



Industrial Boiler Pollution in Illinois

Evergreen Collaborative has published a <u>first-of-its-kind map</u> identifying nearly 14,000 industrial boilers across all 50 states and quantifying the air pollution they emit. Our analysis finds that industrial boilers are a massive pollution source in the U.S., generating 6% of all industrial nitrogen oxide (NO_x) emissions and 5-10% of all industrial carbon dioxide (CO₂) emissions. These boilers depend heavily on fossil fuels, especially fossil gas, to heat water for a wide range of industrial processes, including pulp and paper manufacturing, food processing, chemicals production, and more.

The national map and report highlight key opportunities—and urgent needs—in Illinois. Illinois is home to 1,237 industrial boilers, the third-highest number of any state. Evergreen's National boiler map¹ indicates that boiler pollution is an acute issue in the state:

- About 40% of Illinois' industrial boilers are **located in federally recognized disadvantaged communities** (DACs).
 - Those DACs suffer higher volumes of industrial air pollution—on average, reported boiler units in Illinois DACs emit more NO_x, particulate matter, and other pollutants than reported units located in non-DACs.
- **51.2% of Illinois' industrial boilers are located in nonattainment areas**, where ozone pollution already exceeds legal limits under the Clean Air Act. Nationally, 25% of boilers are located in nonattainment areas.
- Archer Daniels Midland, VCNA Prairie, and Ozinga Ready Mix Concrete own the largest number of boilers in Illinois, with a combined 75 boilers across the state.
- The **food manufacturing** industry operates the largest number of boilers in Illinois with 236 units, followed by the **chemicals and nonmetallic mineral product manufacturing** industries with 189 and 129 units, respectively.
- The top 1% of highest-emitting reported units in Illinois each emitted about 220 tons of NO_x on average annually, cumulatively generating 2,202 tons every year. The top 5% emitted more than 90 tons of NO_x , totaling 4,354 tons of NO_x .
- The highest emitting reported unit in Illinois is owned by Archer Daniels Midland, a food manufacturing company. The unit is located in Decatur and produces 466 tons of NO_x annually. This means the unit has higher NO_x emissions than 99.5% of units in the U.S., by NO_x emissions.

In burning fossil fuels to heat water, **industrial boilers produce a dizzying array of air pollutants.** These include not only CO_2 , the primary driver of climate change, but also multiple contaminants that directly endanger human health, including NO_x , particulate

¹ Filtered for Illinois

matter, mercury, and hydrochloric acid. These pollutants can penetrate deep in the lungs and, depending on the pollutant, cause respiratory illnesses, heart disease, cancer, and premature death. Industrial boiler pollution is a public health crisis, but it doesn't have to be this way: Evergreen and Sierra Club's new report accompanying the national boiler map, *Embracing Clean Heat: Opportunities for Zero-Emission Industrial Boilers*, lays out a pathway to electrifying America's industrial boilers.

The solution: Replace the current boiler fleet, to the greatest extent possible, with electric alternatives. Those alternatives are commercially available and technologically viable replacements for high-polluting legacy boilers. Particularly for industrial processes below 200°C, these alternatives can provide cost-effective pollution reductions compared to fossil fueled units. The time is ripe for state leaders to advance ambitious measures to electrify America's industrial boilers.

Illinois is especially well-positioned to act on this issue. In Illinois' Priority Climate Action Plan, the state committed to "[e]lectrify 10 percent of low-temperature industrial heat by 2030 and 95 percent by 2050," noting that alternative technologies like industrial heat pumps are technically capable of replacing many fossil-fueled boilers. Notably, the state's Pollution Control Board has already adopted NO_x standards for industrial boilers that are, for some units, more stringent than current federal requirements. But the Board's boiler standards do not apply to all units in the state, and do not establish zero-emission standards for any class of boilers. Pursuing more stringent emissions limits and other supportive policies can help Illinois reach key climate targets while tackling a major source of industrial pollution in the state.

<u>Embracing Clean Heat</u> recommends an ambitious policy approach to electrify America's industrial boilers. The policy tools detailed in the report include:

- **New State-Level Clean Air Rules** States can put firm limits on criteria pollution from their industrial boilers, going above and beyond the Trump administration's standards.
- Investments in Electrification State governments can make targeted investments to close the cost gap between fossil and electric boilers, clean up fenceline communities' air, and create jobs.
- **Utility Rate Reforms** States' public utilities commissions can institute rates that reward industrial customers for electrifying equipment and deploying energy storage to enhance demand flexibility and grid stability.

See Evergreen Collaborative and Sierra Club's new report <u>Embracing Clean Heat:</u> <u>Opportunities for Zero-Emission Industrial Boilers</u> for more, including a detailed exploration of states' authorities to act on boiler pollution under the Clean Air Act.

Industrial Boilers in Illinois

