



ALERTS

Will The U.S.' Big Bet On Hydrogen Pay Off?

July 18, 2023

Highlights

- In the past two years, the U.S. has gone all in on developing clean hydrogen production capacity and utilization to decarbonize the economy by reducing greenhouse gas emissions
- To maximize the potential for economic success, the U.S. recently added \$1 billion in demand-side initiatives to \$7 billion of hydrogen supply subsidies and substantial tax credits. DOE has asked for input by July 24 on the most effective ways to catalyze demand.
- A successful hydrogen strategy will also require the U.S. and all stakeholders to overcome substantial environmental, technical and political challenges

The U.S.' ambitious hydrogen strategy is trying to boldly go where no country has gone before, and it is fraught with economic risk. The administration's recent course correction – adding \$1 billion in demand pull initiatives to the supply-side \$7 billion in subsidies for the Regional Clean Hydrogen Hub (H2Hub) program and substantial tax credits – is a timely move that should improve the prospects for the hydrogen strategy to succeed.

The Department of Energy (DOE) has asked for input by July 24 on the

RELATED PEOPLE



Bruce White

Partner
Chicago

P 312-214-4584
F 312-759-5646
bruce.white@btlaw.com

RELATED PRACTICE AREAS

Compliance and Monitorships
Environmental
Environmental, Social and Governance

RELATED INDUSTRIES

Energy and Utilities
Federal Government Relations and Lobbying
Government and Public Finance
Renewable Energy

most effective mechanisms to catalyze durable, bankable demand for clean hydrogen produced by H2Hubs and on the competitive process to select demand-side support recipients.

The jury will be out for quite a while before judgment is rendered on the economic viability and technical effectiveness of the H2Hub program. Along the way, the administration, the DOE, and H2Hub applicants likely will face a host of other challenges that have the potential to delay or impair progress and potentially derail the program.

Practical factors that can impede operations and sales include the lack of sufficient fresh water supplies needed to produce green hydrogen and insufficient or inadequate connective infrastructure needed to store and transport hydrogen to users.

Additionally, the program is facing potential political headwinds from the anti-environmental, social and governance (ESG) movement in the U.S. that could target the hydrogen strategy and escalate to gale force at anytime. Since passing the 2022 Inflation Reduction Act (IRA), the U.S. has also been subject to increasing international pressure from the EU, which is sponsoring and scaling up its own hydrogen production program, including formation of a dedicated European Hydrogen Bank to compete directly with the U.S. by subsidizing production in the EU, stimulating and supporting demand, and retaining jobs in Europe.

The Administration's Bet on Hydrogen

The current administration [has established ambitious goals](#) for the U.S. to reduce greenhouse gas (GHG) pollution from 2005 levels by 50 percent to 52 percent by 2030 under the Paris Agreement, create a carbon pollution-free power sector by 2035, and reach net-zero emissions no later than 2050.

As part of this effort, the Bipartisan Infrastructure Law (BIL), effective in November 2021, went all in on the development of clean hydrogen production capacity and utilization to decarbonize the U.S. economy by reducing emissions in some of the most difficult-to-decarbonize sectors.

The BIL included \$8 billion for the DOE to [fund a Regional Clean Hydrogen Hubs program](#) (H2Hubs) to form a national network of clean hydrogen producers, consumers to accelerate the use of hydrogen as a large-scale clean energy carrier.

Applications for regional hubs were due in early April 2023. For this initial funding opportunity, the DOE envisions selecting six to H2Hubs for a combined total of up to \$6 to 7 billion in federal funding.

In addition, the IRA added two provisions that further subsidize clean hydrogen production. The first is a new [hydrogen production tax credit](#) for up to \$3 per kilogram of clean hydrogen. The second is an increase in the tax credit already available for carbon sequestration which is used to make ["blue" hydrogen](#). The IRA also [provided the DOE nearly \\$300 billion](#) of additional loan authority to help finance clean energy projects, including hydrogen production.

It was anticipated that the H2Hubs and tax subsidies would help scale up the hydrogen industry in the U.S. and reduce the cost of hydrogen so that it would be more cost competitive and thereby more acceptable as a

commercial option. Indeed, these financial incentives were expected to facilitate achieving the [DOE's Hydrogen Shot](#), a June 2021 initiative to accelerate hydrogen technology breakthroughs and cut the cost of clean hydrogen by 80 percent to \$1 per kilogram in one decade.

The Administration's Most Recent Course Correction

In the [U.S. National Clean Hydrogen Strategy and Roadmap](#), issued in June 2023, the DOE acknowledges that apart from cost, there are a number of challenges to market adoption of the use of hydrogen:

"To accelerate the domestic clean hydrogen economy, some important challenges remain. These remaining challenges include lack of ubiquitous hydrogen distribution infrastructure, lack of manufacturing at scale, cost, durability, reliability, and availability challenges in the supply base across the entire value chain. At present, producers also struggle to find offtakers with sufficient hydrogen demand sited within an affordable distance to hydrogen production who are willing to sign long term contracts. Stakeholders on the production, demand, and financing sides highlight hesitancy to commit resources due to lack of price transparency and risks in clean hydrogen supply."

The administration has recognized and is addressing potential economic obstacles to successful implementation of the H2Hubs program and acceptance of hydrogen as a commercially acceptable alternative. Most recently, the administration shifted its focus from the supply side to the lack of near- term demand certainty that can make clean hydrogen projects a riskier investment. On July 5, the White House released an [issue brief on "The Economics of Demand-Side Support for the Department of Energy's Clean Hydrogen Hubs,"](#) which concluded that:

"There is a recognized need for expanded clean hydrogen capacity if the United States is to meet its net zero emissions goals. Clean hydrogen may play a large role in mitigating emissions from otherwise hard-to-decarbonize industries. Given its importance, reducing the risk of market failures can help accelerate the rapid scaling needed.

Historically, innovation policies have centered around supply-side economic tools like investments in basic research; however, economic evidence supports the role that demand-side support can play, in conjunction with capacity-expanding investments, to mitigate the risk of market failures and accelerate market scaling. In the case of clean hydrogen, the economic evidence suggests that mechanisms like a contract for differences and providing regulatory certainty can play a key role in unlocking the full potential of supply-side investments like the Regional Clean Hydrogen Hubs and accelerating market maturation."Also on July 5, the government announced an additional \$1 billion investment from the BIL funding to provide demand side support for producers and users of H2Hubs during the early years of clean hydrogen production to access private investment and help assure early commercial viability."

This funding is intended to provide revenue assurance that producers need to attract private capital and to give comfort to users who need assurance of long-term low cost supplies of hydrogen before committing to the infrastructure investments required to transition from other energy carrier options.

In parallel, the DOE [issued a notice of intent](#) that seeks to collect

information about how to structure the program, which will use an independent entity to implement DOE-designed and funded demand-side support mechanisms. [According to the DOE](#), the information will help “refine and validate its approach to provide demand-side support for the hubs to enter the clean hydrogen market and will identify the best approach to engaging and potentially involving private sector institutions in the organization, capitalization, and execution of the implementing entity’s mandate.”

Mechanisms being considered “include one or more design factors such as pay-for-delivery contracts, offtake backstops, feasibility funding to support analysis by offtakers, or other measures that strengthen demand for clean hydrogen and increase revenue certainty for H2Hubs.”

Responses are due by July 24 and, later this summer or in early fall, the DOE will issue a “broad agency announcement” that will solicit applications for an independent entity that can implement the initiative.

Based on the White House issue brief, this course correction to provide substantial demand-side support appears to be well grounded. The potential risk of market failure absent such support underscores the current need to complement the supply side subsidies with demand pull initiatives to maximize the prospects for the hydrogen strategy to succeed. Given the variables and unknowns, however, it will be some time before we will know whether policy tools like advance market commitments and contract for differences agreements will provide sufficient assurance of demand certainty to draw the critical mass of investors and users needed on the demand side.

Potential Impediments to Success of the Hydrogen Strategy

Apart from the economic uncertainties regarding hydrogen supply and demand, there are a number of other potential challenges that will need to be addressed on the road to implementation of the hydrogen strategy. Some of the thornier issues that could impede success include:

Water Scarcity: The application by Corpus Christi, Texas, to become one of the regional H2Hubs has [put the spotlight on the potential shortage of water](#) needed to operate such facilities in drought stricken areas. In order to obtain the required millions of gallons of fresh water daily, Corpus Christi and other applicants in areas where water is scarce are considering seawater desalination plants to provide the necessary water supply. Such plants are expensive to build and use a lot of energy for operations. The desalination plants proposed for Corpus Christi have also [drawn fire](#) from environmental and community groups. Because more than 25 percent of the 33 proposed projects on the DOE’s H2Hub shortlist are in water-stressed areas, the DOE is going to need to develop strategies to meaningfully address community concerns.

Transportation and Storage: Along with production, transportation and storage of hydrogen presents significant challenges. A lack of connective infrastructure could make it harder to reduce the cost of hydrogen to competitive levels. Apart from the cost of refurbishment, existing infrastructure – including pipelines and tanks – may be brittle or leaky and not economical to renovate. Additionally, given the scale of the H2Hub program and the relatively small amount of infrastructure for

hydrogen transportation and storage currently in place, substantial investments in pipelines and tankage will be required to meet demand. It does not appear that the need for these facilities or the risks developers face investing in them is fully accounted for in the current supply-side and proposed demand-side subsidies and incentives.

Political Considerations: The rhetoric in support of and against use of ESG considerations has reached [a fever pitch this year](#). The H2Hub program could have been a lightning rod for both sides, insofar as the end game of the hydrogen strategy is to cut GHG emissions by replacing fossil fuels with hydrogen. Thus far, however, the H2Hub program has not provoked strong reactions on either side, like the ongoing skirmishes over consideration of ESG factors as part of governmental investment decision-making. To the contrary, red and blue state coalitions have both submitted applications, and projects sponsored by both [have made the DOE's shortlist](#). This may be a function of the magnitude of dollars involved (and associated local and regional jobs) and the participation of companies with substantial fossil fuel interests on several of the H2Hub project teams.

Nonetheless, the DOE and the applicants will need to remain vigilant and be prepared to address potential anti-ESG forays. In June, Republican members of the House Oversight and Accountability Committee [opened an investigation](#) into whether the Environmental Protection Agency's recently proposed New Source Performance Standards emissions rule (which would set new emissions standards for fossil fuel-fired power plants) is "a thinly veiled effort to achieve de facto closures of existing coal and natural gas power plants." In addition, on July 6, House Judiciary Committee Republicans sent letters to several large investment firms announcing the committee [was expanding its ESG inquiry](#) to assess whether the firms are violating U.S. antitrust law by entering into collusive agreements to decarbonize assets under their management to reach net zero emissions by 2050.

International Considerations

Over the past few years, the U.S. and EU have been engaged in an ongoing clean energy competition where interests and approaches sometimes overlap and at other times diverge. One of the more notable was the EU's rejoinder to the Buy American provisions that accompanied the U.S.' IRA investments to fight climate change, reduce GHG emissions, and improve energy efficiency. [The EU responded](#) initially with the Green Deal Industrial Plan, and relied upon the Recovery and Resilience Facility's dedicated climate subsidies to offset the IRA's effects on the EU economy.

More recently, the EU proposed a [Net-Zero Industry Act](#) (NZIA) to scale up EU manufacturing of key carbon neutral technologies to facilitate the clean-energy transition and to prevent the loss of current and prospective green industrial jobs to the U.S. and China. The EU coupled the NZIA with the [Critical Raw Materials Act](#), to ensure the EU's access to a secure, diversified, affordable and sustainable supply of critical raw materials.

The U.S. hydrogen strategy reportedly has been a particular point of contention for the EU. Out of concern that the BIL investments and IRA tax credits subsidizing hydrogen production would shift production and

jobs to the U.S., as part of the NZIA, the European Commission (EC) has proposed formation of a [European Hydrogen Bank](#) (EHB), which is expected to commence operations this fall. The EHB will stimulate and support investment in sustainable hydrogen production, infrastructure planning, the development of reliable supply chains, and rules-based international hydrogen markets. The EHB will be tasked with increasing transparency on hydrogen flows, transactions, costs, and prices, and improving information on supply and demand. The EHB is also expected to “cover and lower the cost gap between renewable hydrogen and fossil fuels for early projects” (i.e., to provide demand-side incentives).

In an effort to lower the temperatures rising across the Atlantic, President Joe Biden and EC President Ursula von der Leyen in March agreed to [deescalate clean energy trade disputes](#) and engage in a dialogue on subsidy transparency. [In a joint statement](#) issued May 31, the U.S.-EU Trade and Technology Council explained:

“We are taking steps to avoid any disruptions in transatlantic trade and investment flows that could arise from our respective incentives. We stress that, in driving clean energy economy of the future, we will cooperate openly and transparently in a coordinated manner reflecting our joint commitment not to act at each other’s expense. We are working against zero-sum competition to ensure that our incentives maximize clean energy deployment and jobs. The dialogue should also address systemic issues on design and effects of incentive programs going forward.”

Notwithstanding those well-meaning sentiments and the associated diplomacy, tensions can still boil over at the highest levels, and the risk of further retaliatory trade actions persists. As recently as July 4, the head of the EU Parliament’s Committee on International Trade proposed taking a more assertive stand against the US IRA subsidies by imposing anti-dumping tariffs on US hydrogen.

Takeaways

The U.S.’ journey to realize the full potential of hydrogen as a clean energy source is much like exploring the final frontier: riddled with doubts and uncertainties, and yet filled with immense potential. Expanding on this metaphor, the iconic Vulcan salutation from Star Trek, “live long and prosper” is particularly apt as the U.S. embarks on this expedition. The venture’s longevity will be determined by the U.S.’ ability to address the commercial, practical and political challenges while maintaining steadfast commitment to its green energy goals. The potential for prosperity lies in the economic growth, job creation, and environmental sustainability that could come from a successful hydrogen program.

For more information, please contact the Barnes & Thornburg attorney with whom you work or Bruce White at 312-214-4584 or bwhite@btlaw.com.

© 2023 Barnes & Thornburg LLP. All Rights Reserved. This page, and all information on it, is proprietary and the property of Barnes & Thornburg LLP. It may not be reproduced, in any form, without the express written consent of Barnes & Thornburg LLP.

This Barnes & Thornburg LLP publication should not be construed as legal advice or legal opinion on any specific facts or circumstances. The

contents are intended for general informational purposes only, and you are urged to consult your own lawyer on any specific legal questions you may have concerning your situation.