

REUTERS EVENTS™

# The hydrogen states of America:

8 U.S. hydrogen  
hubs to watch





## Introduction

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The Biden Administration’s 2022 Inflation Reduction Act is expected to have an electrifying effect on the prospects for low-carbon hydrogen in the United States. The Act includes tax credits that could pump more than \$100 billion into low-carbon or ‘clean’ hydrogen production.<sup>i</sup> That is on top of around \$7 billion from the Infrastructure Investment and Jobs Act that the U.S. Department of Energy (DOE) has pledged to put into as many as 10 hydrogen hubs—industrial centers where the gas can be produced and consumed at scale.<sup>ii</sup>

Hydrogen is hard to store and move around, so the idea of hubs—where production could be associated with complementary cleantech activities such as carbon capture, utilization and storage—is highly attractive. And the industrial growth opportunity is getting plenty of attention. Here are eight of the most hotly tipped hydrogen hubs being considered in the U.S. today.

## The HyVelocity Hub

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The Gulf Coast petrochemical industry already produces around a third of the hydrogen produced in the U.S. Orienting this vast manufacturing scale to low-carbon production makes a lot of sense, according to a Houston-based coalition. The HyVelocity Hub is backed by two nonprofits, GTI Energy and the Center for Houston's Future, plus Air Liquide, Chevron, Energy Transfer, ExxonMobil, Mitsubishi Power, Ørsted, Semptra Infrastructure, Shell and the University of Texas.<sup>iii</sup>

With more than 1,000 miles of dedicated pipelines and 48 production plants, the Gulf Coast is already the

nation's largest hydrogen producer, notes HyVelocity on its website. In December, the hub confirmed it had received a notice of encouragement to apply for regional clean hydrogen hub funding from the DOE.

"HyVelocity will leverage the world's largest concentration of existing hydrogen production assets, infrastructure and customers in the Gulf Coast region to produce clean hydrogen," said the coalition.

The hub will also "deliver benefits to the surrounding communities and support a just and equitable energy transition," it said.<sup>iv</sup>





## The Trans Permian and Horizons Clean Hydrogen Hub

February 2023 saw two major hydrogen hub initiatives joining forces when the Trans Permian H2Hub and Port of Corpus Christi Horizons Clean Hydrogen Hub (HCH2) announced a joint bid for DOE Regional Clean Hydrogen Hubs Program funding. The Port of Corpus Christi, which operates what it says is the most efficient ship channel on the U.S. Gulf Coast, is the prime applicant for the HCH2, which covers roughly two dozen clean hydrogen production projects.

“This consolidation is a very natural and strategic step for the Port of Corpus Christi, the region and the nation,” said Jeff Pollack, the port’s chief strategy and sustainability officer. “West Texas has anchored domestic energy production for decades, with a physical and commercial connection to the Gulf Coast that is the backbone of the nation’s energy economy.”<sup>v</sup>

The HCH2 scheme “creates the roadmap for diversifying and decarbonizing this historic corridor with the potential to deliver transformative benefits to communities in the Hub,” he said.<sup>vi</sup>

## HyBuild Los Angeles

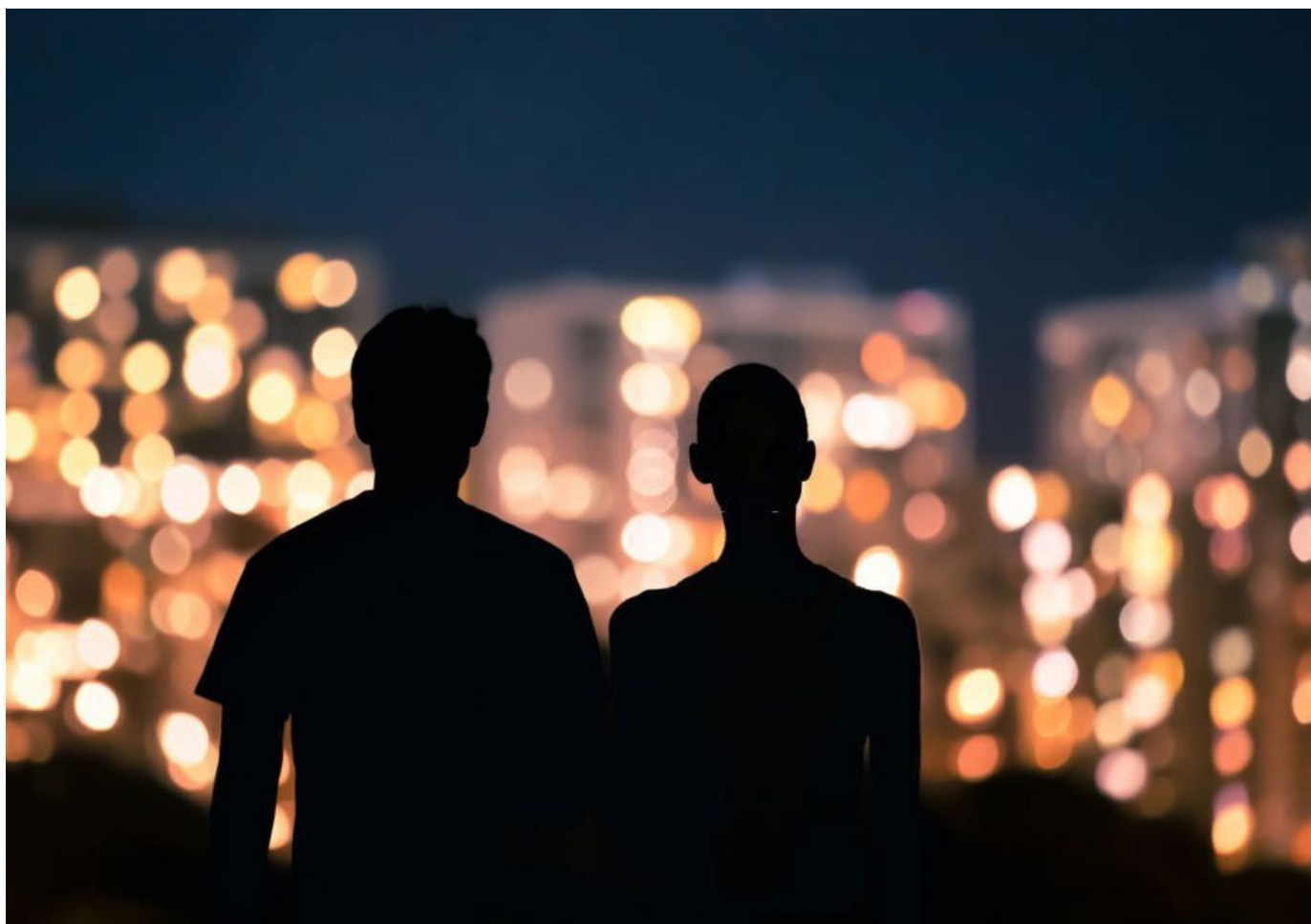
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A nonprofit called the Green Hydrogen Coalition is pushing what it claims would be “the first scaled ecosystem for green hydrogen in North America.”

The HyBuild Los Angeles scheme, named HyDeal in some early reports, is targeting hydrogen from renewables-based electrolysis at a cost of less than \$2 per kilogram. A first phase of the project has involved putting together a high-level system plan, cost models, preliminary demand scenarios, policy recommendations

and sample contract and term sheets, the Green Hydrogen Coalition says.<sup>vii</sup>

According to Mitsubishi Power, hydrogen production in the Los Angeles area could take advantage of wind and solar curtailment that hit record levels across California in 2021.<sup>viii</sup> The hydrogen could help the state achieve its goal of 100% clean energy by 2035, providing fuel for turbines currently powered by natural gas.<sup>ix</sup>





## The HyGrid Project

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While other hydrogen hopefuls were scrambling to get concepts in front of the DOE, National Grid could point to an operational scheme that was one of the first and largest in the country when it launched with support from the Town of Hempstead in 2021. The HyGrid Project in Long Island, New York, has been in development since 2009 and has initially been about blending green hydrogen into gas networks used for residential heating, covering around 800 homes.

It also provides pure and blended hydrogen for use in 10 municipal vehicles. National Grid is also planning

a multi-use hydrogen facility in central New York this year. Electricity for HyGrid's green hydrogen production comes from existing wind and solar generation. But a future hub could benefit from New York's plans to install up to 9 gigawatts of offshore wind energy.<sup>x</sup>

"Long Island in particular is well-positioned to become a hydrogen hub, given the high energy demand in the New York City metro area and the potential to use offshore wind to produce green hydrogen," says National Grid.<sup>xi</sup>

## The HALO Hydrogen Hub

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HALO describes itself as “a three-state partnership to bring clean energy to the nation” and aims to bring clean power prominence to a trio of states that have not thus far been particularly noted for their low-carbon credentials. Arkansas, Louisiana and Oklahoma joined forces for a slice of Infrastructure Investment and Jobs Act hydrogen funding in March 2022.

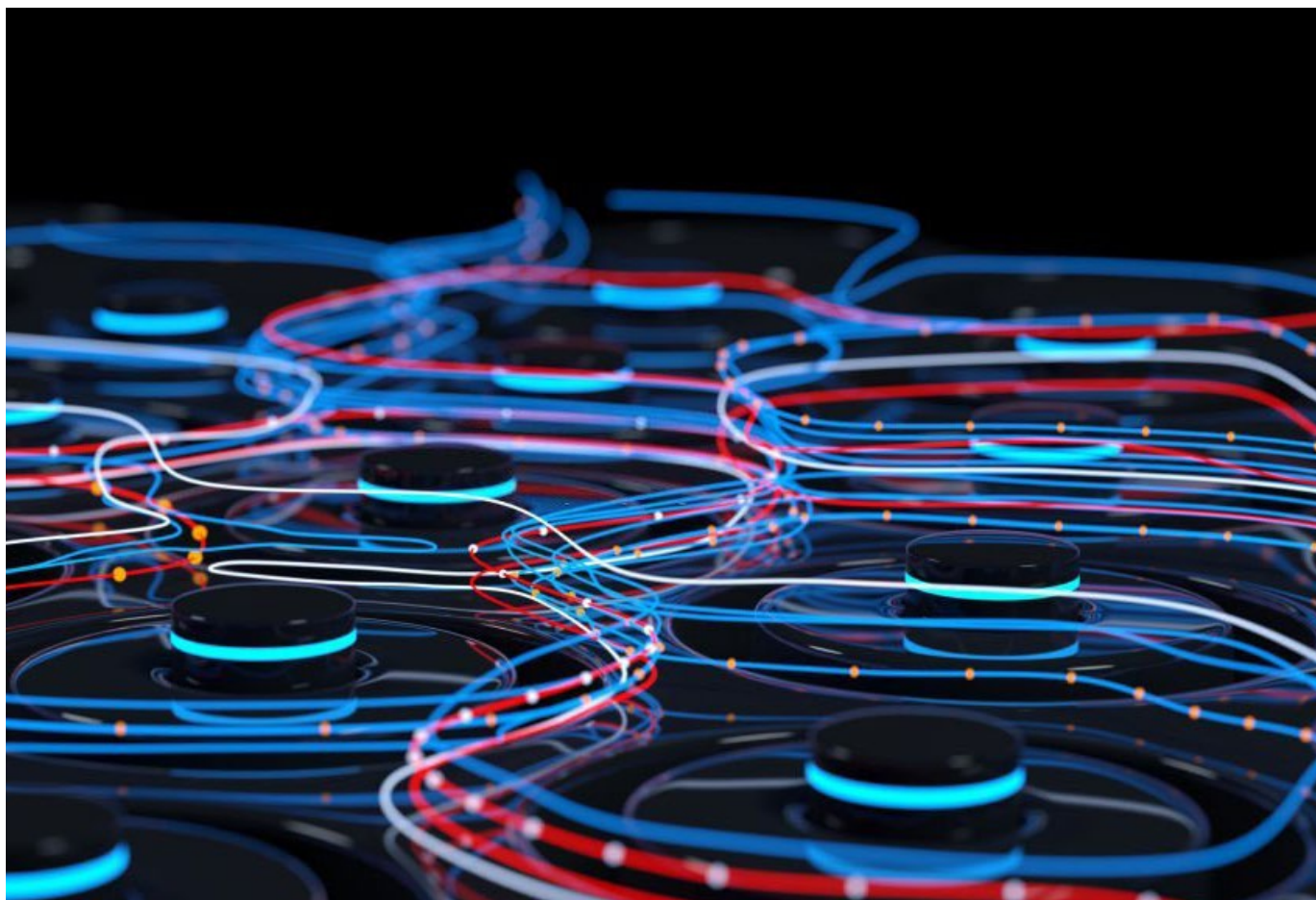
“The state of Louisiana, as well as our partner states in this effort, have a long history of producing and transporting fuels and feedstocks in liquid and gas

forms,” Louisiana’s Governor John Bel Edwards said.

The state also has a “significant population of industrial end users with potential to make use of hydrogen as fuel or as part of manufacturing processes,” he said.<sup>xiii</sup>

HALO is expected to build on assets such as an inland seaport system that runs from Oklahoma through Arkansas and down the Mississippi River to the Gulf of Mexico in Louisiana, plus existing intermodal rail and pipeline infrastructure.





## The Advanced Clean Energy Storage hub

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Located in Delta, Utah, the Advanced Clean Energy Storage hub is touted as being the world's largest renewable energy storage facility, capable of decarbonizing the whole of the western U.S. Promoters say the site will enable utility and industrial-scale green hydrogen production from renewable energy sources and store the gas in underground salt dome caverns to provide a huge reservoir of low-carbon fuel for power generation.<sup>xiii</sup>

Michael Ducker, senior vice president of hydrogen infrastructure at Mitsubishi Power Americas, told Reuters Events that the hub should be able to produce 100 tonnes of green gas a day from 220 megawatts of electrolyzer capacity. "All that is being stored in two massive salt caverns that are the size of the Empire State Building," he said in a video interview. "All that together is supporting long-duration energy storage for our ultimate offtaker, which is the Intermountain Power Agency."<sup>xiv</sup>



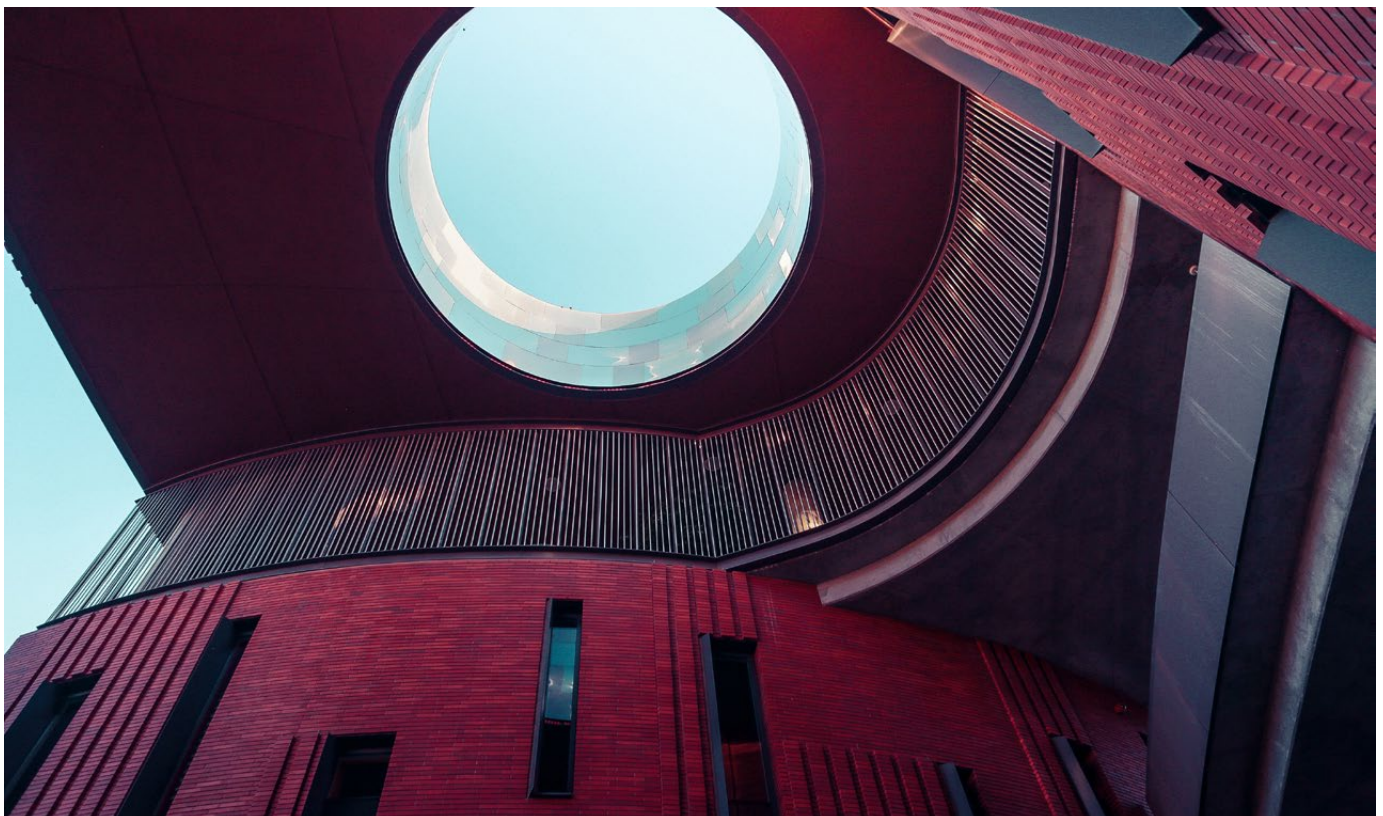
# The Southwest Clean Hydrogen Innovation Network

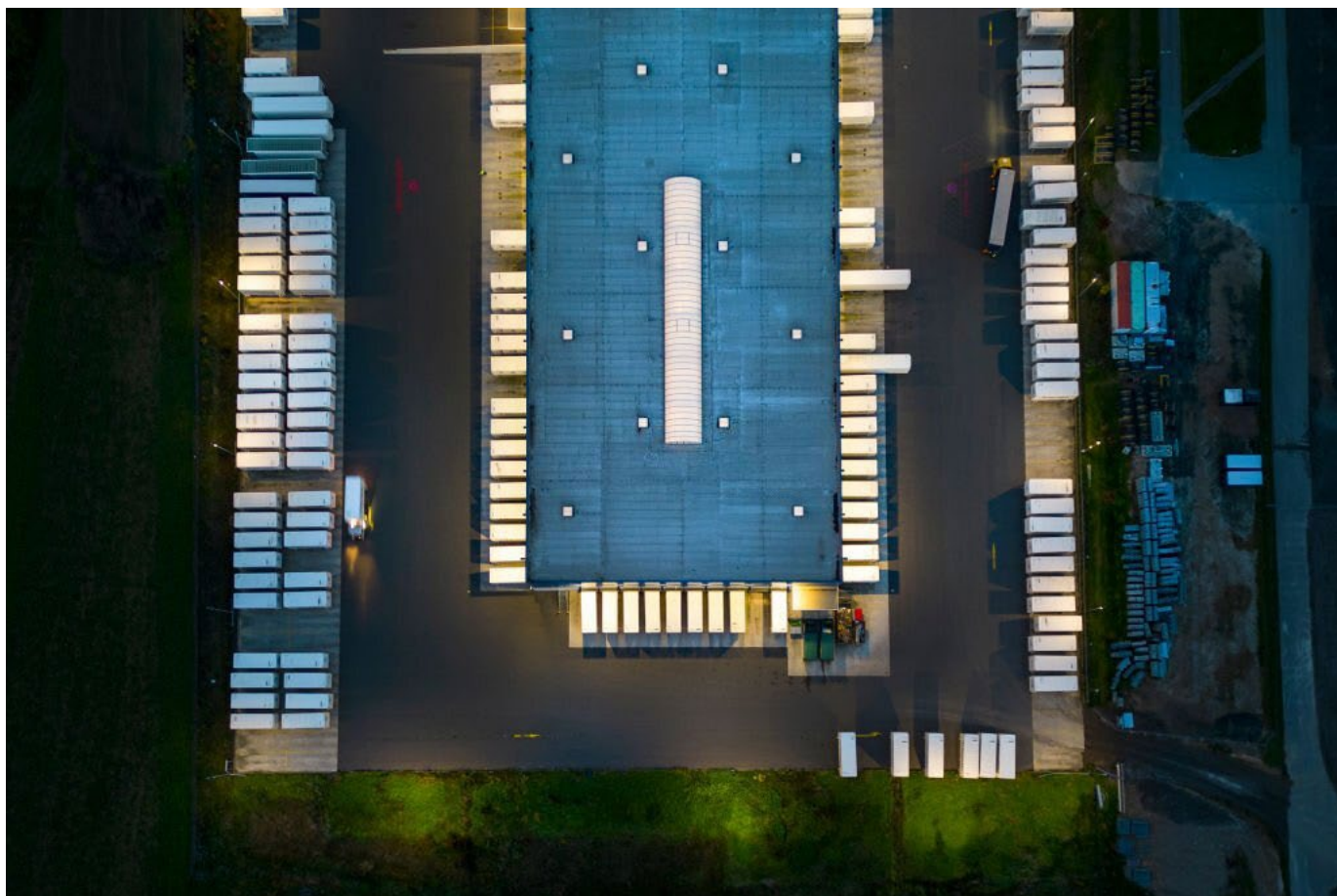
The Southwest Clean Hydrogen Innovation Network, promoted by Arizona State University's Center for an Arizona Carbon-Neutral Economy, features the usual assortment of energy sector backers—40 in this case—plus, more unusually, the Navajo Nation. The Network, or SHINE for short, is looking to exploit the U.S. southwest desert regions of Arizona and Nevada for solar energy to power electrolysis.

Arizona is also home to one of the largest nuclear power plants in the country, the Palo Verde Generating Station, potentially giving the hub access to large amounts of low-carbon electricity. The Center for

an Arizona Carbon-Neutral Economy says hydrogen produced from the hub could be exported to California and onwards to the rest of the U.S. or Asia, using transportation corridors currently dedicated to mining, fuel and heavy-duty transport.

The region also boasts geological resources for large-scale hydrogen storage, the Center says. It is backed by utilities Arizona Public Service, Salt River Project, Southwest Gas and Tucson Electric Power plus Arizona State University, Northern Arizona University and the University of Arizona.<sup>xv</sup>





## The Southeast Hydrogen Hub

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Utilities across Kentucky, Tennessee, Mississippi, Alabama, Georgia and North and South Carolina have formed a coalition that was among the projects selected by the DOE in January 2023 to submit a full application for Infrastructure Investment and Jobs Act funds. The Southeast Hydrogen Hub coalition includes utility companies Dominion Energy, Duke Energy, Southern Company, the Tennessee Valley Authority and Louisville Gas and Electric Company and Kentucky Utilities Company, as well as research nonprofit Battelle.

“A hydrogen hub in the Southeastern U.S. is expected to bring robust economic development benefits and jobs to the region,” says the coalition.<sup>xvi</sup> “Hydrogen is attractive as an energy resource because it has immediate potential to accelerate decarbonization in the Southeast and across all sectors of the U.S. economy—including transportation, which generates the largest share of greenhouse gas emissions.”

News reports have noted that DOE funding for the hub would add to growing clean technology momentum in the region, which has recently seen announcements for electric vehicle battery and solar panel manufacturing.<sup>xvii</sup>

## Outlook and conclusions

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The DOE's call for hydrogen hub concepts that might be eligible for Infrastructure Investment and Jobs Act funding resulted in 79 responses, or more than three for every two states. The DOE encouraged 33 of these to submit formal applications by April 2023 and a final funding decision on up to 10 hubs is expected in the second half of the year. It is unclear at this stage how many hub proposals that do not get DOE funding will proceed regardless.

What is evident, however, is that low-carbon hydrogen is capturing the imagination of a wide range of stakeholders. The hub concepts emerging as a result of federal stimulus programs hail from across the nation and characteristically enjoy

broad bipartisan support. The implication is that the U.S. has committed to a hydrogen future and sees significant regional, national and global advantages in leading this transition. What is required now is hard work to build partnerships, supply chains and early projects.

To help enable this, in October Reuters Events will be celebrating Hydrogen North America 2023—the most senior hydrogen industry event in the U.S.—in Houston. To find out more, visit [events.reutersevents.com/renewable-energy/hydrogen-usa](https://reutersevents.com/renewable-energy/hydrogen-usa).



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