S&P Global

ENERGY TRANSITION, HYDROGEN

October 08, 2025

# University of Texas researchers work on geologic hydrogen map

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HIGHLIGHTS

‘A cool pathway’ to cheap H2: ExxonMobil exec

West Texas seems 'favorable': professor

University of Texas researchers are developing a Texas map that highlights the most likely locations where geologic hydrogen formations may be profitably exploited, attendees of a conference in Austin learned Oct. 8, but infrastructure, policy and market challenges remain.

During The University of Texas at Austin Energy Institute's Hydrogen Day conference, Saad Saleh, an engineering professor and research consultant at UT's Bureau of Economic Geology, said part of the bureau's mandate is to map the state's geological resources.

"If you look at all the different methods of generating hydrogen today, it seems to fall into one of two buckets," Saleh said during a panel entitled, "Geologic and Geo-engineered Hydrogen." "They're either sort of clean from a carbon emission point of view, but somewhat expensive, but the flip side is that they are more affordable -- considerably more affordable -- but not terribly clean from a carbon emission point of view. What geologic hydrogen does is that it offers a potential that maybe someday we could have the benefit of both, something that is affordable and clean."

Moderator Mark Schuster, the BEG's deputy director for energy, said geologic hydrogen exists on every continent, but only one geologic hydrogen well in Bourakebougou, Mali, Africa, is producing it in viable quantities of hydrogen.

Nevertheless, panelist Martin Terrell, who leads subsurface components of ExxonMobile's Low Carbon solutions business, said the driller in Mali captures the hydrogen to burn in a power generator for the village.

Terrell is "intrigued by this opportunity for geologic hydrogen, mostly because it is a cool pathway to get to hydrogen that's $1 a kilogram or $1.50 a kilogram for very robust hydrogen, which is what we kind of need to get to."

"That assumes you have a 100,000-ton-a-year reservoir," Terrell said. "That's about a trillion cubic feet. That would be today a moderate-sized natural gas field. We need to start finding scales like that. Once you find that, now you have a low cost of supply, now you can think about better transportation networks or better on-site use."

The US Geological Survey in January produced a map of naturally occurring hydrogen across the US, Saleh said, but UT's Bureau of Econ
data about Texas and is developing a map of not o

hydrogen but also where hydrogen release can be stimulated, perhaps by use of a catalyst.

"We can basically enhance the map in the second half, regarding stimulated hydrogen, that's really the first of its kind," Saleh said.

Producing the Texas hydrogen map is estimated to take two years, and it is just one into the process, Saleh said, but it is expected to yield information such as the depth of the hydrogen-producing rock, "because it impacts the economics quite a bit."

Saleh said he hopes the preliminary map will be on the BEG's website by the end of 2025 and a full report will be released in the summer of 2025.

Certain areas, such as parts of West Texas, for example "seem to be favorable for stimulated hydrogen, meaning they have the right kind of rocks, they are not too deep, and they have the right temperature," Saleh said.

"Now that doesn't mean that you look at this map and you go and say drill here -- far from it," Saleh said. "Basically, what this tells you is these are the regions that require more work, deeper work. So, we have a team already that's out there in West Texas collecting soil samples that's measuring hydrogen in the soil. And it's way too early to say anything about it other than that there are certain anomalies that are beginning to show in areas that are really interesting and sort of match what we expect about the rock situation. Work continues."