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Texas well-suited to become leading US producer of low-cost hydrogen: panelists

Houston — Texas is well-suited to become the leading producer of low-cost hydrogen in the US due to its existing hydrogen infrastructure and proximity to renewables, natural gas and storage resources, according to several people speaking Jan. 12 on a webinar sponsored by the University of Texas.

The state is in focus thanks to a US Department of Energy H2@Scale initiative, which is working to develop the disparate parts of Texas' energy landscape into a singular hydrogen economy.

The Demonstration and Framework for H2@Scale in Texas and Beyond project was announced last September and will continue for three years, according to the DOE. The \$10.8 million project is intended "to demonstrate how hydrogen production and use can enable grid resiliency, align domestic industries, increase competitiveness, and promote job creation."

"Texas is ideal to lead," said Nico Bouwkamp of Frontier Energy, which has partnered with the DOE to run the Texas initiative. "We think the location is well chosen."

Bouwkamp was speaking Jan. 12 during the Texas Hydrogen Roundtable webinar sponsored by the University of Texas at Austin.

Texas is already the nation's largest hydrogen producer due to its substantial petrochemical sector, which primarily uses cheap natural gas as a feedstock through a carbon dioxide-emitting process called steam methane reforming.

But the state also has access to significant renewable resources that could be paired with electrolysis technology to produce CO₂-free hydrogen from water.

The state ranks first in the country for both installed and under construction wind capacity, totaling roughly 37 GW, according to the American Wind Energy Association. In addition, Texas is the nation's second biggest state for solar energy, with more than 6.7 GW of installed capacity, according to the Solar Energy Industries Association.

In addition to low-cost feedstock inputs, Texas also benefits from plenty of underground storage. There are currently three hydrogen-specific underground storage fields in Texas, with a combined capacity of roughly 6 Bcf.

But the state's geology means its storage capacity could grow significantly, said Mark Shuster, with the Bureau of Economic Geology at UT, speaking Jan. 12 during the webinar. He noted that for hydrogen to replace 1% of US gas demand, the equivalent hydrogen storage needed would be 94 Bcf, which would increase to 940 Bcf at 10% of gas demand.

Current US gas storage capacity is roughly 4,200 Bcf.

Texas also benefits from roughly 1,600 miles of dedicated hydrogen pipelines, which could be expanded to facilitate the state's hydrogen growth, several speakers said.

The key to growing the state's hydrogen economy will be investment, which will help drive down costs, and a commitment from government, industry and consumers to pay a higher price for energy, given fossil fuels are likely to remain cheap.

From the start of the year, the average Platts price for hydrogen produced along the US Gulf Coast via steam methane reforming, including assumptions for capital expenditures, has averaged \$1.29/kg. The price does not include compression, transportation and storage.

On a high heating value basis, \$1.29/kg hydrogen equals roughly \$9.60/MMBtu.

"We need to have the American public get behind this, or we'll quit before we get started because it will get too expensive," said Jack Broodo, president of feedstocks and energy for Dow, speaking during the Jan. 12 webinar.