

### Key Insights

- Electrifying the steel and wet corn milling sectors in Illinois can **significantly reduce emissions**.
- Electrifying recycled plastic, milk powder, container glass, soybean oil, cast aluminum, and beer production may **reduce energy costs** per unit of production.
- Electrifying just the subsectors in this study will **advance Illinois 2.4% of the way to full industrial decarbonization** by 2050.

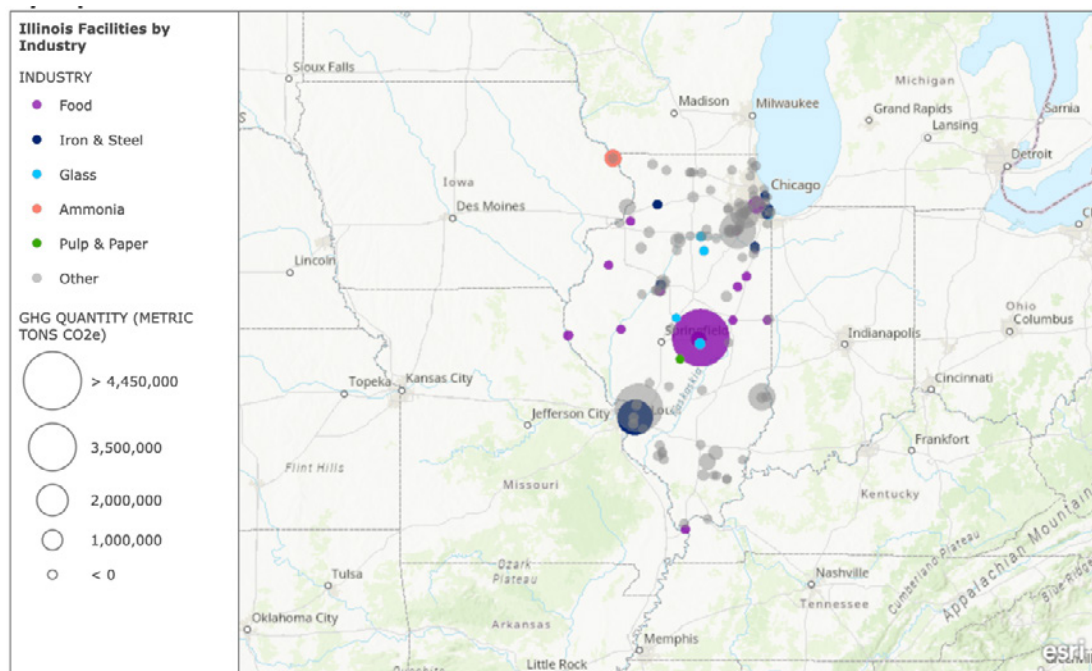
### Quick Facts

- **17.8% of Illinois' GHG emissions** are from industry.<sup>1</sup>
- The state is committed to **cut greenhouse gas emissions 26-28% by 2025**, compared to 2005 levels.<sup>2</sup>
- As of 2022, the manufacturing sector employed **9.4% of the state's workforce** and accounted for more than **12.8% of total gross state product**.<sup>3</sup>

Electrifying industrial processes offers a significant opportunity to decarbonize Illinois' industrial sector, which accounts for 17.8% of the state's greenhouse gas (GHG) emissions.<sup>1</sup> Industrial emissions originate from facilities throughout the state as shown in the map below. These emissions must be reduced to meet the state's emissions reductions goals. In numerous industrial subsectors, electrified technologies can shift production away from carbon-intensive fossil fuels to renewable electricity.

The report [Industrial Electrification in U.S. States](#) analyzes 11 of Illinois' industrial subsectors and the changes in energy use, CO<sub>2</sub> emissions, and energy costs that would occur if individual industrial processes were electrified. This report studied Illinois' industrial pulp and paper, container glass, ammonia, plastic recycling, steel, beet sugar, milk powder, wet corn milling, aluminum casting, beer, and soybean oil sectors.

## Illinois Industrial Emissions



Esri, USGS | Missouri DNR, Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS

Built using ArcGIS online with U.S. Environmental Protection Agency's Facility Level Information on GHGs Tool (FLIGHT) 2020 data. U.S. Environmental Protection Agency, "Greenhouse Gas Reporting Program (GHGRP)," last accessed February 25, 2022, <https://www.epa.gov/ghgreporting>.

This map shows the relative emissions of large industrial facilities. Facility types that are included in the full report analysis are shown in colors while other industrial facility types are shown in grey.

The study found that, among the Illinois subsectors analyzed, the following have the potential to reduce emissions by the largest margins, ranked by the expected decrease in annual emissions by 2050 through electrification:

- Steel (4493 kt CO<sub>2</sub>)
- Wet corn milling (2069 kt CO<sub>2</sub>)
- Ammonia (713 kt CO<sub>2</sub>)

Deploying electric technologies would result in near-term emissions reductions, and, given the Biden administration's stated policy to achieve a "carbon pollution-free power sector by 2035," electrification could deliver even further decarbonization in the near- and medium-term.

Many electrification technologies considered in this study are commercially available, enabling Illinois to begin electrifying, and realizing emissions reductions, in the near-term. Within Illinois today:

- The steel industry can electrify using Hydrogen Direct Reduced Iron (H<sub>2</sub>-DRI) and Electric Arc Furnace (EAF) technology, and the wet corn milling industry can deploy electrical rotary and ring dryer technology. Both would see emissions savings immediately.
- Electrification can bring energy cost savings across six industries including plastic recycling, milk powder, container glass, soybean oil, aluminum casting, and beer if lower renewable electricity cost is used. Additional cost information can be found in the full report.
- Industrial electrification can be advanced by supporting electrified technology demonstration, financially incentivizing electrification, increasing the state's renewable electricity generation capacity, enhancing the electric grid, and developing the workforce. A decarbonized energy grid is crucial for realizing the full benefits of industrial electrification and bringing Illinois closer to its emissions reduction goals.

### Key Actions to Accelerate Industrial Electrification in Illinois

- Open a dialogue with the steel industry to learn what hurdles prevent manufacturers from adopting commercially available electrified technologies, especially H<sub>2</sub>-DRI and Electric Arc Furnace technology.
- Assist facilities in accessing the Inflation Reduction Act's incentives for electrification, such as the Sec. 48C Advanced Energy Manufacturing Credit and the Advanced Industrial Facilities Deployment Program.
- Support efforts to establish federally supported H<sub>2</sub> Hubs in the state, given the potential for hydrogen to decarbonize the steel and ammonia industries with clean electricity.
- Leverage federal resources in the Investment in Infrastructure and Jobs Act (IIJA), including opportunities under the Advanced Energy Manufacturing and Recycling Grant Program and the Industrial Emissions Reduction Technology Development Program.
- Ensure sufficient renewable electricity generation resources are built to supply increasing demand and that grid infrastructure can adequately and reliably serve increased loads.
- Engage frontline communities and those working on environmental justice in this industrial transition.

Additional Factsheet Sources:

<sup>1</sup>U.S. Energy Information Administration, "[Introduction and Key Concepts: State Energy-Related Carbon Dioxide Emissions Tables](#)," Independent Statistics & Analysis, U.S. Department of Energy, October 2022.

<sup>2</sup>JB Pritzker, "[Executive Order Joining the US Climate Alliance and Committing to the Principles of the Paris Climate Agreement](#)," State of Illinois Executive Department, January 23, 2019.

<sup>3</sup>National Association of Manufacturers, "[2022 Illinois Manufacturing Facts](#)," 2023.

Download the full report and analysis here: <https://www.renewablethermal.org/state-electrification-report> or from here: <https://www.globalefficiencyintel.com/industrial-electrification-in-us-states>