \$925 million)

- **California Hydrogen Hub** (Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES); California) — The California Hydrogen Hub will leverage the Golden State’s leadership in clean energy technology to produce hydrogen exclusively from renewable energy and biomass. It will provide a blueprint for decarbonizing public transportation, heavy duty trucking, and port operations—key emissions drivers in the state and sources of air pollution that are among the hardest to decarbonize. This Hydrogen Hub has committed to requiring Project Labor Agreements for all projects connected to the hub, which will expand opportunities for disadvantaged communities and create an expected 220,000 direct jobs—130,000 in construction jobs and 90,000 permanent jobs. (Amount: up to \$1.2 billion)
- **Gulf Coast Hydrogen Hub** (HyVelocity Hydrogen Hub; Texas) — The Gulf Coast Hydrogen Hub will be centered in the Houston region, the traditional energy capital of the United States. It will help kickstart the clean hydrogen economy with its plans for large-scale hydrogen production through both natural gas with carbon capture and renewables-powered electrolysis, leveraging the Gulf Coast region’s abundant renewable energy and natural gas supply to drive down the cost of hydrogen—a crucial step to achieving market liftoff. This Hydrogen Hub is expected to create approximately 45,000 direct jobs—35,000 in construction jobs and 10,000 permanent jobs. (Amount: up to \$1.2 billion)
- **Heartland Hydrogen Hub** (Minnesota, North Dakota, South Dakota) — The Heartland Hydrogen Hub will leverage the region’s abundant energy resources to help decarbonize the agricultural sector’s production of fertilizer, decrease the regional cost of clean hydrogen, and advance the use of clean hydrogen in electric generation and for cold climate space heating. It also

plans to offer unique opportunities of equity ownership to tribal communities through an equity partnership and to local farmers and farmer co-ops through a private sector partnership that will allow local farmers to receive more competitive pricing for clean fertilizer. The Heartland Hydrogen Hub anticipates creating upwards of 3,880 direct jobs—3,067 in construction jobs and 703 permanent jobs. (Amount: up to \$925 million)

- **Midwest Hydrogen Hub** (Midwest Alliance for Clean Hydrogen (MachH2); Illinois, Indiana, Michigan) — Located in a key U.S. industrial and transportation corridor, the Midwest Hydrogen Hub will enable decarbonization through strategic hydrogen uses including steel and glass production, power generation, refining, heavy-duty transportation, and sustainable aviation fuel. This Hydrogen Hub plans to produce hydrogen by leveraging diverse and abundant energy sources, including renewable energy, natural gas, and low-cost nuclear energy. The Midwest Hydrogen Hub anticipates creating 13,600 direct jobs—12,100 in construction jobs and 1,500 permanent jobs. (Amount: up to \$1 billion)
- **Pacific Northwest Hydrogen Hub** (PNW H2; Washington, Oregon, Montana) — The Pacific Northwest Hydrogen Hub plans to leverage the region's abundant renewable resources to produce clean hydrogen exclusively from renewable sources. It's anticipated widescale use of electrolyzers will play a key role in driving down electrolyzer costs, making the technology more accessible to other producers, and reducing the cost of hydrogen production. The Pacific Northwest Hydrogen Hub has committed to negotiating Project Labor Agreements for all projects over \$1 million and investing in joint labor-management/state-registered apprenticeship programs. This Hydrogen HUB is expected to create more than 10,000 direct jobs—8,050 in construction jobs and 350 permanent jobs. (Amount: up to \$1 billion)

Investing in America, Investing in Clean Hydrogen

President Biden's Bipartisan Infrastructure Law includes \$65 billion in clean energy investments at the Department of Energy (DOE), including \$8 billion for a Regional Clean Hydrogen Hubs Program to support the development of hubs for clean hydrogen production, delivery, and end-use. Hydrogen can be produced from diverse domestic resources like solar energy, wind, nuclear energy, biomass, and natural gas with safe and responsible carbon capture, with the potential for near-zero greenhouse gas emissions from production. Seven billion dollars of this program is going towards the development of the regional clean hydrogen hubs that will catalyze multistate hydrogen ecosystems that ultimately will expand and connect to form a national hydrogen economy. Up to \$1 billion of the remaining funding will be used for demand-side support for the hubs to drive innovative end-uses of clean hydrogen.

The Biden-Harris Administration is committed to ensuring safe hydrogen deployment and mitigating potential social, economic, technical, and environmental risks. The hubs are covered under the [Justice40 Initiative](#), which aims to ensure that 40 percent of the overall benefits of certain federal investments flow to disadvantaged communities that are marginalized by underinvestment and overburdened by pollution. Hubs have also submitted detailed Community Benefits Plans, including how the project performers will transparently communicate, eliminate, mitigate, and minimize risks.

Through investments in the Bipartisan Infrastructure Law and the Inflation Reduction Act, DOE is pursuing a suite of technologies to produce clean energy across the board to invest in clean manufacturing, tackle the climate crisis and enhance energy security. To further support DOE's Hydrogen Shot to reduce the cost of clean hydrogen by 80% to \$1 per one kilogram in one decade, DOE has announced other resources to support clean hydrogen research and development. DOE's new Hydrogen Hub Matchmaker

resource is helping clean hydrogen producers, end-users, and others find opportunities to develop networks of production, storage, and transportation infrastructure. In addition to the hubs, the DOE has launched other clean hydrogen programs:

- **\$1 billion for a Clean Hydrogen Electrolysis Program:** Electrolysis (using electricity to split water into hydrogen and oxygen) allows for clean hydrogen production from carbon pollution-free power sources like wind, solar, and nuclear. This program will improve the efficiency and cost-effectiveness of these technologies by supporting the entire innovation chain—from research, development, and demonstration to commercialization and deployment.
- **\$500 million for Clean Hydrogen Manufacturing and Recycling RD&D Activities:** DOE will also support American manufacturing of clean hydrogen equipment, including projects that improve efficiency and cost-effectiveness and support domestic supply chains for key components, through the Bipartisan Infrastructure Law’s Clean Hydrogen Manufacturing Initiative. DOE has also announced funding, as part of the Clean Hydrogen Technology Recycling Research, Development, and Demonstration Program, for innovative approaches to increase the reuse and recycling of clean hydrogen technologies.
- In March 2023, DOE announced the first phase of funding for the Clean Hydrogen Electrolysis Program and the BIL’s manufacturing and recycling initiatives with a \$750 million funding opportunity to dramatically reduce the cost of electrolyzers and other clean-hydrogen technologies. Even before project selections have been announced, these initiatives are already demonstrating payoffs by building investor confidence: [private sector commitments](#) ↗ from the First Movers Coalition represent 1 million metric tons per year of clean hydrogen demand, and recently announced projects

amount to 12 million metric tons per year of planned clean hydrogen production in the United States.

- The Department of Energy Loan Programs Office has also completed investments in clean hydrogen facilities.

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Statement from President Joe Biden on Tentative Agreement Between Kaiser Permanente and the Coalition of Kaiser Permanente Unions

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1600 Pennsylvania Ave NW

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