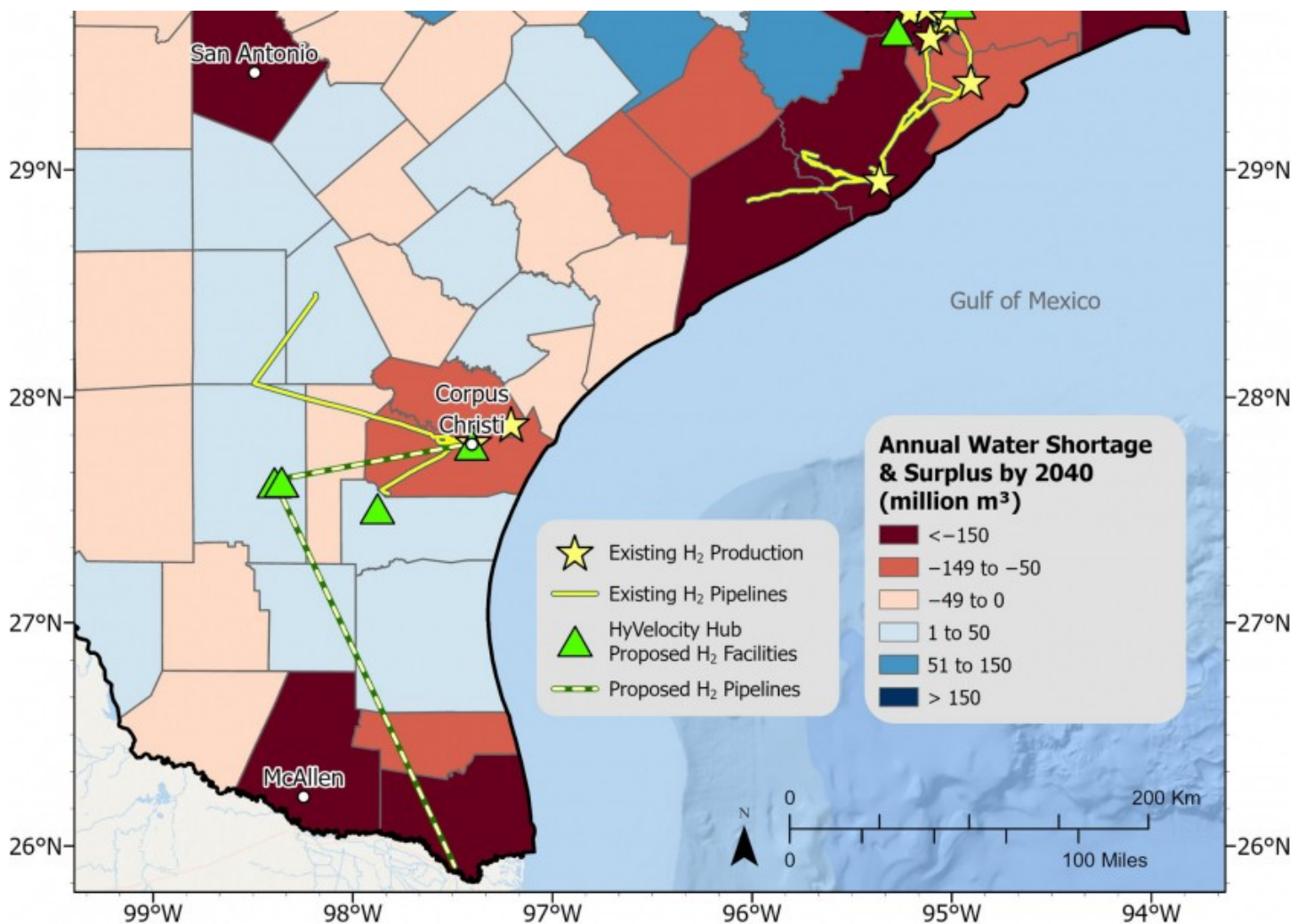


How Much Water Does Texas Hydrogen Need?

DECEMBER 17, 2025



Existing and proposed hydrogen infrastructure as of 2024 in the Gulf Coast region of Texas overlaying projected water needs in each county by 2040. Credit: Lin et al.

There are many ways to make hydrogen — a carbon-free energy source and petrochemical

ingredient. But no matter the method, all hydrogen production requires a lot of water.

In a recent study, researchers examined just how much water the growing Texas hydrogen economy might need. They found that by 2050, new hydrogen production facilities could account for 2%-6.8% of water demand in the state.

In comparison to big water draws, such as irrigation or municipal use, hydrogen's demand is relatively small. But it has the potential to disproportionately affect communities that face future water issues. This includes the Gulf Coast, where most current hydrogen infrastructure is built and where most new hydrogen infrastructure is planned. The State Water Plan projects this region to face large annual shortages of fresh groundwater by 2040.

To estimate future water demand, researchers used data from a 2024 National Petroleum Council study that estimated the regional hydrogen demand from 2030 to 2050. They examined the water requirements from all aspects of hydrogen production, including water used for cooling, and the water needed for different mixes of "blue hydrogen" and "green hydrogen." Green hydrogen is produced from water using electricity. Blue hydrogen is made by burning natural gas.

Research by Chief Economist Ning Lin, postdoctoral fellow Mariam Azumanyan, geospatial and geoprocessing analysis Edna Rodriguez Calzado, and Research Professor Jean-Phillippe Nicot

Bureau of Economic Geology

Published in January 2025 in Sustainability (<https://www.mdpi.com/2071-1050/17/2/385>)

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