LOUISIANA DEPARTMENT OF
CONSERVATION AND ENERGY

Opportunities for Clean Hydrogen in Louisiana

A Report with Findings and Recommendations

Louisiana Clean Hydrogen Task Force

December 1, 2025

In 2024, the Louisiana Legislature created via House Concurrent Resolution No. 64 the Clean Hydrogen Task Force to study and make recommendations on growing the clean hydrogen industry in the state, including an evaluation of current hydrogen production, transportation, storage, and use; projected opportunities for clean hydrogen; and the associated economic and regulatory landscapes. The following report – compiled by staff of the Department of Conservation & Energy at the direction of the Task Force and accepted by unanimous vote – is hereby submitted in accordance with HCR 64 to the Governor of Louisiana, the House Natural Resources and Environment Committee, and the Senate Natural Resources Committee.

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EXECUTIVE SUMMARY

For more than a century, Louisiana has been at the vital core of the nation's energy economy and remains so today. The state refines, processes, and transports vast volumes of oil, natural gas, ammonia, methanol, and other petrochemicals that form the backbone of the US energy economy. Louisiana stands ready to build upon this legacy, pairing its traditional energy strengths with emerging opportunities in new alternatives, such as nuclear, renewables, and clean hydrogen. The latter forms the focus of this report.

Louisiana already is one of the nation's top producers and consumers of hydrogen, with an annual consumption of approximately 2.5 million metric tons (MMT), representing about a third of the total industrial hydrogen use in the nation. Louisiana already ranks first in ammonia production, second in refining capacity, and third in dedicated hydrogen production for refining, in addition to being one of the top states for methanol production. Moreover, the state is uniquely situated to become a national leader in the emerging clean hydrogen economy due to its existing industrial infrastructure, skilled workforce, geological storage capacity, and abundant natural gas feedstock. The density of hydrogen production and offtake in the Mississippi River industrial corridor, for instance, create efficiencies at scale for companies increasingly interested in the global marketplace. Even more, this corridor is connected across the Gulf Coast, from New Orleans to Houston, by a 600-plus-mile hydrogen pipeline network that provides reliability and flexibility to industrial users seeking to expand operations in the region. These assets provide a critical advantage to Louisiana for both near-term and long-term growth.

While the state's present-day hydrogen consumption is concentrated in the oil refining, ammonia, and methanol industries – with carbon-intensive grey hydrogen dominating the market – decarbonization efforts in heavy industry along with the demand for clean energy could drive offtake to 30 MMT per year, a tenfold increase over current use. Much of this expansion is dependent, though, on the state's transition to a blue hydrogen strategy, which would leverage the state's entire existing energy inventory. This includes Louisiana's vast natural gas reserves – the primary feedstock for blue hydrogen – and its geology of salt domes and deep saline formations, the former suitable for large-scale compressed hydrogen storage and the latter needed for the carbon sequestration component of blue hydrogen production. While near-term demand for clean hydrogen will primarily be met by blue hydrogen, the long-term strategy should also position the state to attract other forms of clean hydrogen production, including electrolytic, naturally-occurring, and biomass-based pathways.

Recognizing the critical mass of infrastructure, trained workforce, research university assets, and other resources here in Louisiana, investors have announced tens of billions of dollars for clean hydrogen projects in recent years. The economics underwriting these decisions continue to shift. Federal incentives, such as the Sections 45V and 45Q credits, can play an important role in advancing clean hydrogen projects by improving their financial feasibility and attracting private investment. Recent changes in these programs – specifically to the timeframe in which to claim these credits – might prompt some companies to revisit project timelines and investment strategies, however.

Still, while Federal tax credits can accelerate momentum, they are not the sole determinant. Louisiana retains significant competitive advantages, including its unmatched industrial base, vast natural resources, existing energy infrastructure, and skilled workforce, all of which position the state to remain a leader in the clean hydrogen economy. The demand for clean hydrogen could allow Louisiana to evolve its economic model from one of primarily exporting hydrocarbons (oil, natural gas) and using hydrogen for localized industrial processes to that of additionally exporting high-value, low-carbon feedstocks and energy in the form of ammonia and methanol. This fits squarely within a diversified "all-of-the-above" national energy production strategy and also leverages Louisiana's existing industrial space by continuing to attract high-paying jobs while fostering technological innovation and expertise that can be exported alongside the many physical products already leaving the state's ports.

With an eye towards nurturing this continued development and providing a supportive regulatory environment, this report encapsulates the findings and recommendations of the Clean Hydrogen Task Force in its evaluation of Louisiana's existing hydrogen economy and the potential for continued expansion into the future. Through its meetings and discussions over the past year, the Clean Hydrogen Task Force has sought to:

- Closely evaluate the "what" and "how" of clean hydrogen – science, current uses, and overall economic feasibility – while also developing a clear understanding of clean hydrogen's place within state and national energy policy;

- Differentiate the types of clean hydrogen available – such as that derived from steam methane reforming combined with Carbon Capture and Sequestration (CCS), or that derived through electrolysis from water or biomass thermal conversion – along with the material, environmental, industrial, and financial requirements of production for each;

- Review the current industrial uses of hydrogen while assessing potential future market demand; associated financial, environmental, technology, and regulatory costs; price stability needs; and currently existing production incentives;

- Outline clean hydrogen's connectivity with other elements of Louisiana's energy economy (CCS, natural gas, solar power, etc.);

- Assess possible clean hydrogen production hubs or corridors for development;

- Evaluate clean hydrogen's physical infrastructure needs (pipelines, storage, etc.) and opportunities for the build-out of this infrastructure/manufacturing base;

- Examine workforce needs and training requirements and how these might be met through existing or future technical education programs;

- Review safety, production, transportation, and storage regulatory oversight and highlight any needed improvements;

- Determine opportunities for cooperation on a wider hydrogen production management and regulatory framework for the Gulf South region.

Listed below are the major findings of the Clean Hydrogen Task Force followed by specific recommendations for consideration by the Governor and Legislature in their continued work to strengthen Louisiana's position in national and global energy markets while providing for economic growth at home. These findings and recommendations are supported by the main body of the report.

FINDINGS

1. Louisiana currently has a strong and well-developed industrial base for hydrogen in the fields of ammonia and methanol production and crude oil refining, with strong growth potential in the near future due to expanded demand in world markets for energy generally and clean energy in particular, along with the expansion of hydrogen technologies for new end uses, such as long-haul trucking, maritime, and defense deployments, among others.

2. Louisiana is well-positioned in the Gulf South alongside Texas to secure the benefits of continued growth in the clean hydrogen economy due to: 1) the state's available energy resources, especially natural gas; 2) its advanced industrial transportation infrastructure (pipelines, ports, shipping, and rail); 3) an existing skilled workforce; 4) leading research universities and labs capable of providing testing and technological assistance; and 5) a geology suitable for both compressed hydrogen storage and CCS needed as the vital component of blue hydrogen production.

3. The emerging clean hydrogen economy in Louisiana complements the state's conventional energy mainstays especially with the demand for natural gas utilized in the production of grey hydrogen and blue hydrogen. For the latter, it is imperative that CCS plans move forward at scale. Additionally, Louisiana must retain a favorable atmosphere for PV solar power applications since most water hydrolysis systems for green hydrogen will be powered by solar energy.

4. Despite ongoing policy uncertainty at the Federal level, preservation and extension of the 45V and 45Q tax credits is important to the continued growth of the clean hydrogen economy in Louisiana, especially for expanded production and offtake of blue hydrogen in the near-term as other forms of clean hydrogen production (green, pink, etc.) are developed.

5. The development of the clean hydrogen economy represents an opportunity to expand investment, spur innovation, and add quality, high-paying jobs as the State of Louisiana partners with the private sector to foster demand and offtake capacities, expand infrastructure capabilities, seed research and development in new technologies, strengthen workforce training competencies, and streamline regulatory standardization and permitting.

6. The emerging clean hydrogen economy will contribute to a significantly increased electricity demand with a concurrent need for power generation build-out. Louisiana has demonstrated strong economic competitiveness in recent years due in part to its speed-to-market electricity delivery. Coordinated power generation strategies from an "all-of-the-above" energy approach are essential for hydrogen projects to be properly matched to adequate supply.

7. Industrial use of hydrogen is currently effectively regulated through Federal and State rules and regulatory procedures with a strong safety record, although additional consideration of such rules and procedures may be necessary to achieve the full potential of clean hydrogen. To ensure Louisiana remains competitive with neighboring states, streamlined permitting pathways for safe, scalable projects may be needed as Louisiana sees a continued influx of hydrogen investment.

8. The development of a consistently-applied clean hydrogen definition will give investors, developers, regulators, and offtakers confidence and clarity in the market.

9. The State of Louisiana needs to establish a coordinated administrative approach to the development of the clean hydrogen economy following expiration of the Clean Hydrogen Task Force's remit.

RECOMMENDATIONS

The recommendations of the Clean Hydrogen Task Force are organized in three broad categories: Leadership, Economic Development, and Regulatory Alignment. Some address only a single finding from above, while other address multiple findings.

LEADERSHIP

1. The CHTF endorses the creation of a **Clean Hydrogen Coordinating Committee** within state government to continue the development of the clean hydrogen economy in Louisiana, including delegation of specific staff for this purpose. **Addresses: Findings 1-9**

   The creation of such a dedicated committee or group is a natural evolution of the CHTF and will allow for the careful management and coordination of a wide variety of needs across the state's public/private landscape, ensuring environmental protection and regulatory streamlining while also leveraging state and Federal dollars along with private investment into workforce training, research & development (R&D), transportation and storage infrastructure upgrades, etc. Beneficially, the committee would be able to work closely with industry partners, trade associations, research institutions, state colleges and universities, environmental organizations, and other government agencies and decision-making bodies on important policy and planning matters.

This request is directed to the recently created Natural Resources Commission (NRC) for consideration and implementation. The NRC is in a unique position to assess and determine how best to implement this recommendation with input from the above-noted participants. The CHTF imagines that the coordinating committee would have a clear "lead" and staff able to work across local, state, and Federal government lines and within the discrete spaces of the clean hydrogen economy on a variety of issues (fiscal, transportation, R&D, workforce training, regulatory, environmental, etc.).

2. The CHTF endorses **continued engagement with the Federal government** (and Louisiana's Congressional delegation particularly) on hydrogen economy issues, especially to protect current incentives and credits supporting clean hydrogen expansion and to minimize the importance of such incentives at the state level. **Addresses: Findings 3-4, 7-8**

Initial public support, such as incentives and tax credits, can help Louisiana capitalize on its inherent advantages and establish a robust, long-lasting clean hydrogen economy. The clean hydrogen future in Louisiana would benefit significantly from a conducive Federal fiscal and regulatory environment. As part of a national "all of the above" energy policy, clean hydrogen makes sense, and Louisiana is already very strongly positioned in this sector. Therefore, the CHTF endorses a deep engagement on these issues at the Federal level as well as coordination with similarly-situated states in the Gulf South region (Texas especially) to provide long-term clarity. In particular, the 45V production tax credit has helped reduce production costs and invigorate early investment. Likewise, the 45Q tax credit has been utilized for development of blue hydrogen projects in the state. In particular, Louisiana's hydrogen industry would benefit from the extension of the 45V credit through at least 2032. Recent changes to the timeline for capture of this credit puts projects at risk.

ECONOMIC DEVELOPMENT

3. The CHTF endorses the **creation of a state-level immediate action plan**, along with regional action plans, to maximize benefits to investment and returns to the state. **Addresses: Findings 1-3, 5-6**

There is a considerable amount of existing data and research on the current and projected economic impact of conventional clean hydrogen in Louisiana. Much of this will be detailed in the following report. Nevertheless, there is work to be done in turning this information into a comprehensive vision that prioritizes continued investment, alignment of production with demand, and concentrated development of the hydrogen economy along a phased approach. Specific areas contemplated as part of an immediate action plan include:

A. **Evaluation of Demand-Side Incentives:** State financial support can jumpstart demand and secure offtakers for the early clean hydrogen market. Guaranteed offtake is critical to bring production facilities to a final investment decision and drive scale and cost reduction. Whether the State of Louisiana wishes to focus solely on maintaining Federal incentives and credits for a clean hydrogen economy or decides to embark on the creation of its own economic incentives package is a matter best evaluated as part of an action plan completed in alignment with state-level policymakers. Targeted demand-side incentives can help Louisiana distinguish itself as a premier production and export hub, giving it comparative advantages in attracting private investment and long-term offtake contracts both domestically and for exports.

   Incentives might include tax credits for prioritized end uses, access to grants, or low-interest loans for site and infrastructure development, inducements for technology refitting and conversion, etc. Such economic supports would need additional analysis of the return-on-investment. Likewise, as part of this same inquiry, any state planning effort should assess closely how Louisiana hydrogen and hydrogen-derived products (ammonia, methanol) can meet projected demand in Europe and Asia as part of a hydrogen export readiness plan, while also monitoring annual demand for renewable energy in domestic ventures.

B. **Prioritization of a Phased Approach:** Louisiana already has a clearly established hydrogen economy and future planning should prioritize clean hydrogen in decarbonizing oil refining along with ammonia and methanol production, while also providing a road map for high value uses in hard-to-abate sectors where few other decarbonization options exist, such as in maritime shipping, metallurgy, sustainable aviation fuel production, automotive transport, defense industry needs, etc.

   In particular, planning should evaluate hydrogen fuel cells, refueling stations, permitting and siting requirements for infrastructure, demonstration projects, and any economic packages that would facilitate the use of new technologies in Louisiana. The latter might include grants, waivers, and subsidies for refueling stations and the purchase of fleet or personal vehicles and other non-automotive equipment like forklifts, drays, trams, power generator, tug boats, barges and other vessels, etc. Early deployment should focus on government entities and fleet carriers, as their procurement of fuel cell electric vehicles

(FCEVs) can serve as an effective strategy for market adoption and establishing market confidence.

As solar energy is likely the future primary source of power for electrolyzers, state-level planning should allow for clear, reliable solar facility siting and development rules. Futher, biomass-based thermal conversion should be further investigated since this source is noted by experts as generally the least expensive of green hydrogen options.

C. **Designation of Hydrogen Development Zones, Clusters, or Hubs:** Louisiana already has a natural “clustering” of hydrogen producers and offtakers but solidifying these through the creation of special zones could reduce costs, minimize redundant infrastructure, and enhance operational efficiencies. Such zones might also offer bundled tax incentives, expedited permitting, infrastructure cost-sharing and workforce development programs to attract and retain investments. In particular, the Site Infrastructure and Investment Fund might be utilized to target site-readiness for companies building hydrogen-related manufacturing (electrolyzers, turbines, fuel cells).

As with all efforts in the development of the clean hydrogen economy, the development of these zones or hubs ought to be informed by **open, transparent input from local communities alongside parish and municipal governments** and should address specific returns to the state, particularly in the form of high-paying, permanent jobs for local residents. Criteria for siting generally should incorporate alternatives analysis, protection of important ecosystems, preservation of outdoor recreational access, and public health and safety as part of the overall framework and process for permitting.

D. **Enhancement of Regional Hydrogen Transport and Storage Infrastructure:** In association with above, evaluate continued planning and investment needs for a Gulf Coast regional approach to hydrogen infrastructure development from Texas to Alabama, including mapping of transportation, storage, production centers, and end-use facilities; appraise opportunities for a multi-state compact or specific agreements on various aspects of hydrogen production, transportation, marketing, and regulation. Offtaker scaling should be considered based on offtaker use activities.

E. **Strengthening of Hydrogen Pipeline Network:** While Louisiana can boast of one of the largest pipeline networks in the nation, continued investment in an expanded network is crucial to smoothing delivery to offtakers, reducing overall costs, and encouraging overall market activation. Support of such can be made through effective mapping of routes, investigation of common-carrier status for existing pipeline networks, and incentives for expansion and build-out to further reach current and/or prospective users.

The physical blending or mixing of hydrogen into natural gas pipelines to create a single fuel stream and, more broadly, co-mingling by transporting hydrogen through shared infrastructure, may warrant additional standards or guidance as part of evaluating the use of existing non-hydrogen pipelines for hydrogen transport since risks like metal fatigue and embrittlement remain. Additional research in this field is crucial and it may prove that new or "re-sleeved" pipelines may ultimately be more secure than repurposed ones. The State should commit to developing and enforcing robust monitoring, reporting, and verification protocols for hydrogen leaks and mitigation as part of this expected expansion.

F. **Providing Funding for Streamlined Permitting:** The Legislature should consider funding additional staff positions for the Department of Conservation & Energy (C&E) to speed-up review of CCS and other hydrogen-related projects while also providing same to the Department of Environmental Quality (DEQ) for environmental monitoring and compliance.

G. **Continuing to Invest in Research University R&D:** The Legislature should continue to invest in the state's research universities and labs working in the field of clean hydrogen in order to build-out the technological foundations that will help solidify future economic investment decisions in Louisiana.

4. The CHTF endorses the **continued development of safe, effective, innovative, and scientifically-sound CCS projects** as part of a blue hydrogen strategy in the near-term while other forms of hydrogen production are developed. **Addresses: Findings 3-4, 7**

A huge portion of the hydrogen industry in Louisiana is dependent at present and into the foreseeable future on grey hydrogen produced from natural gas. Blue hydrogen, with the off-gas CO_2 captured and injected into deep formations, is the likely future focus. Louisiana's geology is ideal for subsurface storage via Class VI wells. Protecting policies in Louisiana that are supportive of the safe deployment of CCS will be crucial for clean hydrogen deployment. See Recommendations 3.F and 9 regarding streamlined permitting, funding for additional staff, and close coordination with state policymakers.

5. The CHTF endorses the **appropriation of monies at the state level, possibly through the Louisiana Growth Fund, that will support research, pilot projects, and demonstrations** as part of a larger emphasis on research and development in the hydrogen economy. **Addresses: Findings 1-2, 5**

While likely unable to fund a full R&D program in its own right, the State of Louisiana nonetheless can encourage such work by utilizing the Louisiana Growth Fund to supply start-up dollars for R&D projects while helping to match these with other sources of revenue such as Federal grants and private investment. See Recommendation 3.G.

6. The CHTF endorses **coordination on power generation strategies and procurement** to meet the expected increased electricity demand from clean hydrogen projects and to support the business and workforce development opportunities associated with such projects. **Addresses: Findings 6, 9**

In particular, the CHTF endorses the regular collaboration between the Louisiana Public Service Commission, Louisiana Economic Development, C&E, NRC, and utilities to develop policies and align regional-based electricity strategies, business development activities, and planned power generation. Regular collaboration will: 1) advance the objective to secure long-term contracts with appropriate sources of power-matching at-scale for target projects; 2) analyze renewable energy demand and opportunities to procure low-carbon energy for future development projects pursuant to Act No. 492 of 2025; 3) inform policy development and integrated resource planning with the objective to meet demand for the state's businesses and industries; 4) explore and recommend credible, flexible pathways for development projects to access the right source of power-matching, such as solar energy for data centers, hydrogen projects, direct air capture, sustainable aviation fuel, etc.; and 5) enable expedient delivery of transmission upgrades through coordination with MISO and Federal partners while strengthening overall grid reliability.

7. The CHTF endorses **additional state-level investment in workforce training** for the hydrogen economy. **Addresses: Findings 1-2, 5**

Though some of this work is already underway through coordination of university- and LCTCS-level initiatives, a strategic planning effort can further establish specific pathways, incentives, tools, and funding necessary to the development of a comprehensive curriculum of instruction both within specific institutions and across multiple colleges and universities. This effort could consider the following approaches:

Labor analysis: Conduct a labor supply/gap analysis in partnership with technical colleges, other higher education institutions, and training providers on occupations and skill sets needed, midcareer transition strategies, and supply of occupations adjacent to a hydrogen economy. Identify and target geographic regions of Louisiana traditionally underserved by industrial job training programs as part of an effort to expand the state's talent pool;

High-Impact Job Compliance: Monitor and encourage high-wage job creation in line with the High-Impact Jobs Program, established during the 2025 Legislative Session;

Cross-Industry Skill Mapping: Collaborate with Louisiana Works and industry associations to identify overlapping skill sets across hydrogen and other energy subsectors, enabling more efficient training pipelines;

Collaborative Workforce Development: Support Louisiana Works-facilitated employer partnerships aimed at growing the talent pool collaboratively, reducing reliance on lateral talent competition and emphasizing training and upskilling, while aligning these partnerships with a skilled trades marketing and awareness campaign;

Reducing Barriers to Hiring: Identify and address barriers to hiring and promote broader access to high-wage jobs across energy and infrastructure sectors, leveraging One Door to do so; and

Work-Based Learning: Leverage the Work-Based Learning Tax Credit to expand internships and apprenticeships related to hydrogen and associated industries, encouraging employers to utilize available funding to grow their future workforce.

REGULATORY ALIGNMENT

8. The CHTF endorses the adoption of standard, commonly-accepted definitions, protocols, and measurements related to clean hydrogen. **Addresses: Finding 8**

Clean Hydrogen: A clear definition of clean hydrogen gives investors, developers, regulators, and offtakers the confidence that product marketed as clean is verifiably low-emissions and worth investment and/or purchase. In addition, adopting a clear and credible definition of clean hydrogen can strengthen Louisiana's competitiveness in the global energy market by ensuring its hydrogen and hydrogen derivatives meet the requirements of export destinations with stringent emissions standards. Aligning with these standards will enable producers in Louisiana to certify their ammonia, methanol, and other hydrogen-based exports as compliant, opening doors to premium markets, long-term contracts, and new investment.

The CHTF recommends that the State of Louisiana adopt the Federal clean hydrogen standard definition which specifically sets a limit on the amount of CO_2 emitted per kilogram of hydrogen produced (4 kg CO_2e/kg H_2), considering all stages of the process, from production to delivery ("well-to-gate"). Setting a basic standard that meets not only a national but global definition will encourage industry to use carbon intensity as the benchmark, rather than endorsing a specific technology or production pathway. The market sets the demand – and subsequent choices of technology and production – rather than the government shaping outcomes. Careful attention ought to be paid to changes in international definitions, standards, protocols, etc., to ensure the marketability of Louisiana hydrogen and hydrogen products. The State might consider as well the requirement of upstream methane monitoring as part of its controls.

Standardized Lifecycle Analysis: The CHTF recommends that the State of Louisiana adopt a standardized lifecycle analysis (LCA) that uses consistent system boundaries, such as “well-to-gate” or “well-to-end use” terminology, to ensure comparability across projects. The Federal 45VH2-GREET (Greenhouse gases, Regulated Emission and Energy use in Technologies) LCA model is transparent, regularly- and publicly-updated, and capable of accounting for key emissions drivers. Moreover, 45VH2-GREET is currently the most robust and widely accepted LCA tool for calculating the carbon intensity of hydrogen at the Federal level; it is used by the Federal government not only for determining eligibility under the 45V tax credit but also for implementing the U.S. Department of Energy’s (DOE) clean hydrogen production standard through Federal grant programs.

9. The CHTF endorses the **strengthening of regulatory capacity** at the state level to ensure timely review and permitting of hydrogen-related projects while also addressing compliance with safety standards and environmental law. **Addresses: Findings 7-9**

Louisiana’s ability to scale clean hydrogen infrastructure will depend, in part, on the state’s capacity to keep pace with regulatory demand. State agencies must have the resources, staffing, and institutional support to oversee the deployment of the hydrogen value chain, from refueling infrastructure and pipeline build-out to port equipment conversions and storage facility regulations.

In particular, the CHTF specifically endorses as part of a larger regulatory review a revision to Louisiana’s Natural Resources & Energy Act (La. R.S. 30:501, et seq.) to assure the applicability of this Act and its relevant rules (LAC 43:XI.Subpart 1) to hydrogen produced through methods not utilizing hydrocarbons. The CHTF also supports C&E’s recent decision to devote additional staff to the clean hydrogen economy and encourages the Legislature to work closely with C&E and industry on identifying funding and regulatory guidance needs.

In general, the CHTF recommends a coordinated structure for management. A Hydrogen Coordinating Committee – as successor to the CHTF – would be best positioned to work with state policymakers to secure targeted funding to support the work of permitting offices and infrastructure agencies that are central to hydrogen project review, standards setting, and enforcement. Such a dedicated team can be expected to address the overall regulatory framework, including safety standards, permitting needs, and environmental review (emissions, air quality, hydrogen leakage, verification of volumes, etc.) while also working with industry and other key stakeholders to identify, recognize, and partner on existing or new certification initiatives for low carbon intensity hydrogen and hydrogen products that correspond with national and international market requirements. This added staff capacity and regulatory structure will not only ensure safe and transparent project development but also accelerate clean hydrogen deployment and attract new investment.

WHY CLEAN HYDROGEN? TYPES OF PRODUCTION

To comprehend the strategic landscape of the hydrogen economy, it is essential to first understand the diverse methods through which hydrogen is produced. While the final product is chemically identical regardless of its origin, the production pathway determines its carbon footprint, cost, and role in a transition to clean energy. Academia and industry have adopted an informal, color-coded classification to differentiate these pathways, creating a "hydrogen spectrum" that serves as a shorthand for the technology and feedstock employed, although the real measuring stick remains overall carbon intensity. This “spectrum” framework is important to understanding the economic and policy drivers shaping the industry.[1]

Figure 1: Hydrogen Color Wheel (LSU Center for Energy Studies, “Potential for Hydrogen in Louisiana”)

[1] This section draws both from presentations at the Clean Hydrogen Task Force meetings as well as published materials on hydrogen production; for example, see the similar section in Anurag Mandalika, John Flake, Brian Snyder and Greg Upton, “The Potential for Hydrogen in Louisiana,” LSU Center for Energy Studies, March 2025, https://www.lsu.edu/ces/publications/2025/potential-for-hydrogen-in-louisiana-2024-df-rev3.pdf.

GREY HYDROGEN

Grey hydrogen is the most common form of hydrogen produced today, accounting for over 95% of current U.S. production. It is manufactured through a process called steam methane reforming (SMR), where high-temperature steam reacts with natural gas (methane/CH_4) to produce hydrogen. This process, however, also generates significant amounts of carbon dioxide (CO_2) as a byproduct, which is typically vented directly into the atmosphere. Due to its unabated emissions, grey hydrogen carries a high carbon intensity, typically between 9 and 12 kilograms of CO_2 equivalent (kg CO_2e) per kilogram of hydrogen produced. It serves as the industrial and environmental baseline against which all "clean" hydrogen pathways are measured.

BLUE HYDROGEN

Blue hydrogen represents a production pathway for places like Louisiana rich in natural gas resources and geological storage capacity. The production process is identical to that of grey hydrogen – typically SMR or a related technology called Autothermal Reforming (ATR) – but with the addition of CCS technology. The CCS system captures the CO_2 byproduct before it can be released, pressurizes it, and injects it deep underground into suitable geological formations for permanent storage. Louisiana's geology is particularly well-suited to CCS with many deep saline aquifers separated by dense, impermeable confining layers. A highly efficient blue hydrogen facility can capture 90% or more of the process emissions, dramatically reducing its carbon footprint. However, the addition of CCS infrastructure increases both the capital cost and the energy required for production given the carbon intensity of blue hydrogen.

GREEN HYDROGEN

Green hydrogen is produced through a process called electrolysis. This method uses an electric current passed through a device called an electrolyzer to split water into its constituent elements: hydrogen and oxygen. For the resulting hydrogen to be classified as "green," the electricity powering the electrolyzer must come from renewable sources, such as wind, solar, or biomass. This pathway produces no carbon emissions. Green hydrogen also offers the capability for energy storage; excess renewable energy generated during periods of high wind or sun can be used to produce hydrogen, which can then be stored and converted back into electricity when needed, effectively acting as a "battery in a molecule". Currently, the high cost of electrolyzers and their efficient utilization make green hydrogen more expensive than blue hydrogen.

PINK HYDROGEN

Pink hydrogen is a variation of green hydrogen, produced via the same process of electrolysis. The key difference is the source of electricity: pink hydrogen uses carbon-free nuclear power. Nuclear power plants provide a constant, high-capacity source of electricity, which can allow electrolyzers to operate with higher utilization rates compared to the intermittent nature of wind and solar. This pathway is particularly relevant for Louisiana, which is home to two nuclear power plants supplying about 15% of the state's total net generation. With the advent of "hyperscalers" constructing data centers with substantial energy requirements, the foreseen growth in electricity demand has resulted in renewed interest in nuclear energy options for the state, perhaps through expansion of existing plants or the deployment of small modular reactors.

Hydrogen Production Pathway	**Primary Feedstock**	**Core Process**	**Key Byproducts**	**Carbon Intensity (kg CO2e / kg H2)**	**Commercial Scalability**
Grey	Natural Gas	Steam Methane Reforming (SMR)	CO_2 (vented)	9 - 12	High (Current Standard)
Blue	Natural Gas	SMR/ATR with CCS **See *Note* on ATR w/CCS below**	CO_2 (sequestered)	0.4 - 4 (with >90% capture)	High (Proven Technology)
Green	Water / Biomass	Electrolysis (Renewable Power) or Thermal Conversion	Oxygen	< 0.4 via water, ~2 via biomass	Moderate (Rapidly Scaling)
Pink	Water	Electrolysis (Nuclear Power)	Oxygen	< 0.4	Moderate (Dependent on Nuclear)
Turquoise	Natural Gas	Methane Pyrolysis	Solid Carbon	< 1 (Process Dependent)	Low (Emerging)
Black/Brown	Coal / Lignite	Gasification	CO_2 (vented)	> 20	High (In Decline)
White	N/A (Geologic)	Extraction	N/A	Very Low	Very Low (Unrealized)

Figure 2: Hydrogen Pathways. ***Note:*** *Steam Methane Reforming w/CCS can capture between 60-70% of total CO2 emissions while Autothermal Reforming w/CCS has the ability to capture more than 95% of total emissions.*

TURQUOISE HYDROGEN

Turquoise hydrogen is an emerging technology that uses methane pyrolysis. In this process, natural gas is heated to very high temperatures in the absence of oxygen, which "cracks" the methane molecule into hydrogen gas and solid carbon (carbon black). This avoids the production of gaseous CO_2 while the solid carbon byproduct can potentially be stored more easily or used in other industrial applications, such as manufacturing tires or plastics. This production method has not yet been proven at a commercial scale but it represents a potential low-emission pathway if the process heat is generated from renewable sources.

WHITE HYDROGEN

White hydrogen – also known as “gold hydrogen” or “natural hydrogen” – refers to naturally occurring, geological hydrogen found in underground deposits. Early studies suggest that geologic hydrogen could offer a low-cost, low-carbon source of energy that potentially could be developed through processes like fracking or through direct mining. While discoveries have generated interest, strategies for large-scale exploitation and commercialization are still in the earliest stages of development. White hydrogen has no bearing on current strategic planning for Louisiana, although the state’s drilling technology expertise could be a potential export.

BLACK/BROWN HYDROGEN

Representing the most carbon-intensive end of the spectrum, even more so than grey hydrogen, black hydrogen is produced through the gasification of black coal and lignite (brown coal – hence sometimes “brown” hydrogen), respectively. This process releases large quantities of CO_2 and other pollutants. While historically significant in some parts of the world, this pathway is not a primary focus for Louisiana's future hydrogen development.

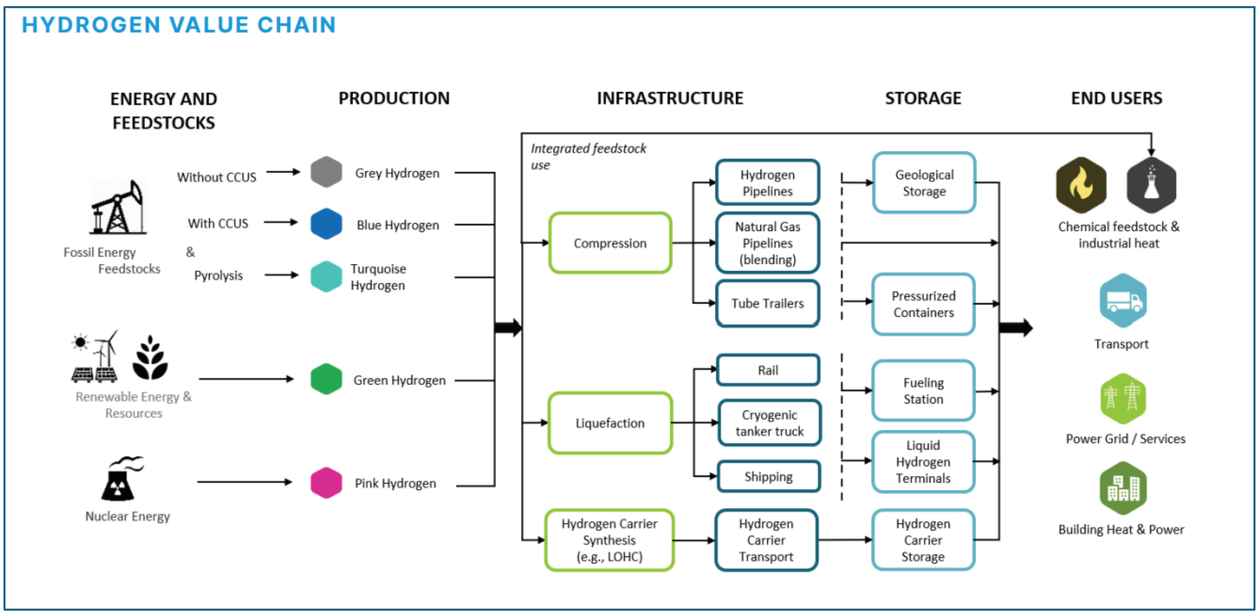


Figure 3: Hydrogen Value Chain (H2theFuture, “Hydrogen Asset Inventory”)

EVALUATING CARBON INTENSITY FOR STATE PLANNING

The color classification outlined above is a useful tool for understanding production although Federal programs, most notably the 45V Clean Hydrogen Production Tax Credit, are structured not around the production method itself but around the lifecycle carbon intensity of the production process. The DOE has established a Clean Hydrogen Production Standard, defining "clean" as having a well-to-gate lifecycle intensity of less than or equal to 4 kg of CO_2e per kg of hydrogen. This performance-based standard creates a technology-neutral playing field, allowing companies to pick-and-choose production technologies as suits their need. A highly efficient blue hydrogen project with a high carbon capture rate, for instance, could qualify for a more substantial tax credit than a green hydrogen project that relies on a grid with a significant fossil fuel mix.

For Louisiana, this policy structure reinforces an initial strategic direction towards the blue hydrogen play. This is not solely a consequence of the state’s substantial natural gas reserves – although no doubt a dominant factor in the decision matrix – but also encapsulates a careful understanding of the whole sum of resources available. Louisiana has a skilled workforce trained in gas processing, an extensive network of pipelines and industrial facilities, deep experience in subsurface geology, and geological formations ideal for hydrogen storage and, especially, carbon sequestration. While green hydrogen represents an important long-term diversification strategy, blue hydrogen is a direct evolution of the state's industrial identity, offering a pragmatic and scalable pathway to decarbonization by building upon a century of accumulated expertise and capital investment.

LOUISIANA IN THE CURRENT HYDROGEN ECONOMY

To fully understand the potential for clean hydrogen in Louisiana, it is imperative to evaluate the state's place in the existing hydrogen economy. Louisiana is already an important market player in hydrogen at the regional and national level. On the supply side, it is one of the nation's largest and most efficient hydrogen producers, with a substantially self-sufficient home market. Currently, the state houses numerous dedicated hydrogen production facilities strategically located in close proximity to their industrial offtakers. Data shows production to be about 2.8 MMT annually while the state's annual hydrogen consumption averages about 2.5 MMT a year. As noted previously, this latter figure represents about 30% of all industrial hydrogen use in the United States.[2]

By volume, Louisiana is the second-largest state in the nation for hydrogen consumption, behind only Texas. These numbers are not only significant nationally, underscoring Louisiana's central role in the nation's chemical and refining sectors, but they also put the state on the world stage. Moreover, having such strong production and consumption centers creates a balanced market that greatly lowers the cost barriers to entry for clean hydrogen, especially as companies and their investors seek pathways to decarbonize.

CORE INDUSTRIAL SECTORS: AMMONIA, REFINING, METHANOL

Louisiana's hydrogen demand is highly concentrated within three core industrial sectors:

- **Ammonia Production:** The largest single consumer, utilizing an estimated 1MMT per year. Hydrogen is the primary feedstock in the Haber-Bosch process, wherein it is combined with nitrogen from the air under high pressure and temperature to synthesize ammonia (NH_3). This sector alone in Louisiana accounted for approximately 32% of total U.S. ammonia production in 2023, primarily for use in agricultural fertilizers.

- **Crude Oil Refining:** The second-largest consumer, at an estimated 1 MMT per year. The state's numerous refineries utilize hydrogen for two critical processes essential

[2] The information here is culled from a wide variety of sources, including presentations at CHTF meetings. But generally, see LSU Center for Energy Studies, "The Potential for Hydrogen in Louisiana," March 2025; H2theFuture, "The Case for Hydrogen in Louisiana," https://h2thefuture.org/hydrogen/; H2theFuture, "Hydrogen Asset Inventory," prepared by Emergent Method, April 14, 2023, https://gnoinc.org/wp-content/uploads/sites/2/2024/01/H2theFuture_Strategic_Asset_Report_FINAL.pdf; Sam Barnes, "H2theFuture works to make Louisiana the epicenter of hydrogen universe," *10/12 Industry Report*, Nov. 27, 2023, https://www.1012industryreport.com/energy/the-case-for-hydrogen/; Paul Day, "US Gulf Coast a natural fit for clean hydrogen energy," *Reuters*, May 23, 2024, https://www.reuters.com/business/energy/us-gulf-coast-natural-fit-clean-hydrogen-industry-2024-05-23/; Paul Doucette, "Gulf Coast Hydrogen Ecosystem: Opportunities and Solutions, University of Houston, 2024, https://uh.edu/uh-energy-innovation/uh-energy/energy-symposium-series/2023-2024/hydrogen-ecosystem/_files/gulf-coast-hydrogen-ecosystem.pdf.

for producing modern transportation fuels: hydrocracking, which uses hydrogen to break down heavy, complex hydrocarbon molecules into more valuable, lighter products like gasoline and diesel; and hydrotreating, which uses hydrogen to remove sulfur and other impurities to meet clean fuel standards.

- **Methanol Production:** A significant and growing sector, utilizing an estimated 0.56 MMT per year. Hydrogen is a key component of the synthesis gas used to produce methanol (CH_3OH), a foundational chemical building block for countless products, and an emerging clean fuel in its own right.

These sectors are anchored by facilities of significant capacity. CF Industries, for instance, operates the largest and most efficient ammonia production complex in the world at Donaldsonville. The methanol sector is similarly concentrated, with major plants including the Methanex complex in Geismar and the Koch Methanol facility in St. James Parish. Again, this concentration of large-scale, sophisticated industrial consumers provides a comparatively safe investment market for emerging clean hydrogen producers.

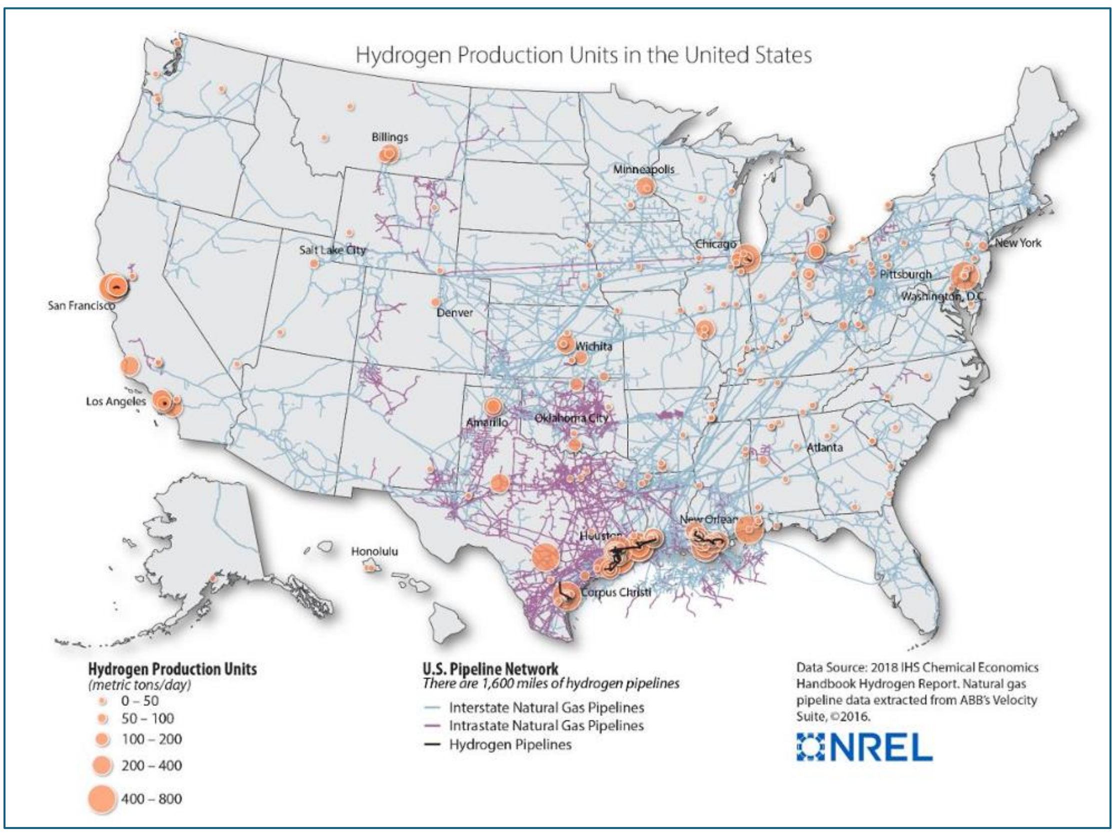


Figure 4: Hydrogen Production Units, US, ca. 2016 (NREL), showing relative dominance of the Gulf Coast region in hydrogen production and suitable infrastructure.

DOMINANCE OF GREY HYDROGEN

Despite its scale, the existing hydrogen economy within Louisiana (and in the global market) is characterized by an overwhelming dependency on fossil fuels, specifically natural gas from regional plays like the Haynesville Shale. 95% of the state's hydrogen production is classified as grey hydrogen, produced from natural gas through the long-established, cost-effective SMR process. In this thermochemical process, methane (CH_4) – the primary component of natural gas – is reacted with high-temperature steam (H_2O) under pressure in the presence of a catalyst to produce a mixture of hydrogen (H_2) and carbon monoxide (CO). This syngas then undergoes a water-gas shift reaction, where the carbon monoxide is reacted with more steam to yield additional hydrogen and carbon dioxide (CO_2). The resulting stream of nearly pure CO_2 is typically vented directly into the air. Standard SMR processes release between 9 and 12 kilograms of carbon dioxide equivalent (CO_2e) for every kilogram of hydrogen produced, giving the hydrogen sector in Louisiana an annual carbon footprint of 20-25 MMT of CO_2.

GEOGRAPHIC LOCATION OF THE HYDROGEN ECONOMY

As noted, Louisiana is one of the nation's largest hydrogen-producing states, with a mature industrial base that manufactures and consumes hydrogen for chemical and refining operations. The geographic concentration of these facilities within the state's existing industrial corridors, especially along the Mississippi River, has created a self-reinforcing ecosystem for growth, with a wave of clean hydrogen investment announcements over the past few years.

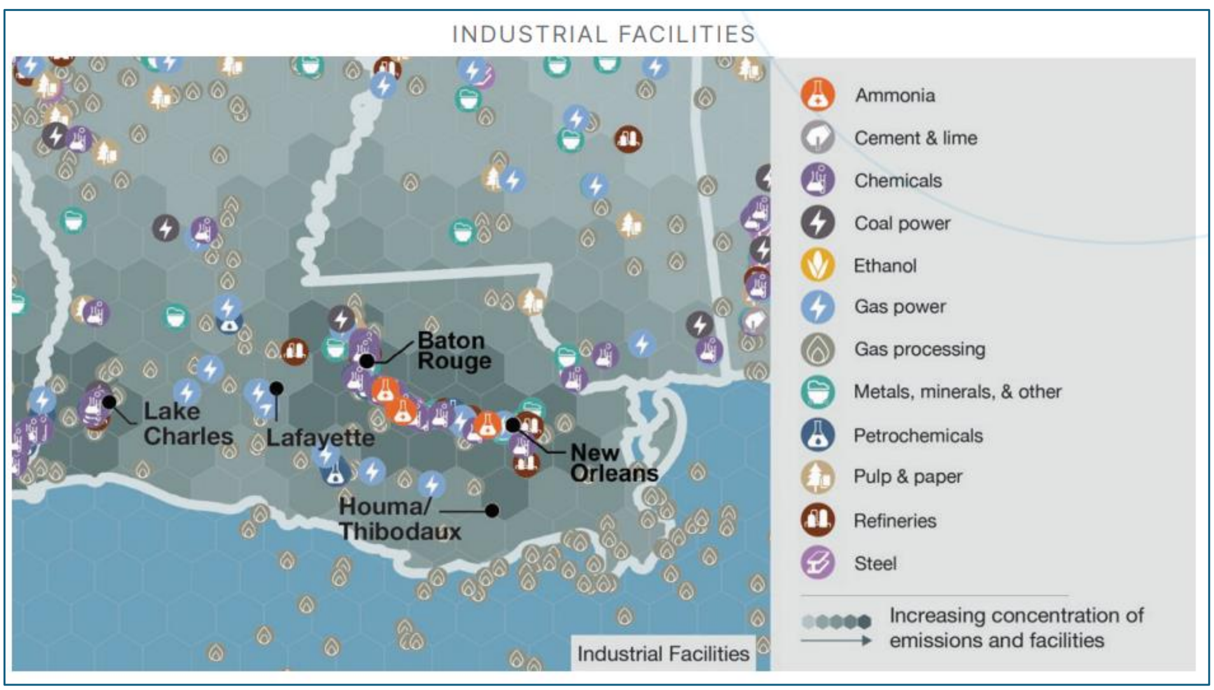


Figure 5: Industrial Facilities (H2theFuture, "Hydrogen Asset Inventory")

Both the existing facilities and proposed projects are strategically sited as part of a deliberate economic strategy to minimize costs for transportation by linking production and offtake, whether close to industrial facilities for local use or to ports for global markets. Such a strategy allows projects to leverage existing pipeline rights-of-way and also reduces the overall cost and complexity of connecting supply with demand. The lack of access to such core infrastructure continues to be a major barrier to hydrogen adoption in less industrialized regions; in a state like Louisiana, though, this strategy makes perfect sense and provides a strong market advantage to companies interested in clean hydrogen.

LOUISIANA HYDROGEN PRODUCTION FACILITIES

The following table provides a select inventory of Louisiana's hydrogen and ammonia production facilities, including data on existing plants and major announced projects. The scale of the proposed facilities, particularly their carbon capture capabilities, underscores the pivot to a low-carbon production model – the blue hydrogen strategy – to compete in global markets.

The scale of these proposed projects, particularly the blue ammonia facilities, points towards the move from hydrogen production for a primarily domestic market to a global export model. Ammonia (NH_3) is a more stable and energy-dense carrier for hydrogen compared to compressed gas or cryogenic liquid hydrogen, making it one of the preferred vectors for long-distance marine transport. With strong decarbonization mandates and carbon pricing mechanisms like the European Union's Carbon Border Adjustment Mechanism coming into effect, a significant international market is emerging for low-carbon energy carriers and feedstocks. These new export facilities are designed to facilitate a supply of low-carbon energy and chemical feedstocks to Europe and Asia. The drawbacks with ammonia are its toxicity and the requirements for its physical conversion back into hydrogen, which also imparts a cost.

Operator/Project	Location (Parish)	Type	Status	Stated CO_2 Capture (MMT/year)	Planned Operation
Air Products	East Baton Rouge	Grey Hydrogen (SMR)	Existing	N/A	N/A
Air Products	Ascension	Grey Hydrogen (SMR)	Existing	N/A	N/A
Linde Inc.	Ascension	Grey Hydrogen (SMR)	Existing	N/A	N/A
Air Products	St. James	Grey Hydrogen (SMR)	Existing	N/A	N/A
Air Products	St. John the Baptist	Grey Hydrogen (SMR)	Existing	N/A	N/A
Air Products	St. Charles	Grey Hydrogen (SMR)	Existing	N/A	N/A
Linde Inc.	St. Charles	Grey Hydrogen (SMR)	Existing	N/A	N/A
Valero Refining	St. Charles	Grey Hydrogen (SMR)	Existing	N/A	N/A
Air Products	Calcasieu	Grey Hydrogen (SMR)	Existing	N/A	N/A
Linde Inc.	Calcasieu	Grey Hydrogen (SMR)	Existing	N/A	N/A

Operator/Project	Location (Parish)	Type	Status	Stated CO_2 Capture (MMT/year)	Planned Operation
Air Products Darrow Blue Energy Facility	Ascension	Blue Hydrogen/Ammonia	Proposed	5.0	2026
Ascension Clean Energy (ACE) Facility	Ascension	Blue Ammonia	Proposed	12.0	2027
CF Industries/Mitsui Blue Ammonia Plant	Ascension	Blue Ammonia	Proposed	2.0	2027
Nutrien Geismar Ammonia Plant	Ascension	Blue Ammonia	Proposed	1.9	2026 (On Hold)
St. Rose Blue Ammonia Facility	St. Charles	Blue Ammonia	Proposed	5.0	2027
Lake Charles Methanol	Calcasieu	Blue Methanol	Proposed	N/A	2027
G2 Net-Zero Energy Complex	Cameron	Blue Ammonia	Proposed	4.0	2027
Olin & Plug Power JV	Iberville	Green Hydrogen	Proposed	N/A	2025
AmmPower	St. John the Baptist	Green Hydrogen/Ammonia	Proposed	N/A	N/A

Figure 6: Select Existing and Proposed Hydrogen/Ammonia/Methanol Production Facilities[3]

[3] Generated from Louisiana Economic Development announcements, corporate press releases, annual reports, etc. For example, see "CF Industries Announces Joint Venture with JERA Co., Inc., and Mitsui & Co., Ltd., for Production and Offtake of Low-Carbon Ammonia," April 8, 2025, https://www.cfindustries.com/newsroom/2025/blue-point-joint-venture; Woodland Biofuels, https://www.woodlandbiofuels.com/news-2/ultra-green-hydrogen-facility, press release, Sept. 17, 2024; etc.. Some projects have been suspended or are on-hold pending review; see for example Nick Georgiou and Stefan Krumpelmann, "Nutrien suspends work on US low-carbon ammonia plant," March 8, 2023, https://www.argusmedia.com/en/news-and-insights/latest-market-news/2475833-nutrien-suspends-work-on-us-low-carbon-ammonia-plant; and Rachel Parkes, "Air Products halts new spend on $4.5bn Louisiana blue hydrogen-to-ammonia project," May 2, 2025, Air Products halts new spend on $4.5bn Louisiana blue hydrogen-to-ammonia project | Hydrogen Insight.

LOUISIANA'S STRENGTH OF INFRASTRUCTURE

Louisiana's potential in the clean hydrogen economy hinges upon some of the most advanced and dense industrial infrastructure in the world. This network of pipelines, ports, railways, and storage facilities – developed over decades to serve the oil and gas industry – provides an economic advantage to Louisiana and the Gulf Coast; the lack of such a network elsewhere is a significant barrier to entry. These assets reliably and efficiently connect production to offtake and form the backbone of the existing regional hydrogen economy.[4]

WORLD'S LARGEST HYDROGEN PIPELINE

At the heart of the region's infrastructure is the Air Products Gulf Coast hydrogen network, the world's largest integrated hydrogen pipeline system. This vast network spans over 600 miles, creating a seamless supply corridor from the Houston Ship Channel in Texas to the industrial complexes east of New Orleans. The system is supplied by more than 20 connected hydrogen production plants and has the capacity to deliver over 1 billion standard cubic feet of hydrogen per day. A critical segment of this network is the 180-mile pipeline connecting Lake Charles and Plaquemine, Louisiana, which unified the eastern and western portions of the Gulf Coast system, enabling bidirectional flow and supply flexibility.

Figure 7: Air Products Gulf Coast Hydrogen Network (H2theFuture, "Hydrogen Asset Inventory")

[4] In particular, see_H2theFuture, "Hydrogen Asset Inventory," prepared by Emergent Method, April 14, 2023, https://gnoinc.org/wp-content/uploads/sites/2/2024/01/H2theFuture_Strategic_Asset_Report_FINAL.pdf.

This pipeline is more than a simple conduit for transporting hydrogen gas, though. Its immense scale and high degree of interconnectivity create a liquid market for hydrogen along the Gulf Coast. This allows producers to sell excess capacity into the network and provides consumers with a highly reliable source of primary and backup supply. This structure de-risks investment for both producers, who are assured of an outlet for their product, and consumers, who are protected from single-plant outages. This market function creates a more efficient, resilient, and far-ranging regional hydrogen economy than could exist otherwise. It is a highly-sophisticated economic asset that provides a template for future pipeline expansion.

OTHER PIPELINES

Beyond the dedicated hydrogen gas pipeline system operated by Air Products, Louisiana possesses a dense web of thousands of miles of existing natural gas and oil pipelines (along with other industrial gas lines). These established pipeline corridors present a significant opportunity for the build-out of new hydrogen infrastructure. Constructing new pipelines within these pre-existing rights-of-way can dramatically reduce surface disturbances, minimize environmental impact, and streamline complex land acquisition and permitting processes.

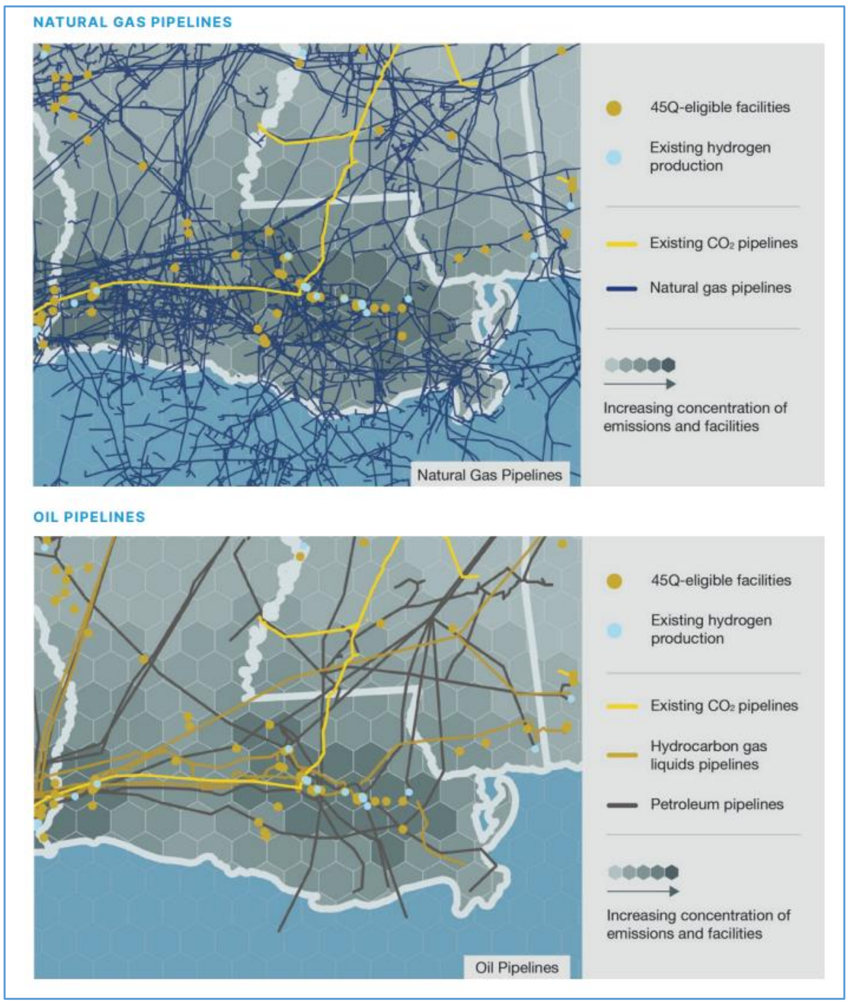


Figure 8: Oil and natural gas pipelines in Louisiana (H2theFuture, "Hydrogen Asset Inventory")

While the concept of directly retrofitting natural gas pipelines to carry pure hydrogen is appealing, it presents significant technical and safety challenges. Hydrogen molecules are smaller and more volatile than natural gas. More critically, hydrogen can cause embrittlement in certain types of steel used in older pipelines, increasing the risk of failure. Consequently, extensive retrofitting or, more likely, the construction of new, purpose-built hydrogen pipelines may be required to meet the needs of expanded hydrogen production and offtake. The true value of the existing pipeline network probably lies in the already existing rights-of-way. Building off these corridors should avoid significant cost and delay compared to the requirements for new projects.

Hydrogen usage at an industrial scale also may be implemented with the production of hydrogen directly “behind-the-gate,” that is, within offtaker facility confines. This option is actually common practice among larger hydrogen users via SMR production. Although it eliminates transporation needs and reduces storage issues, such on-site production does not completely eliminate the latter concern.

MULTIMODAL TRANSPORT

Louisiana's infrastructure advantage extends beyond pipelines. The state's multimodal transportation system provides robust logistical support for the entire hydrogen value chain.

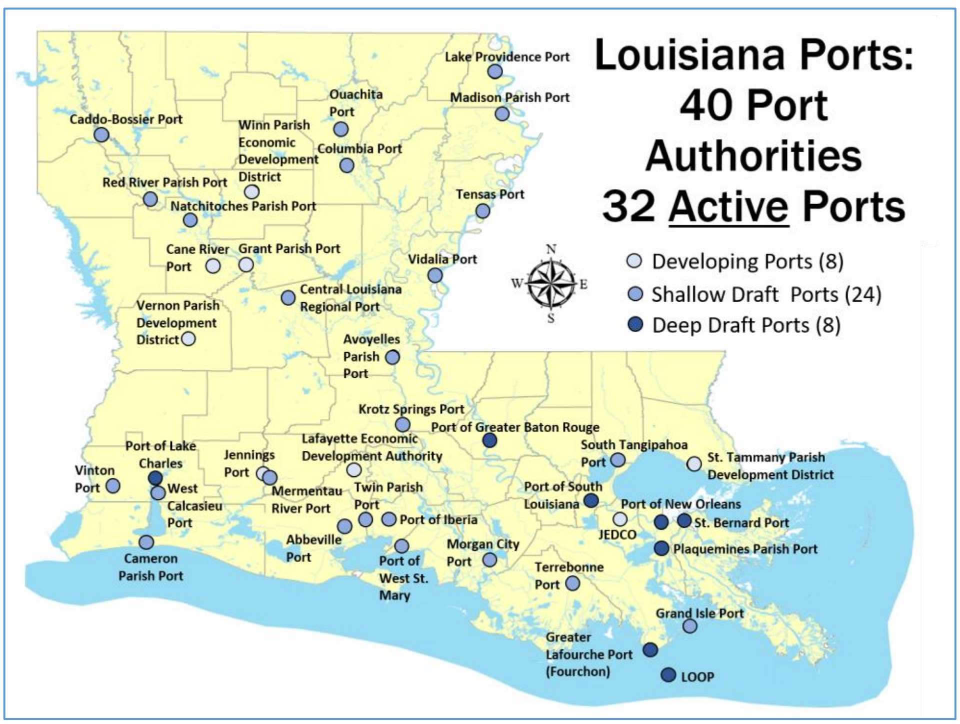


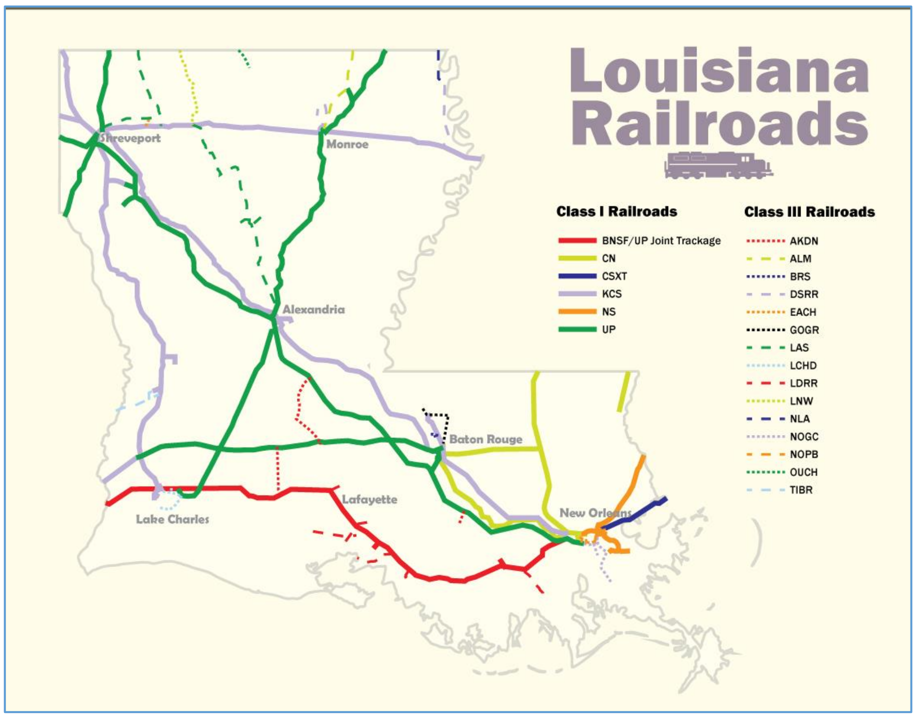
Figure 9: Louisiana Ports (DOTD)

- **Ports and Waterways:** Louisiana features eight deep-draft, or deep-water, ports, including those at New Orleans, Baton Rouge, and Lake Charles, among others. These ports, combined with smaller ones, comprise an impressive complex supplying liquid natural gas, agricultural products, and other bulk goods around the world. The Port of

South Louisiana and the Port of New Orleans, in particular, provide global access for importing equipment and exporting hydrogen carriers like ammonia and methanol. The extensive network of navigable waterways, including the Mississippi River and the Intracoastal Waterway, facilitates efficient barge transport throughout the whole industrial corridor. If liquefied hydrogen matures via cost reduction and technical improvements, these ports will be as critical for LH_2 transport as they are currently for LNG.

- **Highways and Rail:** Louisiana is served by major interstate highways (I-10, I-12, I-55) and all six Class I railroads, ensuring efficient land-based transport of materials, equipment, and containerized hydrogen.

Figure10: Louisiana Railroads (DOTD)



BLUE HYDROGEN, GEOLOGIC STORAGE, AND CCS

The viability of a blue hydrogen strategy is dependent on the unique geology of Louisiana, which is exceptionally well-suited for geologic CO_2 storage, which paired with carbon capture is the key component of blue hydrogen production. Geologic storage involves injecting captured CO_2 emissions deep underground into porous formations, where they are permanently trapped. Louisiana and Texas both contain abundant onshore and offshore deep saline formations, along with depleted oil and gas fields, with clearly defined confining layers that provide ideal repositories for CO_2. These formations are located thousands of feet below freshwater sources utilized for human consumption and are capped by impermeable layers that prevent gas migration. Moreover, Louisiana's many salt domes – long used for hydrocarbon storage in addition to other industrial activities – are the ideal medium for safe, large-scale, and long-duration storage of compressed gases like hydrogen. This capability offers the potential in the future for seasonal or temporary hydrogen storage to balance any of the intermittency of green hydrogen production from solar or wind, if those projects move forward.

Certainly in the short-term, though, CCS is the critical enabler for the multi-billion-dollar blue hydrogen and blue ammonia and methanol projects proposed for Louisiana. Without access to reliable, large-scale, and permanent geologic storage, these projects would not be economically or environmentally viable. Moreover, the 45Q tax credit, which incentivizes the permanent sequestration of CO_2, further enhances the economic attractiveness of these projects. This combination of favorable geology and policy makes Louisiana one of the most economically feasible locations for blue hydrogen development.

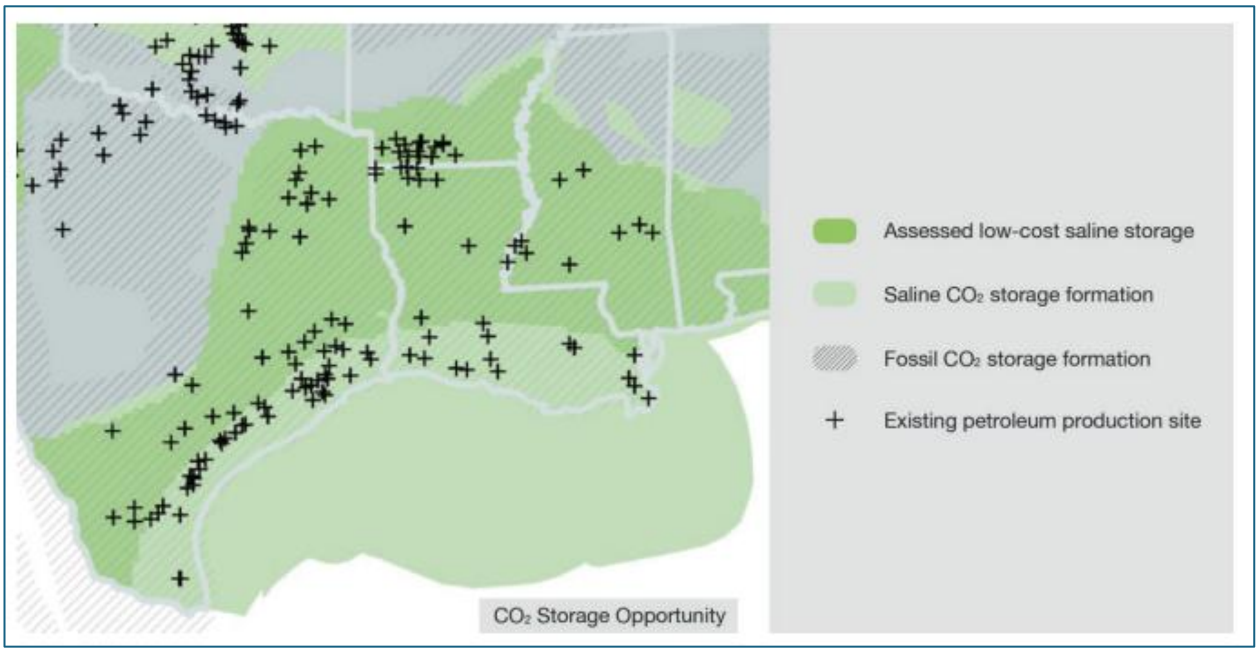


Figure 11: Geologic Storage Opportunities (H2theFuture, "Hydrogen Asset Inventory")

BUSINESS FOCUS AND DEMAND PROJECTIONS

Louisiana's approach to building a clean hydrogen economy has been pragmatic and multifaceted, embracing multiple production pathways. Obviously, the state's status as a producer of large volumes of natural gas, its experienced workforce, and its base of heavy industry has created a conducive environment for a successful blue hydrogen strategy as the focal point for new economic development. By pursuing parallel tracks for blue, green, and other forms of clean hydrogen, though, Louisiana can mitigate the risks associated with market fluctuations in the future.

BLUE HYDROGEN AS NEAR-TERM FOCUS

The production of blue hydrogen constitutes the cornerstone of Louisiana's near-term entrée into clean hydrogen. This pathway involves producing hydrogen from natural gas using established methods like SMR or, increasingly, autothermal reforming (ATR). The critical technological distinction from grey hydrogen is that the resulting CO_2 emissions, instead of being vented, are captured at a high percentage and, as discussed previously, permanently sequestered deep underground in secure geological formations. This approach is strategically sound for Louisiana as it directly utilizes two of the state's most significant competitive advantages: its low-cost natural gas resources and unique geology. Moreover, as the clean hydrogen economy emerges, there will be the need for many existing offtake facilities to convert their process equipment into hydrogen-ready status; the use of blue hydrogen should allow future offtakers to "transition" their plants over time with a much cheaper option to start.

The major blue hydrogen projects announced within the state are deploying advanced technologies like ATR, which enables more efficient hydrogen production and higher carbon capture rates, often at 95% or greater. Louisiana's successful receipt of primacy from the U.S. Environmental Protection Agency (EPA) has provided the state with the authority (under C&E) to permit and oversee Class VI CO_2 injection wells, the specific type required for permanent sequestration. State-level control should streamline the complex regulatory and permitting process, providing greater certainty to investors and significantly accelerating timelines for those projects meeting these requirements.

GREEN, PINK, AND OTHER HYDROGEN OPTIONS

Although blue hydrogen provides an immediate pathway to decarbonization of certain industries, green hydrogen produced via electrolysis from renewable energy sources like solar and wind offers a true carbon-neutral option. At present, the capacities for green hydrogen are limited primarily by by scale and cost, with the latter being the most significant barrier. Depending on the process, green hydrogen can cost up to twice as much per kilogram as grey or blue hydrogen, making it uncompetitive for most industrial applications without significant subsidies. The state's strategy ought to encourage companies to use Federal incentives like the

45V tax credit, which can provide up to $3/kg for the cleanest hydrogen, to drive down costs through economies of scale, while they also invest in technological innovations, especially electrolyzers. The continual decline in the price of renewable energy ultimately should assist in this effort as well. Some projections indicate that green hydrogen could achieve cost-competitiveness with blue hydrogen in Louisiana within the next decade. Moreover, Louisiana has a huge timber inventory that badly needs new markets, with thermal conversion process equipment relatively more mature than that required for electrolysis.

Pink hydrogen refers to hydrogen produced via electrolysis powered by nuclear energy. As a reliable, 24/7 source of carbon-free power, nuclear energy is an ideal partner for electrolysis. With nuclear power already providing somewhere around 15% of Louisiana's electricity, the state has a carbon-free power source that could be tapped for future clean hydrogen projects, providing a steady supply that complements power supplied from renewables that encounter problems with intermittency. Expanding nuclear would require navigating a difficult regulatory process, however, so that future capacity increases may require considerable time to advance through permitting. The potential use of microreactors, however, might serve to lessen regulatory and price-point stressors.

Turquoise hydrogen production uses a process called methane pyrolysis to split natural gas into hydrogen gas and solid carbon (carbon black), a valuable industrial commodity. This process avoids the creation of gaseous CO_2 thereby eliminating the need for complex and costly CCS infrastructure. Another source is by-product hydrogen generated from the production of chlorine (the chlor-alkali process). This often is used as a low-cost fuel but also represents a highly efficient source of clean hydrogen that some investors are seeking to capture for use. Again, though, for these options as with others, the issue becomes one of scale.

AMMONIA AND METHANOL FOR EXPORT

Hydrogen carriers like ammonia (NH_3) and methanol (CH_3OH), however, are very scalable, hence the massive interest in these as the key piece of Louisiana's hydrogen economy. Pure hydrogen, being the smallest and lightest of elements, is very difficult and expensive to transport over long distances, especially by sea. Ammonia and methanol, though, are hydrogen-rich chemical compounds – more dense than free hydrogen – that can be transported in liquid state at moderate pressures and temperatures utilizing existing fleet tankers and carriers, although the chemical conversion back to hydrogen does add some cost and hazard. Logistical realities explain why Louisiana's largest announced clean energy projects are not for pure hydrogen but blue ammonia. These facilities are explicitly designed to enable export to emerging global clean energy markets in Asia and Europe, which have strong decarbonization mandates but lack the domestic resources to produce clean hydrogen at scale. By focusing on these carriers, Louisiana producers are positioning themselves in the global market place.

MAJOR PROJECT ANNOUNCEMENTS AND FINAL INVESTMENT DECISIONS

According to Louisiana Future Energy, in excess of $60 billion in capital investment is flowing into Louisiana with a significant amount of this slated for projects with direct links to clean hydrogen. A report to the CHTF in August 2025 tallied some $43 billion in hydrogen-related projects that already had been announced, or were expected soon. These figures, of course, encompass both clean energy and/or traditional energy projects with significant decarbonization components. Regardless of the exact number, it is clear that hydrogen continues to be of great interest to investors.[5]

The near-term strategy, as evidenced by the largest projects that have reached or are approaching a final investment decision (FID), is heavily weighted toward the construction of blue hydrogen and blue ammonia facilities. These projects are designed to leverage the state's existing strengths in natural gas production and processing, coupling them with carbon capture technology. The most significant of these include:

- **Air Products Clean Energy Complex:** A $4.5 billion project that will produce over 750 million standard cubic feet per day of blue hydrogen. The facility will feature the world's largest carbon capture operation for a hydrogen plant, designed to permanently sequester over 5 MMT per year of CO_2 in nearby geologic formations. (On Hold)

- **CF Industries "Blue Point" Facility:** A $4 billion joint venture with Mitsui & Co. to construct a new blue ammonia plant with an expected 1.4 MMT annual capacity. This project is a prime example of decarbonizing an existing industry, as it will sequester approximately 2.3 MMT per year of CO_2 while producing a low-carbon product for export.

- **Clean Hydrogen Works/Ascension Clean Energy:** A proposed $7.5 billion facility targeting the production of 7.2 million tons of blue ammonia per year, explicitly for export to markets in Asia. The project plans to capture 98% of its CO_2 emissions, making it one of the most ambitious clean ammonia projects globally.

- **Hyundai Hydrogen-Powered Steel Mill:** A landmark $6 billion investment to construct a direct reduced iron steel mill powered by blue hydrogen. This project creates a massive, non-traditional offtake demand for the state's clean hydrogen production and illustrates a viable pathway towards decarbonization of heavy industry.

[5] Isabel Jones, "Louisiana's CapEx Outlook: Hydrogen, LNG, Data Centers, and the $60B Opportunity," Sept. 22, 2025, https://www.nesfircroft.com/resources/blog/louisiana-capex-outlook-hydrogen-lng-data-centers-60b-opportunity/.

PROJECTING DEMAND

The market for hydrogen in Louisiana is characterized at present by a stable, mature base of industrial production and offtake with an uncertain but possibly significant potential for growth driven by decarbonization trends in the broader energy and industrial sectors. The current market is defined by hydrogen's use as an industrial feedstock, a chemical input required to manufacture physical products like gasoline and fertilizer. The potential future market is defined by hydrogen's use as a traded energy commodity (via ammonia and methanol). This transition from a specialized chemical to an energy carrier necessitates the development of new technologies, commercial structures, pricing mechanisms, and trading markets that are only now emerging.[6]

NEAR-TERM USE TARGETS

As noted previously, the most significant near-term growth opportunity for clean hydrogen in Louisiana lies in its potential to displace conventionally produced hydrogen in existing industrial applications, **particularly in ammonia and methanol production and petroleum refining**, allowing for low- or no-cost retrofits and rapid substation. Initial growth in clean hydrogen will likely come from more manageable, incremental steps in this direction as transitioning existing ammonia and methanol facilities and oil refineries by switching feedstocks from grey to blue hydrogen is both financially and technically feasible. Moreover, these "inside-the-fence" projects can leverage existing hydrogen use and infrastructure, providing a foundation on which to build larger clean hydrogen production and CCS networks before tackling a massive expansion.

PRIORITY END-USE TARGETS

Beyond this opportunity, several other sectors represent important growth markets for clean hydrogen, aligning with the strategic roadmap developed by the DOE. While smaller in aggregate, these emerging applications are crucial for diversifying the hydrogen economy, particularly as hydrogen represents a uniquely effective or practical solution for these sectors but is not yet in widespread use.

- **Steel Manufacturing/Heavy Industry:** Hydrogen can be used as a clean reducing agent in place of coking coal in the steelmaking process, offering a pathway to decarbonize this hard-to-abate sector. Beyond steel, hydrogen can be used to provide high-temperature heat for other manufacturing processes, such as in the production of glass and cement, creating new local demand.

[6] See previously cited LSU Center for Energy Studies, "The Potential for Hydrogen in Louisiana"; Eric Smith, "Hydrogen could be a key resource to fueling Louisiana's future. Here's how," *Times-Picayune/Nola.com*, May 16, 2025, https://www.nola.com/opinions/guest_columns/environment-hydrogen-fossil-fuels-climate-change-carbon-capture/article_7dec82e1-cd22-452d-a5d2-f237207e8be3.html.

- **Manufacturing and Industrial Heat:** The state's manufacturing sector relies heavily on natural gas for process heat used in furnaces, boilers (particularly dueal fuel), and chemical reactors. Replacing this consumption with hydrogen could generate a demand of 3.5 MMT per year.

- **Sustainable Aviation Fuel (SAF):** Clean hydrogen is a critical input for producing e-fuels, a type of SAF that can significantly reduce aviation emissions. SAF is already being produced in large volumes.

- **Heavy-Duty Transportation:** While electric batteries are well-suited for light-duty passenger cars, the greater potential for clean hydrogen in this field lies in the decarbonization of heavy-duty transportation, where battery weight and long charging times present major challenges. For applications like long-haul trucking, drayage trucks moving containers at ports, and logistics fleets, hydrogen fuel cell electric vehicles (FCEVs) offer some advantages, including longer range, greater payload capacity, and rapid refueling times comparable to diesel. The establishment of refueling stations along I-10 and I-12 – the major freight routes of the Gulf Coast – might support continued development and deployment of these technologies, provide for offtake, and demonstrate feasibility. Initial deployments would likely focus on "back-to-base" fleets operating out of ports and distribution centers, providing a predictable, scheduled demand. Likewise, hydrogen internal combustion engines are an emerging technology in which large manufacturers like Cummins have made significant investments.

- **Maritime Sector Uses:** The decarbonization of the global maritime sector presents another important opportunity for Louisiana's future clean hydrogen economy. With a dense industrial infrastructure, cross-country transportation nodes, and deep-water ports – along with its strategic location on the Gulf of America – Louisiana is well-positioned to become a leading global hub for production, supply, and offtake of ammonia and methanol, which are considered the leading candidates for clean marine fuels. The announced large-scale blue ammonia projects in Louisiana might serve a dual purpose as export terminals for a clean energy commodity and as future refueling stations, or "bunkering" facilities, for shipping. Some of this research and development work is already underway. As with other hydrogen projects, the initial focus likely would be along the industrial corridors of south Louisiana, especially taking advantage of the barging and tow traffic along the Lower Mississippi and Intracoastal Waterway.

- **Defense Applications:** The U.S. Department of War is continuing to evaluate the role of hydrogen technologies for energy resilience and operational flexibility, as hydrogen can be a key enabler for reducing reliance on vulnerable civilian electricity grids and contested fossil fuel supply chains. Louisiana's extensive port infrastructure, industrial capacity, and proximity to major military installations make it a natural candidate for future defense-related hydrogen initiatives for land, sea, and air use. CHTF discussions with U.S. Army Engineer Research and Development Center (ERDC) staff illustrated a bevy of potential applications including hydrogen-powered microgrids with on-site electrolyzers and storage to provide "island ability," (a resilient, uninterruptible power) for critical military bases; fuel cell technology for use in small-size attritable drones; domestically-produced expeditionary power for naval vessels and aviation assets; and fuel options in extreme weather (especially Arctic) conditions.[7]

POTENTIAL LONG-TERM USE TARGETS

- **Liquefied Natural Gas (LNG) Exports:** This represents the single largest potential market for hydrogen in the state. The energy required to cool and liquefy natural gas for export is substantial. Replacing this energy component for LNG exported from Louisiana terminals in 2023 would require an estimated 23 MMT of hydrogen per year. The sheer scale of this potential demand presents a dilemma of sorts as this would be a multi-decade, multi-trillion-dollar undertaking. LNG facility operators are unlikely to make massive capital investments to convert their processes to run on hydrogen without long-term, cost-competitive supply agreements. Similarly, hydrogen producers cannot secure the financing needed for such massive projects without firm, long-term offtake agreements from trusted buyers.

- **Electricity Generation:** Natural gas is the dominant fuel for electricity generation in Louisiana, accounting for approximately two-thirds of the state's total output. Converting the state's natural gas-fired power plants to run on clean hydrogen would create an annual demand of 4.6 MMT. As with the use of hydrogen for LNG processes, there are significant technological, infrastructure, system, and cost challenges associated with such a transition.

[7] See Sophia Espinosa, "ERDC celebrates US Army's first hydrogen-powered nanogrid," press release, Jan. 8, 2025, https://www.army.mil/article/282424/engineer_research_and_development_center_celebrates_us_armys_first_hydrogen_powered_nanogrid; Shaun Waterman, "Air Force Piloting Hydrogen Energy Tech for Agile Combat Logistics," *Air & Space Forces Magazine*, April 15, 2025, https://www.airandspaceforces.com/hydrogen-energy-tech-agile-combat-logistics/; Fuel Cells Works, "U.S. Military Explores Hydrogen Generators for Ship and Shore Applications," Aug. 1, 2025, https://fuelcellsworks.com/2025/08/01/news/u-s-military-explores-hydrogen-generators-for-ship-and-shore-applications; Nicholas E.M. Pasquini, "Naval Research Hydrogen Tech Goes Tactical," U.S. Naval Research Laboratories, Aug. 6, 2025, https://www.navy.mil/Press-Office/News-Stories/display-news/Article/4267435/naval-research-hydrogen-tech-goes-tactical/.

BUSINESS CLIMATE, REGULATORY, INITIATIVES, AND OUTLOOK

The rapid acceleration of interest in the clean hydrogen economy is not a purely market-driven phenomenon. It is being actively catalyzed and shaped by a complex framework of Federal and state policies that have reshaped the economic landscape for clean energy investment. Understanding this policy architecture and the changes it is undergoing at the present time is essential to appreciating both opportunities and risk.

FEDERAL POLICY: THE BIPARTISAN INFRASTRUCTURE LAW (BIL) AND INFLATION REDUCTION ACT (IRA)

Two pieces of Federal legislation enacted in the in 2021 and 2022 have encouraged investment in Louisiana and across the nation:

- **The Bipartisan Infrastructure Law (BIL) of 2021:** This law provides the public investment for the physical infrastructure of the clean hydrogen economy. Its signature initiative is the authorization of $8 billion for the Department of Energy's Regional Clean Hydrogen Hubs (H2Hubs) program, which is designed to fund large-scale, coordinated networks of hydrogen producers, consumers, and connective infrastructure to accelerate market lift-off.

- **The Inflation Reduction Act (IRA) of 2022:** For the hydrogen sector, its most critical provisions are the Section 45V Clean Hydrogen Production Tax Credit and the enhanced Section 45Q tax credit for carbon sequestration. These provisions provide direct, long-term, and highly valuable financial incentives that make multi-billion-dollar clean hydrogen projects economically viable.

45V AND 45Q TAX CREDITS

The intricate interplay between the 45V and 45Q tax credits is the central economic mechanism driving the current wave of clean hydrogen projects in Louisiana.

- **Section 45V (Production Tax Credit):** This is a direct tax credit for the production of clean hydrogen. Its tiered structure provides up to a maximum of $3.00 per kilogram for hydrogen produced with the lowest lifecycle greenhouse gas emissions. This incentive is sufficient to make green hydrogen produced via electrolysis somewhat cost-competitive with conventional grey hydrogen and it significantly improves the economics of blue hydrogen projects with very high carbon capture rates.

- **Section 45Q (Sequestration Tax Credit):** This credit incentivizes the capture and permanent geological storage of carbon dioxide. The IRA enhanced this credit to provide up to $85 per metric ton for sequestered CO_2. This is the primary financial driver for "blue" hydrogen projects, as it directly subsidizes the cost of the carbon capture and storage equipment, which is the main capital expense that differentiates blue from grey hydrogen. A crucial provision in the law prevents a single facility from claiming both the 45V and 45Q credits for the same operation, forcing project developers to make a strategic economic choice based on their specific technology and carbon intensity. This incentive structure is deliberately designed to encourage developers to invest in carbon capture technology and secure low-methane-emission natural gas in order to achieve the lowest possible carbon intensity score and qualify for the maximum available credit.

THE HYDROGEN HUB STRATEGY

The Regional Clean Hydrogen Hubs (H2Hubs) initiative funded by the Bipartisan Infrastructure Law (BIL) was designed to provide the strategic coordination and financial support necessary to accelerate the clean hydrogen economy's transition to commercial scale. Administered by the DOE's Office of Clean Energy Demonstrations, H2Hubs ultimately allocated $7 billion in October 2023 to fund the creation of seven regional networks of hydrogen producers, consumers, and connective infrastructure. The Gulf Coast Hydrogen Hub (HyVelocity), a partnership centered in Texas but with opportunities for Louisiana, was selected to receive up to $1.2 billion. It was designed to leverage the region's existing hydrogen production and offtake, pipeline infrastructure, and carbon sequestration potential to produce large volumes of low-cost blue hydrogen. Recent news however has indicated an abrupt reversal in support for this program, with at least two and possibly all seven hubs slated for cancellation of funding.

The move from a coordinated national strategy to a purely market-driven, state-by-state approach dramatically increases investment risk. Whether or not the economic viability remains to fund the research, development, and deployment of cutting-edge clean hydrogen technologies without some sort of supportive financial backstop, though, is unclear at the moment. In such an environment, Louisiana's intrinsic advantages in infrastructure, workforce, and geology become even more pronounced.

STATE LEVEL REGULATORY

The physical build-out of the clean hydrogen economy requires navigating a complex, multi-layered regulatory landscape for infrastructure development and operation. A key technical and regulatory challenge is that hydrogen, as a much smaller and more volatile molecule than natural gas, behaves differently in pipelines. This can lead to issues like metal embrittlement and higher leakage rates, potentially requiring costly retrofitting of existing natural gas pipelines or the construction of new, purpose-built pipelines made from specialized materials. Though risks exist, hydrogen pipelines have operated safely in Louisiana for decades, supported by established federal safety standards and continuous industry oversight. Pipeline regulatory operations fall under C&E.

On the permitting front, Louisiana's state-level authority over Class VI CO_2 injection wells provides a distinct regulatory advantage for investors in blue hydrogen projects. This primacy granted by the EPA allows for a more streamlined and predictable permitting process for carbon sequestration sites, giving project developers in Louisiana a significant edge over those in other states where Federal permitting is still required.

While Louisiana's regulatory regime has a long history with permitting injection wells of various types the current volume demand requires additional resources. As of the writing of this report, 33 permit applications are under review and consideration at C&E, which recently issued guidance to: 1) pause new Class VI CO2 injection well permit applications, according to Executive Order; 2) direct resources to prioritize and review existing permit applications; and 3) require compliance with Louisiana's injection and pipeline safety rules before permit issuance. The State should consider closely all available next steps to move these and future projects forward quickly and efficiently.

ECONOMIC COOPERATION AND WORKFORCE DEVELOPMENT INITIATIVES

Spurred by recent announcements of substantial capital investment into Louisiana's industrial space as part of the expanded interest in clean hydrogen, state economic and political leaders have responded with a series of initiatives aimed at providing business support and developing an even more skilled workforce than already exists in the state. Louisiana Economic Development is already at work with its partners on the local level, especially Louisiana Works (the Louisiana Workforce Commission) and the LCTCS, to develop new curricula and training programs tailored to the specific needs of the hydrogen industry. Industrial training is well-developed in Louisiana because of its long history with heavy industry like refineries and chemical processing; hydrogen leverages this existing expertise of the Louisiana workforce, keeping Louisiana's people at home and putting them in quality, high-paying jobs.

The state's remarkable success in attracting this level of investment is not accidental; it is the result of coordinated, strategic, and proactive programs designed to market the state's advantages and de-risk project development.

- **H2theFuture:** This ambitious initiative serves as the state's primary vehicle for developing a green hydrogen economy. Supported by a $50 million federal grant from the Economic Development Administraion's Build Back Better Regional Challenge and $24.5 million in state matching funds, its mission is to create an offshore wind-powered hydrogen cluster in south Louisiana. It integrates efforts across universities, community colleges, and private industry to advance research, workforce development, and public-private partnerships. H2theFuture – Energy Transformation in South Louisiana

- **Louisiana Future Energy:** This initiative, a partnership between Louisiana Economic Development and other state agencies, serves as the marketing and business development arm of the state's energy transition. It functions as a single point of contact for global investors, proactively showcasing Louisiana's assets, streamlining interactions with state government, and ensuring that potential projects receive the support they need to reach a final investment decision. https://lafutureenergy.org/

CONCLUDING OUTLOOK

Louisiana holds a portfolio of assets that can be important in the development of an expanded clean hydrogen economy in the future. State investment in clean hydrogen can strengthen Louisiana’s energy leadership, create skilled jobs, and leverage the state’s unmatched industrial capacity. A comprehensive analysis reveals a landscape of distinct strengths, weaknesses, opportunities, and obstacles that will define Louisiana's clean hydrogen future.

STRENGTHS

- **Concentrated Industrial Landscape:** Louisiana features a dense cluster of large-scale hydrogen producers and offtakers (refineries, chemical plants) that co-exist within a compact industrial corridor, creating immense efficiencies of scale.

- **Highly-Developed Transportation Network:** Louisiana is home to the world's largest hydrogen pipeline network and possesses a dense, multimodal system of ports, railways, highways, and waterways that provide superb logistical capabilities.

- **Abundant Feedstock:** The state has access to low-cost, abundant reserves of natural gas, the primary feedstock for scalable blue hydrogen production.

- **Ideal Geology for CCS:** South Louisiana's geology offers abundant, well-suited formations for the permanent sequestration of carbon dioxide, which is critical for low-carbon blue hydrogen production.

- **Skilled Workforce:** The state has a deep talent pool of engineers, technicians, and operators with decades of experience in gas processing, chemical manufacturing, and subsurface operations. Moreover, state leaders are committed to additional training and workforce development to meet industry needs.

- **World-Class Research Universities:** Louisiana is home to researchers and labs supporting R&D in clean hydrogen, workforce training and development, and technology testing and deployment.

- **Reasonable Solar Fluxes:** These support economically feasible solar power generation, the likely power source for future hydrogen electrolyzers.

- **Tremendous Woody Biomass:** This asset can be used to produce green hydrogen via thermal conversion (about 30% less expensive that via electrolysis) and its use for such would likewise support Louisiana’s timber industry in those rural areas of the state badly in need of economic opportunities.

CHALLENGES

- **Carbon-Intensive Baseline:** The vast majority of current hydrogen production is carbon-intensive grey hydrogen, representing a significant existing emissions footprint.

- **High Dependency on CCS:** The state's near-term strategy is overwhelmingly reliant on blue hydrogen, the economic viability of which is entirely dependent on the successful, cost-effective, and safe deployment of large-scale carbon capture and sequestration.

- **Limited In-State Renewable Capacity:** Compared to other regions, Louisiana has comparatively less renewable energy deployed and in the queue, which presents a challenge for producing large-scale, cost-competitive green hydrogen in the immediate future.

OPPORTUNITIES

- **Potentially Large Decarbonization Market:** The most significant near-term growth opportunity for clean hydrogen lies in its potential to displace conventional hydrogen in the industrial sector, particularly in ammonia and methanol production and oil refining. Priority end-use opportunities exist for expanded hydrogen consumption in various industrial processes such as steel manufacturing along with use in the aviation, trucking, maritime, and defense sectors.

- **Global Export Leadership:** Louisiana is positioned to become a leading global exporter of low-carbon hydrogen carriers, particularly blue ammonia and methanol, to meet growing international demand in markets like Asia and Europe.

- **Federal Tax Incentives:** The Section 45V and 45Q tax credits remain powerful financial incentives that can significantly improve the economic feasibility of clean hydrogen projects, even without the H2Hubs program.

OBSTACLES

- **Policy Instability:** The reported termination of the Federal H2Hubs program is a potential setback to the industry's development as it removes an important catalyst for technological innovation and industry coordination. To a degree it signals a retreat from a coordinated hydrogen strategy at the national level.

- **Economic Competitiveness:** Clean hydrogen must ultimately compete on cost with incumbent fuels, primarily natural gas. The added cost of CCS for blue hydrogen and electrolysis for green hydrogen remains an economic barrier that may require early policy support to overcome. Long-term projections for hydrogen use in LNG and electricity generation face considerable cost challenges.

- **Public and Environmental Opposition:** Large-scale infrastructure projects, including new pipelines and CO_2 injection wells, can face significant local community and environmental opposition, which can lead to costly delays and potential project cancellations.

APPENDIX A: MEETING AGENDAS

Meeting agendas of the Clean Hydrogen Task Force are available online at:
https://dce.louisiana.gov/assets/Other/2025-CHTF-Report/2025-CHTF-Report-Meeting-Agendas-Combined.pdf

Video recordings of the meetings can be found in the Broadcast Archives of the Louisiana House of Representatives, online at:
https://house.louisiana.gov/H_Video/Hse_Video_OnDemand

APPENDIX B: PUBLIC COMMENT

Public comment associated with the preparation of this report is available online at:
https://dce.louisiana.gov/assets/Other/2025-CHTF-Report/2025-CHTF-Report-Public-Comments-Combined.pdf

APPENDIX C: RESOURCES CONSULTED

A list of resources consulted in the prepration of this report is available online at:
https://dce.louisiana.gov/assets/Other/2025-CHTF-Report/2025-CHTF-Report-Resources-Consulted.pdf