

Modernizing Industry in Georgia

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Key takeaways

1. The **Peach State's manufacturing sector** heavily **relies on chemicals** and **pulp and paper production**. Georgia's chemicals industry recently experienced **6% employment growth**, and the state employs 1.85 times more workers in pulp and paper per capita compared to the national average.
2. As demand for chemicals and paper shifts to low-emissions products, **Georgia can** leverage its specialized workforce and existing infrastructure to **establish an early-mover advantage in green markets**.
3. **The strategies with the greatest potential** for reducing manufacturing emissions in Georgia are **electrifying thermal processes** and **deploying green hydrogen** as fuel source.
4. Georgia can **support industrial modernization and economic competitiveness through enabling state policies**, such as a production tax credit for clean industrial heat and green product certifications.

Georgia's economy shows momentum and strength in the chemicals and pulp and paper sectors. The Peach State is the thirteenth-largest [chemical-producing state](#), and Georgia is responsible for more than [20% of national pulp and paper exports](#). The state employs [1.85 times more paper and pulp workers](#) per capita than the national average.

But global changes necessitate a new strategy to keep Georgia competitive. [Chemical markets are shifting](#) to low-emissions products. Meanwhile, [new global regulations and growing consumer concern](#) are compelling [sustainable approaches](#) to pulp and paper manufacturing. Aligning with environmental priorities presents [long-term growth potential for producers](#). As the chemicals and pulp and paper markets transition, Georgia has significant assets it can leverage to establish an early-mover advantage.

Supporting the development of low-emissions chemicals and green pulp and paper industries will also reduce climate pollution. Chemicals and pulp and paper are the leading sources of statewide manufacturing emissions. In 2024, Georgia's manufacturing sector collectively released 20.7 million metric tons (MMT) of carbon dioxide equivalent (CO₂e), according to data from the [Energy Policy Simulator](#). If the state does not take action, by 2050, the manufacturing sector is forecast to emit similar levels of pollution as today. However, if the state incorporates the strategies outlined below, it could reduce manufacturing emissions to 7.4 MMT CO₂e.

Health impact from Georgia's chemicals and pulp and paper facilities

Current levels of air pollution from Georgia's chemicals and pulp and paper facilities adversely impact public health and economic activity.

Health Event	Estimated Annual Incidents from Facilities		
	Chemicals	Pulp and Paper	Total
Premature deaths	10-19	47-104	57-123
ER Visits, respiratory	14	166	180
Asthma symptoms	6,423	65,756	72,179
Work loss days	930	6,026	6,956
School loss days	1,888	27,212	29,100
Total health costs*	\$158M-\$285M	\$1.5B-\$2.3B	\$1.6B-\$2.4B
Lost economic activity**	\$4.2M	\$53M	\$57.2M

*Includes health costs incurred from additional incidents not listed like cardiac arrests, stroke, and hospital admits

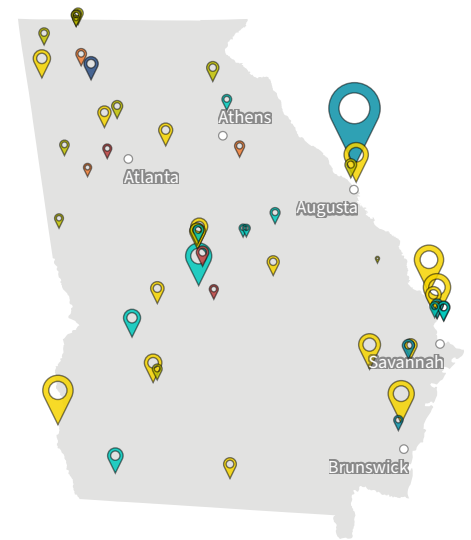
**Includes economic impact of minor restricted activity days, in addition to school and work loss days

Source: [EPA CO-Benefits Risk Assessment \(COBRA\)](#)

In addition to having a negative climate impact, industrial emissions harm public health. Certain industrial processes can release pollutants like particulate matter, nitrogen oxides, and sulfur dioxide, which are linked to [adverse health conditions](#), ranging from asthma

exacerbation to premature death and disease. Curbing emissions from facilities is particularly critical to the health of local communities, which are [disproportionately impacted by exposure](#) to air pollution.

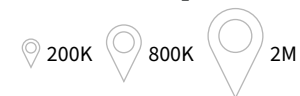
Georgia's industrial facilities



Facilities by industry

- Pulp and paper
- Chemicals
- Cement and other nonmetallic minerals
- Other manufacturing
- Glass products
- Other metals
- Iron and steel

Metric tons CO₂e



Source: [US EPA](#)



Strategies for emissions reduction

Modernizing facilities can support competitiveness in emerging markets while reducing air and climate pollution. Based on the [Energy Policy Simulator](#), an open-source model for estimating the impacts of energy policies, the strategies with the greatest potential for reducing emissions in Georgia are electrifying thermal processes, especially those requiring heat below 400°C, and deploying green hydrogen as fuel source.

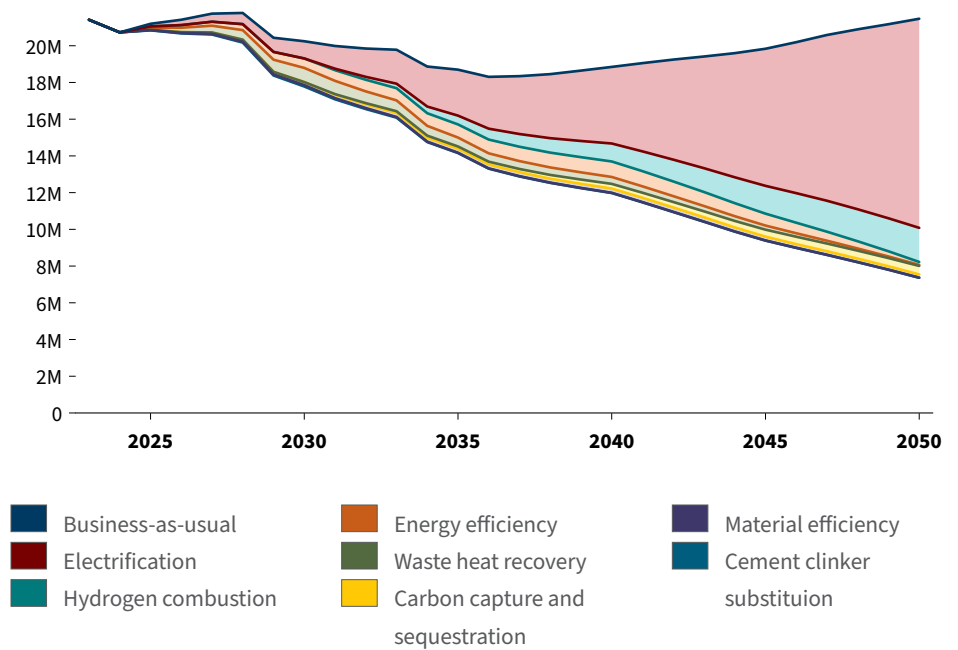
If nearly all industrial processes below 400°C are electrified by 2050, Georgia can reduce emissions from manufacturing by a cumulative 109.5 MMT CO₂e, or 66.4% of overall potential emissions reductions from the set of strategies. Electrification of thermal processes is an immediate opportunity to reduce emissions from on-site combustion of fossil fuels. Direct electrification for low- to medium-temperature heat has the greatest potential in [light industries](#), including pulp and paper, food and beverage, and certain [chemicals](#).

Deploying [green hydrogen](#) as a fuel source is a longer-term opportunity to abate emissions from processes that require high-temperature heat. If the transition to hydrogen begins in 2031, at which time [the cost of hydrogen production is expected to fall](#) 50%-60% there is the potential to reduce cumulative statewide emissions by 20.4 MMT CO₂e by 2050.



Industrial emissions in Georgia

Emissions from manufacturing have the potential to decline by 14.1 million metric tons of CO₂e by 2050, compared to a business-as-usual scenario.



The wedges show each strategy's annual impact towards emissions reductions and was calculated using the Energy Policy Simulator (EPS). The business-as-usual scenario corresponds to the Federal Policy Repeal and Rollback scenario in the EPS, which is more representative of today's policy landscape, and assumes that Georgia takes no further action to reduce industrial emissions.

Source: RMI Analysis, [Energy Policy Simulator](#)

Cumulative emissions reduction by strategy

Strategy	cumulative MMT CO ₂ e reductions through 2030	cumulative MMT CO ₂ e reductions through 2050	▼ % of cumulative industrial emission reductions
Electrification	3.2	109.5	66.4%
Hydrogen combustion	0.0	20.4	12.4%
Energy efficiency	1.7	14.6	8.9%
Waste heat recovery	2.7	9.8	5.9%
Carbon capture and sequestration	0.0	5.2	3.2%
Material efficiency	0.6	4.8	2.9%
Cement clinker substitution	0.3	0.6	0.3%

These values were calculated using the Georgia Energy Policy Simulator (EPS), and they assume both stringent implementation and carbon capture and sequestration and hydrogen combustion reaching technological readiness by 2031. The conversion of BF-BOF to hydrogen-ready DRI facilities is estimated in the EPS by pairing the feedstock shifting and electrification levers.

Source: RMI Analysis, Energy Policy Simulator

Additional interventions that can be deployed in the near term include:

- Increasing the efficiency of industrial equipment, including updating heat pumps and compressors and integrating advanced process control systems. Other technologies include enzyme-assisted refining and impulse drying. [Energy efficiency](#) is the quickest and most cost-effective mitigation strategy.
- Recovering waste heat using economizers and heat exchangers and converting it into usable energy.
- Using smarter design materials to reduce demand for new steel, cement, and other products, i.e., material efficiency.
- Prioritizing the use of [low-carbon intensity methane](#) in industries relying on high-heat processes while the infrastructure and supply for cleaner low carbon fuels is developed.



Supporting policies

With recent changes in federal policy causing market uncertainty, state leadership is critical to maintaining the interest and energy of its investors and project developers. Georgia's policymakers can support industrial competitiveness and decarbonization through policies that establish certainty, which involves setting standards, and providing support, including reducing the costs of technical interventions and increasing the value of low-emissions products.

There are several actions that Georgia can take to modernize its industrial sector. Examples include:

Creating standards

- **State target setting** or mandates to direct the industry sector's emissions reductions.
- **Energy efficiency standards** for industry to drive development and deployment of energy-saving technologies, such as electrified Haber-Bosch processes for chemical production and infrared dryers for pulp and paper manufacturing.

Providing support

- **Technical assistance grants** to assist facilities in transitioning to low-emissions production. Technical assistance can help facilities overcome financial barriers, capacity constraints, or knowledge gaps in modernizing.
- **Developing hydrogen infrastructure**, including pipelines, storage facilities, and liquefaction plants, can provide the robust and resilient quality infrastructure needed to transition to green hydrogen as a fuel source.
- **Shift any remaining fossil fuel demand towards low methane intensity resources** by incentivizing the use of oil and gas that was produced with lower upstream emissions over other sources.

Adding value

- **A production tax credit (PTC) for clean industrial heat** would reward industrial facilities for meeting thermal energy needs with clean fuel sources, like electricity or green hydrogen, instead of fossil fuels. The credit can be structured per unit of clean heat delivered to an industrial process and increases clean fuel's cost competitiveness. A PTC for clean industrial heat may also incentivize black liquor gasification for generating heat and steam in pulp and paper facilities.
- **Labels for low-emissions products** based on an established certification process provide credible assurance to buyers. The use of labels helps manufacturers capitalize on emerging markets and partnerships that prioritize environmental responsibility.

For more information about industrial decarbonization, please email USAnalysis@rmi.org