

Industrial Boiler Pollution in California

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_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 highlights key opportunities—and urgent needs—in California.

California is home to 1,386 industrial boilers, the highest number of any state.

[Evergreen's National boiler map](#)¹ indicates that boiler pollution is an acute issue in the Golden State:

- About 47% of California's industrial boilers are located in **federally recognized disadvantaged communities** (DACs), well over the national average of 40%
 - DACs also suffer higher volumes of industrial air pollution—on average, boilers in California DACs emit 4x more mercury than they do elsewhere. Nationally, boilers in DACs are twice as polluting as boilers in non-DACs.
- An eye-popping **92% of California's industrial boilers are located in nonattainment areas**, where ozone pollution already exceeds legal limits under the Clean Air Act.
- **Aerojet Rocketdyne, Foster Farms, and Phillips 66 Co.** own the largest number of industrial boilers in California, with a combined 94 reported units across the state.
- The **food manufacturing** industry operates the largest number of boilers in California with 497 units, followed by the **chemical manufacturing** and the **computer and electronic product manufacturing** industries with 150 and 145 units, respectively.
- The top 1% of highest-emitting boilers in California each emitted more than 112 tons of NO_x on average annually, cumulatively generating 1,467 tons of NO_x annually. The top 5% emitted more than 35 tons of NO_x on average annually, or 2,472 total tons of NO_x.
- **The highest emitting boiler in California is owned by Sierra Pacific Industries**, a wood product manufacturing company. The boiler is located in Sonora and produces 153.55 tons of NO_x annually.

In burning fossil fuels to heat water, **industrial boilers produce a dizzying array of air pollutants**. These include not only CO₂, the primary driver of climate change, but also

¹ Filtered for California

multiple contaminants that directly endanger human health, including NO_x (the main constituent of ozone), 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 solution: Replace the current boiler fleet, to the greatest extent possible, with electric alternatives. These 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 leaders to advance ambitious measures to electrify America's industrial boilers.

California's lawmakers are already making progress on the issue:

- The **South Coast and Bay Area Air Quality Management Districts** have already issued rules that will phase in zero-emission NO_x limits on small commercial and industrial boilers, and South Coast is initiating rulemaking to establish similar standards for larger units.
- The **California Air Resources Board** (CARB) is initiating rulemaking to establish zero-emissions NO_x limits on small commercial and industrial boilers for units across the entire state of California.
- **Senate Bill 318**, introduced by Senator Josh Becker, would encourage and empower air regulators to require the use of zero emissions technology during the air permitting process.

Evergreen and Sierra Club have recommended an ambitious set of priorities for building on the progress California has already made. The policy recommendations in the report include investments in closing the cost gap between fossil and electric boilers through clean heat production tax credits and other supportive programs, as well as utility rate reforms that reward industrial customers for electrifying equipment and deploying energy storage.

See Evergreen Collaborative and Sierra Club's new report [*Embracing Clean Heat: Opportunities for Zero-Emission Industrial Boilers*](#) for more information on all of the above, including a detailed exploration of states' authorities to act on boiler pollution under the Clean Air Act.

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