EXECUTIVE SUMMARY

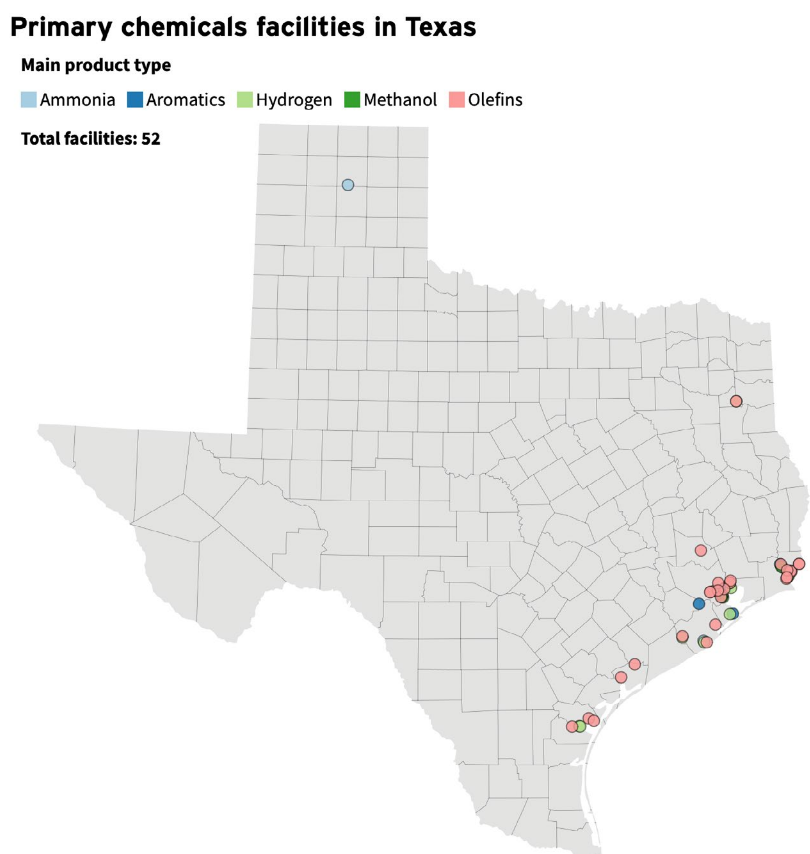
Transforming Chemicals Production in Texas

September 2026

Texas, the nation's leading chemical manufacturer and exporter, is at an inflection point. The state can enable facilities to continue operating largely as they do today or help the industry modernize in ways that strengthen global competitiveness, improve public health, and reduce emissions.

Texas is home to 52 basic chemical manufacturing facilities that primarily produce olefins and hydrogen, building block chemicals used to manufacture everyday products such as plastics, detergents, and adhesives, as well as a few that produce ammonia, methanol, and aromatics, which are used to make textiles. Some of these facilities have been in operation for several decades, since petrochemical production first began in Texas. These facilities are largely concentrated in Harris and Brazoria counties along the Gulf Coast. The chemical sector is a major contributor to Texas's economy, supporting approximately 36,000 jobs, contributing $26 billion to the national GDP, and accounting for $19 billion of the state's exports.

Collectively, these facilities release approximately 71 million tons of carbon dioxide equivalent (CO_2e) each year, along with significant quantities of criteria and hazardous air pollutants, particularly nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs) and 1,3-butadiene, which contribute to poor air quality and toxic health risks. Globally, market standards are increasingly tracking the emissions intensity of products, signaling growing



demand for lower-emissions commodities. By deploying technologies that reduce pollution and emissions from primary chemical production, Texas can protect and strengthen its competitive advantage in the chemical industry, particularly in growing export markets for low-emissions commodities. Solutions exist today to modernize Texas's chemicals industry, delivering reliability and resilience of production processes benefits alongside public health benefits.

AI-Driven Predictive Maintenance

AI-driven predictive maintenance uses sensors and analytics software to monitor high-consequence equipment and identify abnormal vibration, temperature, pressure, or flow patterns before failures cause shutdowns, leaks, venting, or flaring.

~100 events/year *~2 events/facility/year*	**Potential unplanned maintenance events avoided**
$22–$40 million *~$0.4 million–$0.8 million per facility*	**Deployment cost statewide**
~$300 million *~$6.3 million per facility per year*	**Avoided production losses per year**
65,000 tons	**CO_2 avoided per year**
27 tons	**NO_x avoided per year**
140 tons	**VOCs avoided per year**

Low-Leak Natural Gas Procurement

Low-leak natural gas procurement is when chemical producers buying natural gas that is produced, processed, and transported with lower methane leakage, through measurement-based certification standards set by independent, third-party organizations.

Methane intensity can vary by as much as 100 times between the highest-emitting production and an openly certified volume of gas. As such, chemical manufacturers can play an important role in reducing supply chain emissions by demanding low-leak natural gas from their suppliers.

~420 million MMBtu	**Annual natural gas procurement in Texas for chemical feedstock and fuel**
1.71%	**Methane intensity baseline** (North American average)
<0.2%	**Methane intensity target**
~119,000 tons	**Methane avoided per year**
~9.8 million tons	**CO_2e avoided per year**
~$38 million	**EPA COBRA health benefits**
Incremental annual cost	**Net negative for some levers; cost varies by type of abatement technology implemented**

NO_x Air Pollution Control

NO_x air pollution controls include low-NO_x burners (LNB), which reduce NO_x formation inside combustion equipment, and selective catalytic reduction (SCR), which removes NO_x from flue gas after combustion.

24,000 tons	**Modeled NO_x baseline per year** (statewide)

LNB installation

- **NO_x reduction:** 1,800 tons/year
- **Cost:** $3 million/ year
- **Health benefit:** $66 million/year

SCR installation

- **NO_x reduction:** 2,400 tons/year
- **Cost:** $26 million/ year
- **Health benefit:** $85 million/year

Stacked installation

- **NO_x reduction:** 4,200 tons/year
- **Cost:** $29 million/ year
- **Health benefit:** $149 million/year

Low-Emissions Hydrogen with CCS

Low-emissions hydrogen is created from hydrogen production units such as steam methane reformers and autothermal reformers that are outfitted with carbon capture equipment; the captured CO_2 is then used or sequestered instead of released into the atmosphere.

6.6 million tons	**Net CO_2e avoided per year**
$5 billion	**Estimated capital expenditure (capex)** (statewide)
$860 million	**Estimated annual cost** (statewide)
$130/ton	**Cost per ton tCO_2e**
$40/ton	**Cost per tCO_2e (including federal tax incentive)**

Thermal Energy Storage (TES) for Industrial Steam

Thermal energy storage uses electricity to heat a storage medium and later discharges that stored heat to produce steam for industrial process heating.

36 million MMBtu	**Eligible boiler heat per year** (share attributable to conventional boilers in target facilities)
2.4 million tons	**Max CO_2 Reduction Potential per year** (if TES charged with 100% renewable energy)
$90 million –$134 million	**Human health benefits per year** (if TES charged with 100% renewable energy)

Energy Cost Scenario 1: Average 2025 Texas Industrial Retail & Gas Prices

- **TES heat cost:** $19.6/MMBtu
- **Gas-Boiler cost:** $4.5/MMBtu
- **Incremental energy cost increase:** $545 million/year

Energy Cost Scenario 2: Favorable Scenario for TES

- **Electricity assumption:** $30/ MWh; all-in electricity price
- **Natural gas assumption:** $6.61/ thousand cubic feet (MCF); 2022 high-price case
- **TES Heat Cost: $**9/MMBtu, Gas-Boiler Cost: $8/MMBtu
- **Incremental energy Cost increase:** $36 million/year

Policies and market drivers summary

To encourage deployment of these five technologies, Texas could undertake policy and market-driving actions for its chemicals industry using a phased approach.

Over the next two years, Texas could organize markets to reduce transaction costs, create market signals, and begin planning for the long-term through actions that do not require new legislation.

Over the next five years, the state could work with the Texas Legislature to authorize funding to improve project economics, reduce capital barriers, and attract investment into industrial modernization projects.

Over the next decade, Texas could scale its competitive advantage by updating the State Improvement Plan to reflect the availability of new technologies in the chemicals manufacturing sector.

By laying the foundation now, Texas can protect the competitive advantage of its chemical industry and ensure it remains the preferred location for the next generation of chemical manufacturing.