

### Key Insights

- Electrifying ammonia production in Washington can **significantly reduce emissions**.
- Electrifying aluminum casting, beer, and milk powder production can **reduce energy costs** per unit of production.
- Electrifying just the subsectors in this study will advance Washington 15% towards its goal of net-zero emission from the industrial sector by 2050.<sup>1</sup>

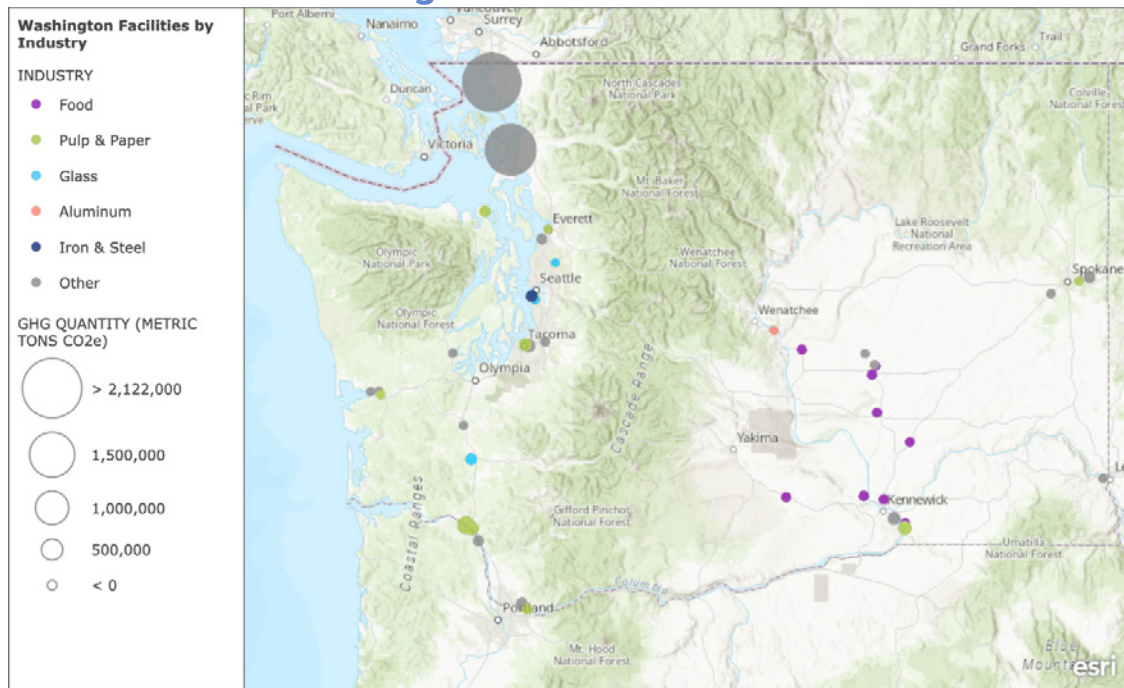
### Quick Facts

- **5% of Washington's GHG emissions** are from industry.<sup>2</sup>
- The state is committed to **net-zero emissions state-wide by 2050**.
- As of 2022, the manufacturing sector employed more than **7% of the state's workforce** and accounted for more than **8% of total gross state product**.<sup>3</sup>

Electrifying industrial processes offers a significant opportunity to decarbonize Washington's industrial sector, which accounts for 5% 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 Washington's emissions reductions and net-zero 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 nine of Washington's 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 Washington's industrial aluminum casting, ammonia, beer, container glass, milk powder, pulp and paper, recycled plastic, soybean oil, and wet corn milling sectors.

## Washington's Industrial Emissions



Esri, USGS | WA State Parks GIS, Esri, HERE, Garmin, FAO, NOAA, USGS, Bureau of Land Management, 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 Washington’s studied subsectors, the following have the potential to reduce emissions by the largest margins, ranked by the expected decrease in annual emissions by 2050 through electrification:

- Ammonia (466 kt CO<sub>2</sub>)
- Pulp & Paper (213 kt CO<sub>2</sub>)
- Container Glass (76 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 Washington to begin electrifying, and realizing emissions reductions, in the near-term. Within Washington today:

- The ammonia sector can electrify by switching to using hydrogen created through electrolysis, immediately delivering energy and emissions savings.
- Electrification can bring energy cost savings across eight industries including container glass, ammonia, plastic recycling, milk powder, wet corn milling, aluminum casting, beer, and soybean oil if lower renewable electricity cost is used. Additional cost information can be found in the full report.
- Industrial electrification can be supported 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 Washington closer to its emissions reduction goals.

### Key Actions to Accelerate Industrial Electrification in Washington

- Open a dialogue with the ammonia industry to learn what hurdles prevent manufacturers from adopting commercially available electrified technologies, especially electrolyzers for producing hydrogen using renewable electricity.
- 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 ammonia industry 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> Department of Ecology State of Washington, “[Greenhouse Gases](#),” 2019.

<sup>2</sup> Department of Ecology State of Washington, “[Washington’s greenhouse gas inventory](#),” 2019.

<sup>3</sup> National Association of Manufacturers, “[2022 Washington Manufacturing Facts](#),” 2022.

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>

