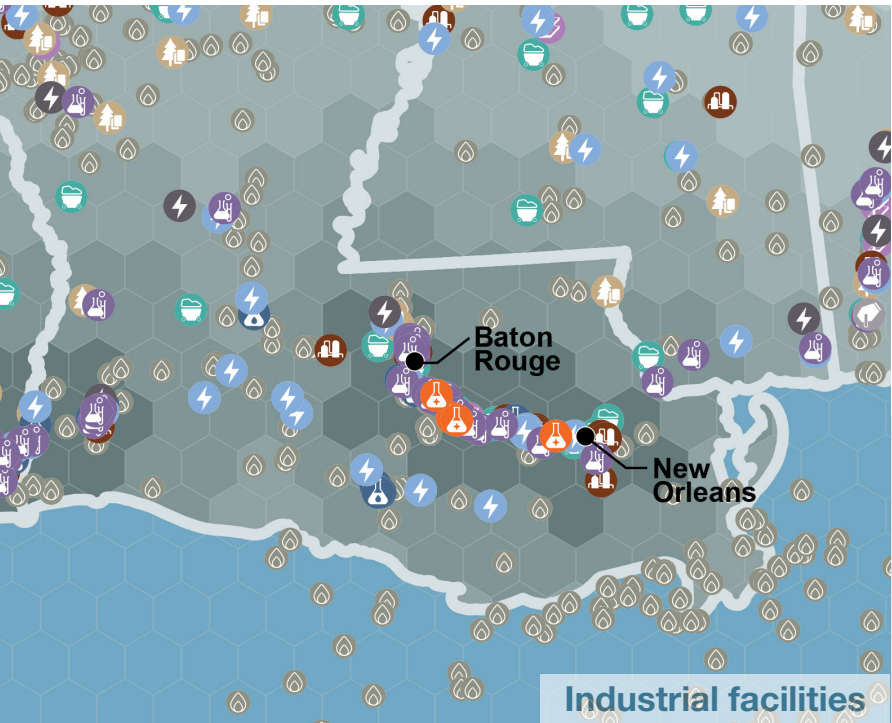


Louisiana Hub

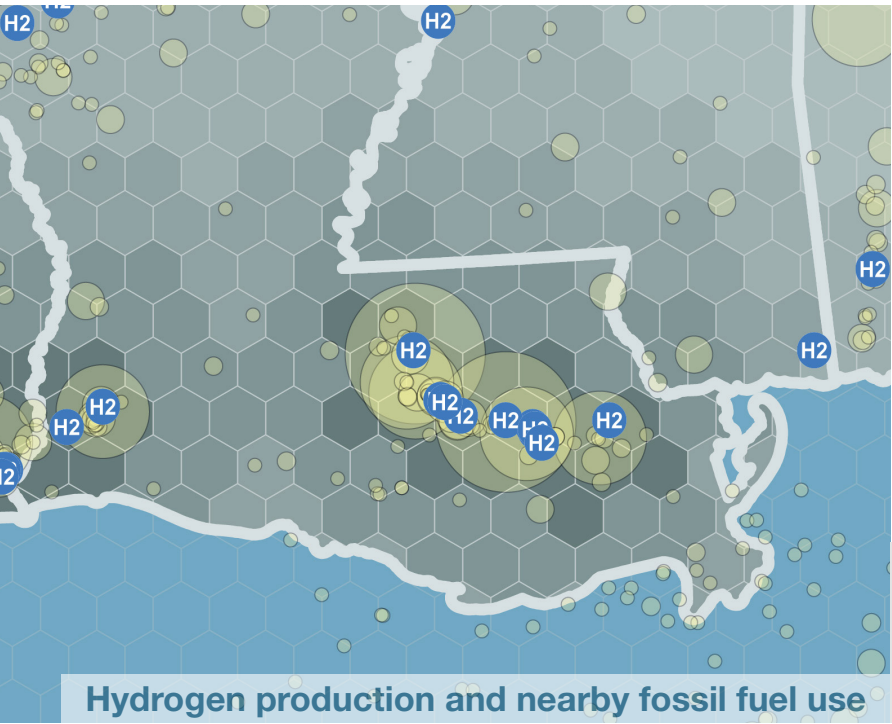
The existing landscape of industrial production, commodity transport infrastructure, and geologic carbon storage capacity make Louisiana a natural launching point for investment in carbon capture and low-carbon hydrogen deployment.



Industrial Emissions and Fossil Fuel Use

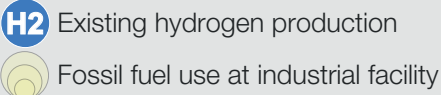


Louisiana is home to a high number and concentration of diverse industries, including petrochemicals production, natural gas processing, and petroleum refining. Facilities in the Louisiana hub emit 86.1 million metric tons (Mt) of CO₂e annually, including 36.3 Mt from stationary combustion and 29.4 Mt from process emissions. There are 42 facilities in this regional hub that are eligible for the 45Q tax credit based on their current emissions profile.



There are **10 hydrogen-producing facilities** in the Louisiana hub already co-located with the central corridor of industrial activity and fossil fuel use. Industrial facilities in this regional hub use a total of 755 million MMBtu of fossil fuels per year.

Hydrogen can be used as a low- or zero-carbon alternative to fossil fuels at industrial facilities. Clusters of hydrogen production and fossil fuel demand can facilitate technology deployment and jumpstart the transition to hydrogen.



Industrial facility emissions

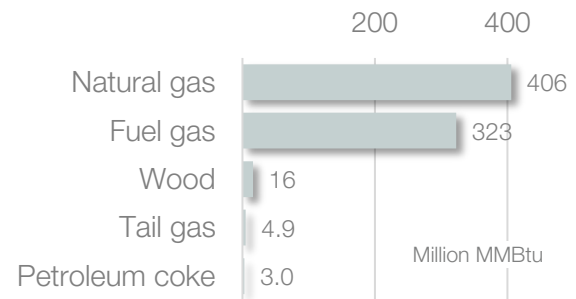
Sector	Total # of Facilities	Total Emissions	Stationary Combustion Emissions	Process Emissions
Ammonia	4	12.9	3.9	9.0
Chemicals	22	2.1	1.6	0.5
Coal power plants	1	2.9	< 0.1	-
Gas power plants	11	15.6	0.2	-
Gas processing	35	8.2	2.0	6.3
Metals, minerals & other	11	1.6	1.6	-
Petrochemicals	19	13.5	10.3	3.3
Pulp & paper	2	0.5	0.4	0.1
Refineries	10	24.5	16.3	8.2
Steel & steel products	1	1.0	< 0.1	0.9
Total	117	85.1	36.3	28.3

All emissions are in million metric tons CO₂e.

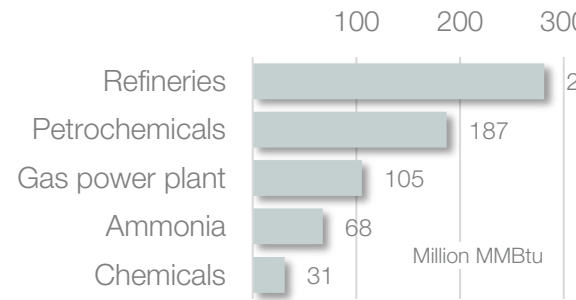
The top industrial fuels consumed in the Louisiana hub include natural gas at 406 million MMBtu per year and fuel gas at 323 million MMBtu per year. Refineries and petrochemicals plants are the largest consumers of fossil fuels in this regional hub, consuming 281 million MMBtu and 187 million MMBtu of fossil fuels, respectively.

Using hydrogen as a medium- and high-intensity energy source to displace conventional fossil fuels can reduce combustion emissions alongside other solutions like electrification and renewable energy. Process emissions from product manufacture are another major source of GHGs at industrial facilities. These production processes may not involve fuel combustion and would require other solutions such as carbon capture to fully decarbonize.

Top industrial fuels consumed



Largest fuel-consuming industries

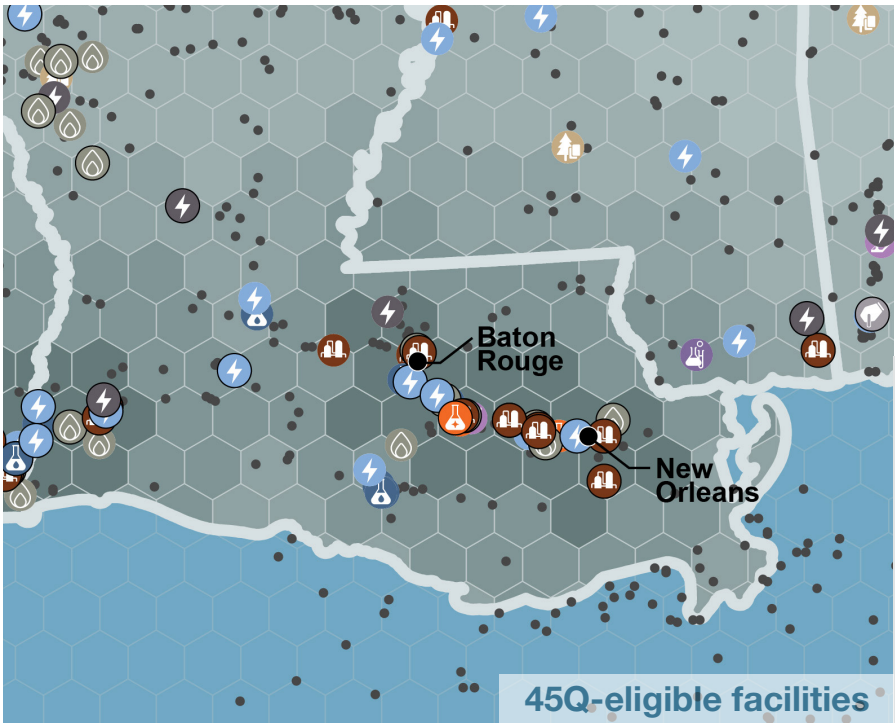


Louisiana Hub

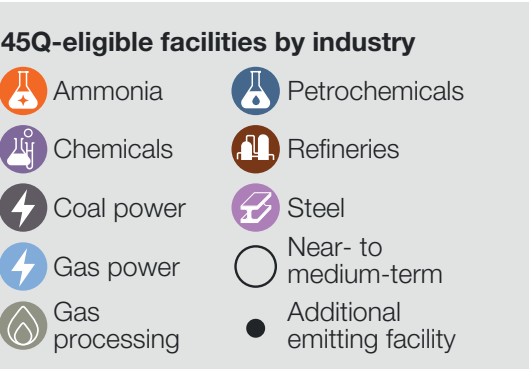
Carbon capture and storage is an essential tool for achieving midcentury climate goals, maintaining the competitiveness of US industry, and protecting and creating high-wage jobs. Carbon capture is crucial in decarbonizing key carbon-intensive industries where CO₂ emissions are inherent to the chemistry of production processes and cannot be eliminated solely by switching to low-carbon electricity. The US has capacity to safely and permanently store thousands of years of carbon emissions in geologic saline formations.



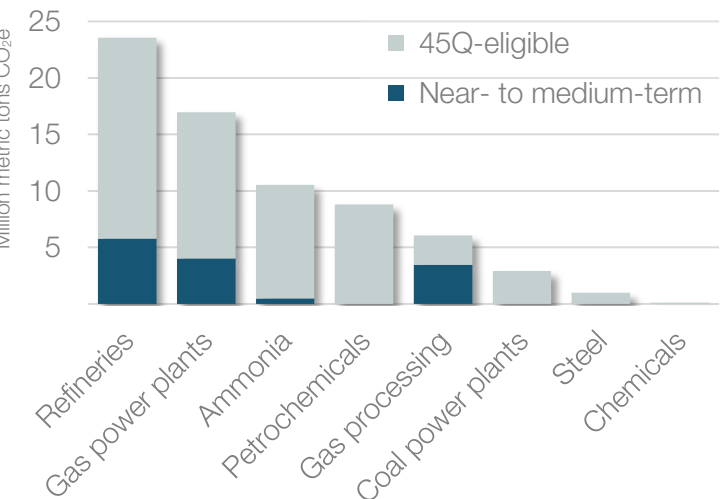
Carbon Capture and Storage



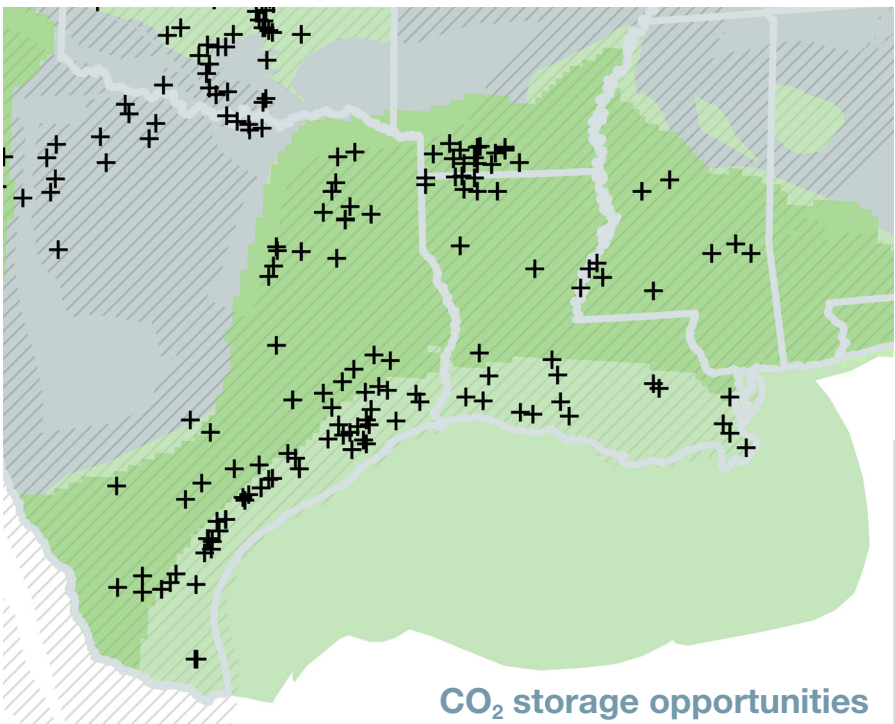
The Section 45Q tax credit lowers cost barriers to carbon capture and storage. Among the 42 industrial and power facilities in the Louisiana hub that meet emissions thresholds for Section 45Q eligibility, 19 have been identified as near-to medium-term candidates for capture retrofit over the next 10 to 15 years.



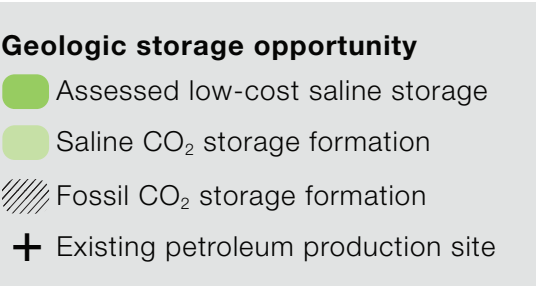
Carbon capture opportunities



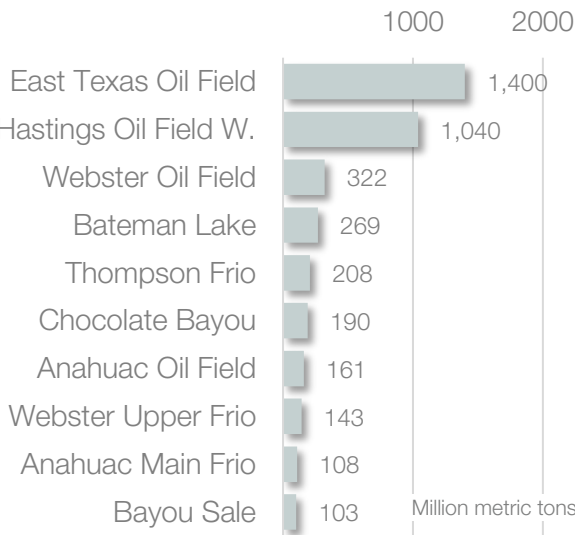
- Industrial and power facilities emit **85.1 Mt CO₂e per year**
- 45Q-eligible** facilities emit **73.1 Mt CO₂e per year**
- 13.7 Mt CO₂ per year** are **capturable** in the **near- to medium-term**



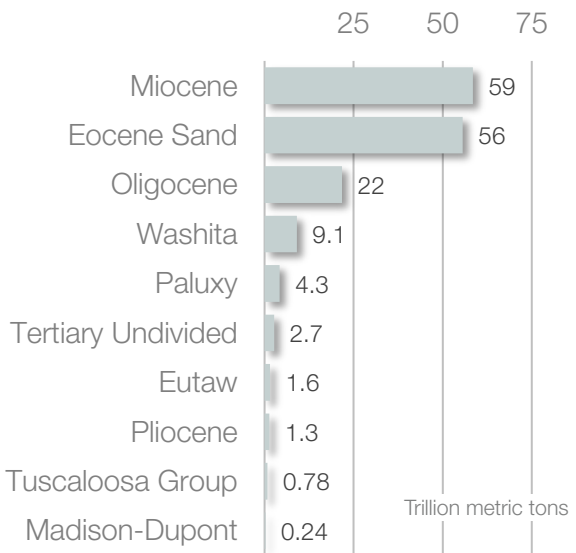
Louisiana has potential to act as a major carbon storage destination for capture facilities and carbon removal throughout the country. The state of Louisiana has potential to store 802 billion metric tons of CO₂ in secure geologic saline formations, and also has extensive capacity for carbon storage in geologic fossil basins such as oil and gas fields.



Fossil storage formations by CO₂ storage capacity



Saline storage formations by CO₂ storage capacity



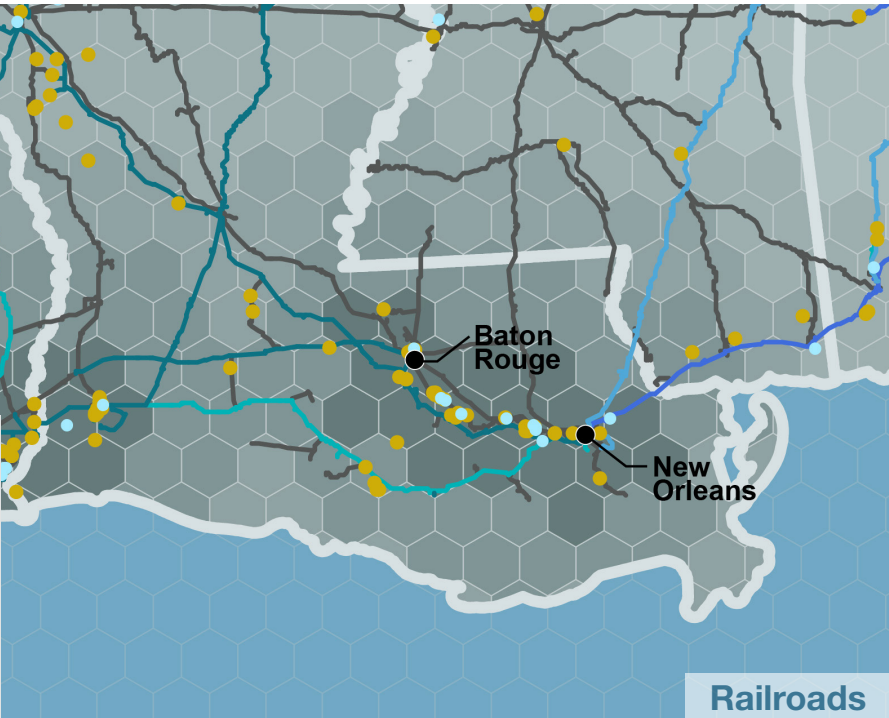
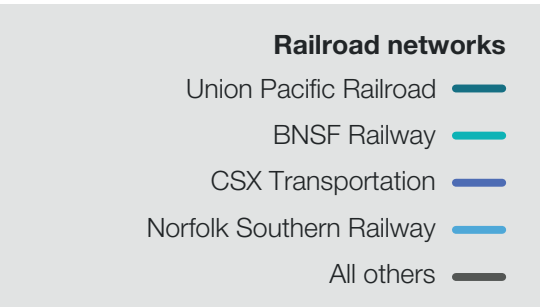
Louisiana Hub

Industrial hubs can offer existing transportation infrastructure, delivery routes, and distribution networks needed for the efficient supply of feedstocks and delivery of products. Hydrogen may be blended into existing natural gas pipelines for co-firing, and both carbon and hydrogen could be transported by rail, freight trucking, or barge. Existing pipeline rights-of-way may be crucial for efficient and equitable routing of new CO₂ pipelines for utilization and permanent storage.



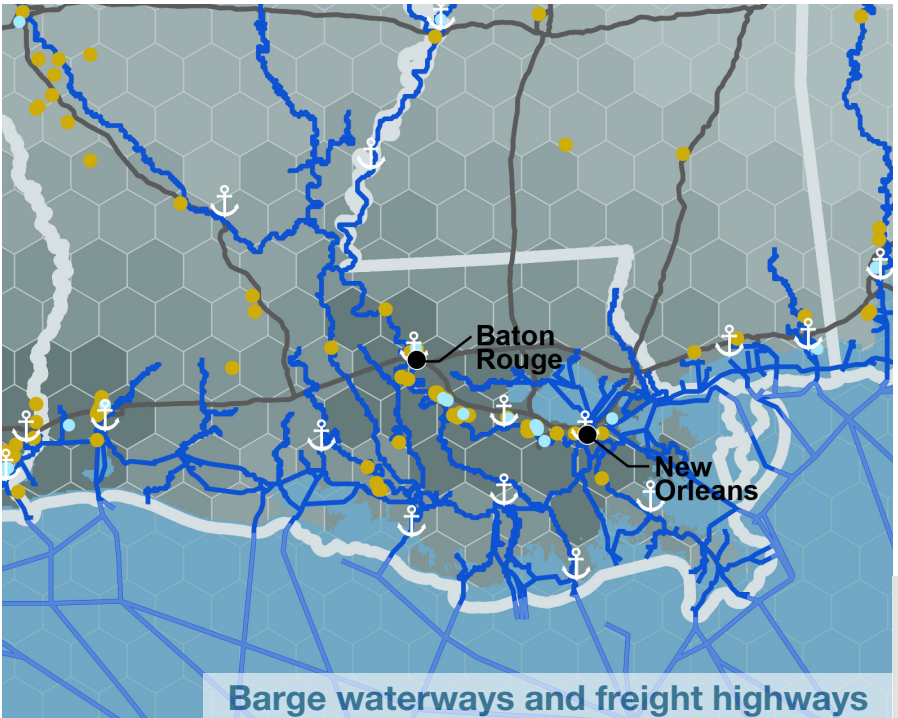
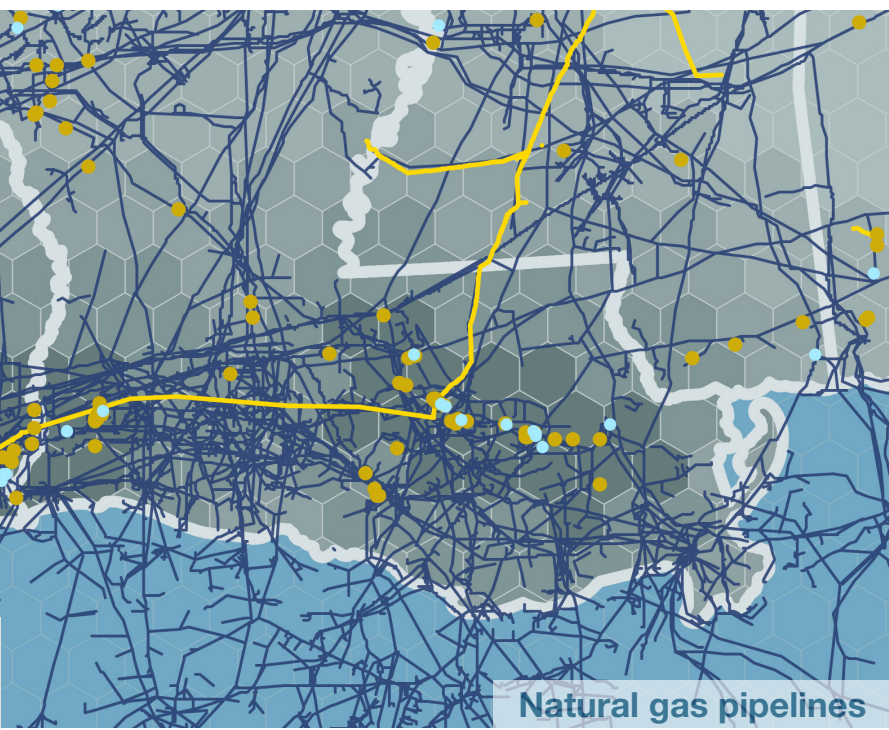
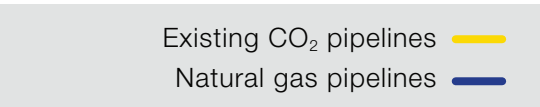
Transport Infrastructure

Many industrial facilities are located along rail lines and often use rail transport to import and export goods. Railroads can also play a role in transporting captured carbon and hydrogen. Many of the facilities in the Louisiana hub are located along major rail lines, facilitating connection to markets across the US.

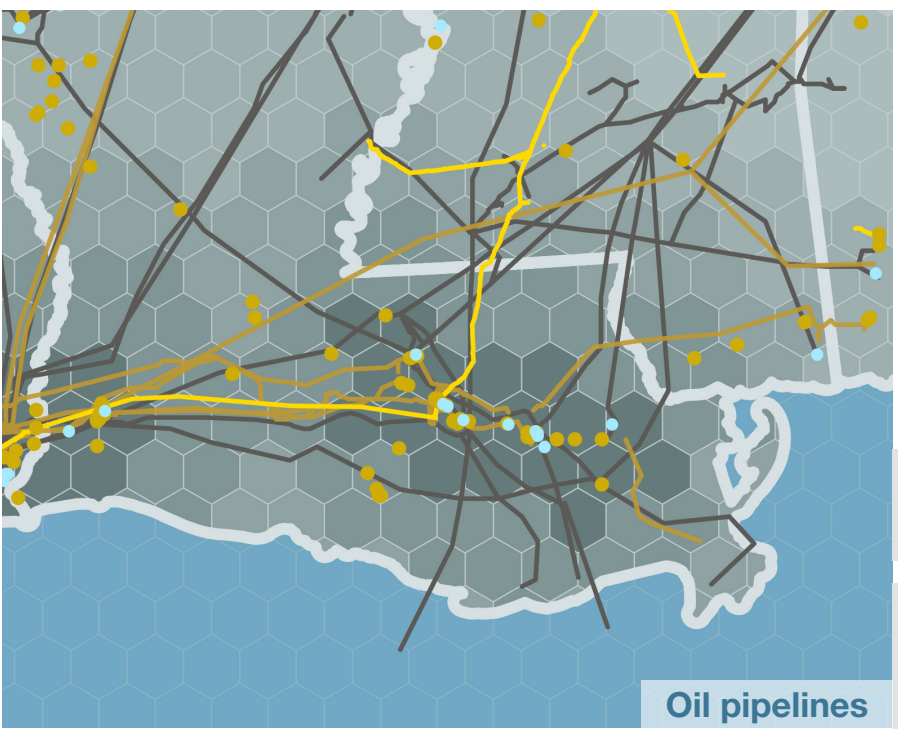
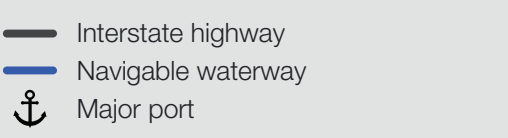


Logistical challenges to carbon and hydrogen pipeline deployment can be reduced by following existing right-of-way of natural gas lines. The Louisiana hub currently has 4,475 miles of natural gas pipelines and 77 miles of CO₂ pipelines.

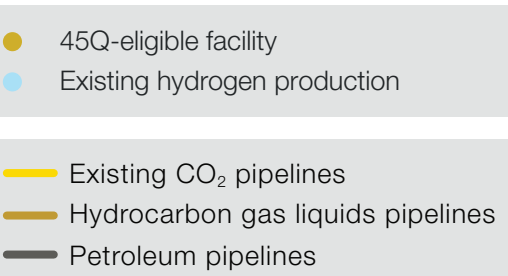
Infrastructure	Miles
Natural gas pipelines	4,475
Oil pipelines	5,145
Existing CO ₂ pipelines	77



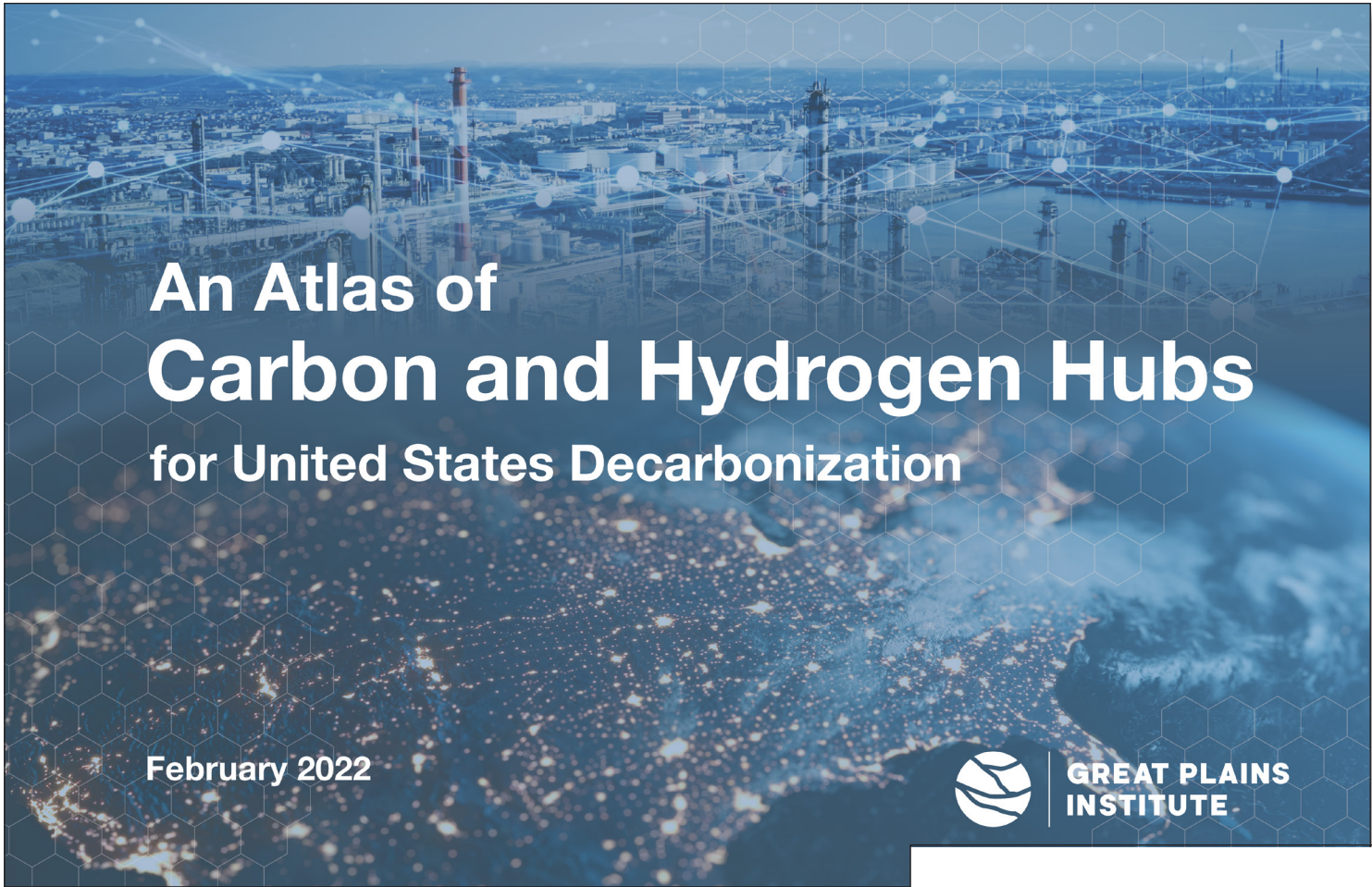
Freight trucks and barges can each play a role in the development of carbon and hydrogen transport networks. Both transport options are flexible, enabling routes to evolve over time and the frequency of transport to adapt in line with the volume of material being transported. With several major ports and extensive access to shipping channels, Louisiana has unique access to global and domestic markets for carbon and hydrogen.



Collocating new CO₂ and hydrogen pipelines along existing pipeline routes can maximize efficiency and reduce surface impacts. New CO₂ and hydrogen pipelines could follow existing right-of-way established along the Louisiana hub's 5,145 miles of oil pipelines to achieve efficient buildout.



GPI's Atlas of Carbon and Hydrogen Hubs



About the Great Plains Institute

A nonpartisan, nonprofit organization, the Great Plains Institute (GPI) is transforming the energy system to benefit the economy and environment. Working across the US, we combine a unique consensus-building approach, expert knowledge, research and analysis, and local action to find and implement lasting solutions. Our work strengthens communities and provides greater economic opportunity through creation of higher paying jobs, expansion of the nation's industrial base, and greater domestic energy independence while eliminating carbon emissions.

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