

## Industrial Boiler Pollution in Colorado

Evergreen Collaborative has published a [first-of-its-kind map](#) 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<sub>x</sub>) emissions and 5-10% of all industrial carbon dioxide (CO<sub>2</sub>) 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.

In burning fossil fuels to heat water, **industrial boilers produce a dizzying array of air pollutants**. These include not only CO<sub>2</sub>, the primary driver of climate change, but also multiple contaminants that directly endanger human health, including NO<sub>x</sub>, particulate 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 national map and report highlight key opportunities—and urgent needs—in Colorado. **Colorado is home to 175 industrial boilers**. [Evergreen's Colorado dataset](#) indicates that boiler pollution is an acute issue in the state:

- About 45% of Colorado's 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 Colorado DACs emit nearly two times more NO<sub>x</sub>, two times more lead, and 158 times more mercury than reported units located in non-DACs.
- 72.4% of Colorado's industrial boilers are located in nonattainment areas, where ozone pollution already exceeds legal limits under the Clean Air Act—nearly three times the national average of 25%.
- Cargill, Leprino Foods, and Swift Beef own the largest number of boilers in Colorado, with a combined 21 boilers across the state.
- The food manufacturing industry operates the largest number of units in Colorado with 60 units, followed by the chemical manufacturing and the beverage and tobacco product manufacturing industries with 17 and 11 units, respectively.
- The top 5% of highest-emitting reported units in Colorado each emitted more than 173 tons of NO<sub>x</sub>, cumulatively generating 1,384 tons of NO<sub>x</sub>.

- The highest emitting reported unit in Colorado is owned by Western Sugar Cooperative, a food manufacturing company. The unit is located in Fort Morgan and produces 568 tons of NO<sub>x</sub> annually. This makes this unit higher-emitting than 99.7% of units in the U.S., by NO<sub>x</sub> emissions.

Evergreen and Sierra Club's report lays out a policy agenda to tackle the massive pollution burden of fossil-fueled industrial boilers. That agenda hinges on replacing the current boiler fleet, to the greatest extent possible, with electric alternatives. The report argues that those alternatives—industrial heat pumps, conventional electric boilers, and thermal energy storage—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 and federal leaders to advance ambitious measures to electrify America's industrial boilers.

Colorado is especially well-positioned to advance industrial boiler electrification. The state has already demonstrated a nation-leading commitment to industrial decarbonization through the creation of the [GEMM 1](#) and [GEMM 2](#) programs, which set emissions reduction targets for the state's highest-emitting industrial facilities. Colorado's ambitious statewide decarbonization timelines, which include reaching 100% net-zero greenhouse gas emissions by 2050, can further motivate industrial boiler electrification—as can the state's [high levels of ozone pollution](#).

*Embracing Clean Heat* 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, *Embracing Clean Heat: Opportunities for Zero-Emission Industrial Boilers*, for more, including a detailed exploration of states' authorities to act on boiler pollution under the Clean Air Act.