

WHY SEQUESTER CARBON?

Carbon dioxide is a greenhouse gas created in chemical production and by burning fossil fuels, waste, and wood. Human activities have rapidly increased CO₂ in the atmosphere by almost 50 percent in the past 270 years. We are already seeing some consequences of this CO₂ increase: rising average temperatures, more frequent and destructive weather events, melting ice sheets, rising sea levels, and ocean acidification.

IS IT EFFECTIVE?

The oil and gas industry has been sequestering carbon for at least 50 years. A 2013 test project near Wallula Gap pumped about 1,000 tonnes of CO₂ into a 4,000 foot deep well. After 3 years of scientific monitoring, about 60 percent of the CO₂ had crystallized into minerals such as ankerite.

CO₂ EMISSIONS IN WASHINGTON

Washingtonians emit nearly 100 million tons of CO₂ every year. Total Washington emissions have been relatively consistent since 1990. The top three sources of CO₂ are:

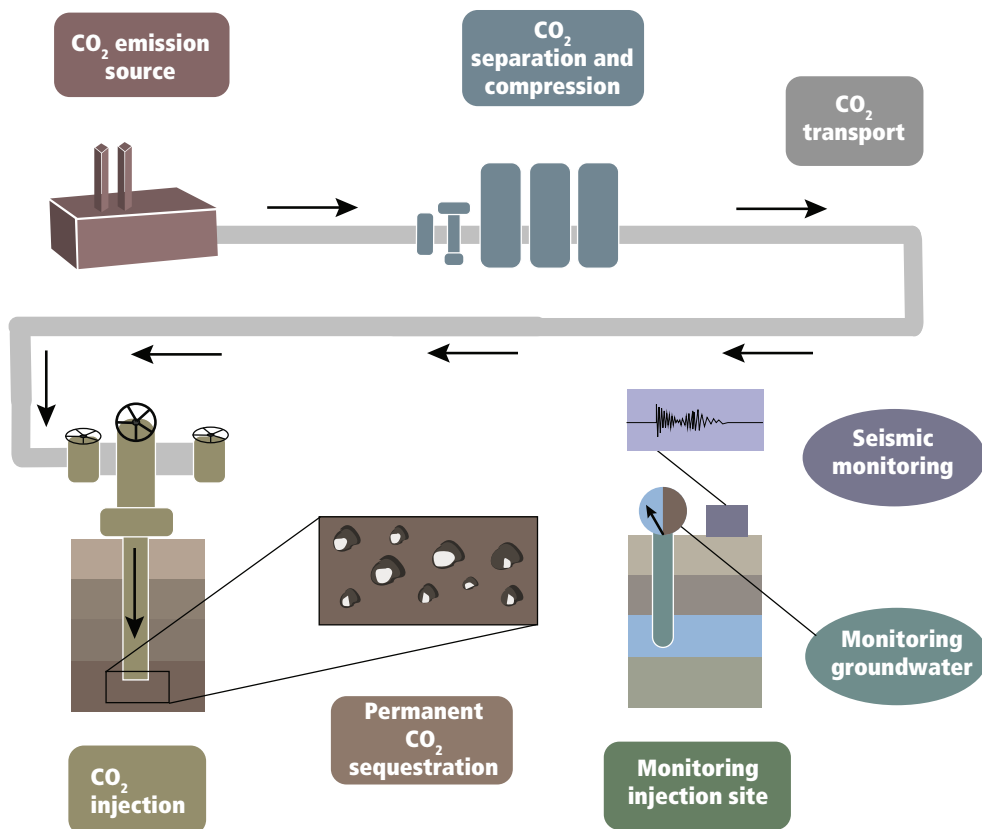
- transportation (cars, boats, planes, trains)
- heating for homes and workplaces
- electricity generation

WHAT WASHINGTON IS DOING

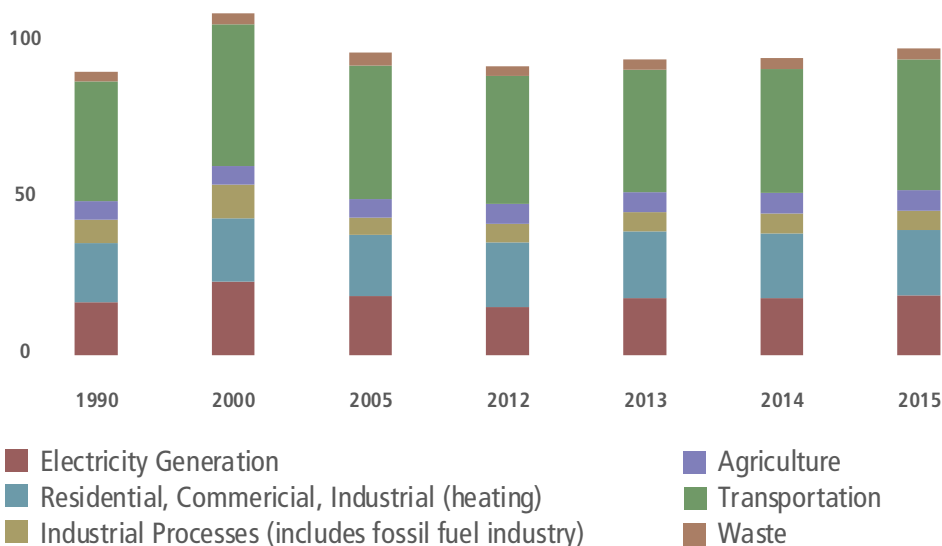
In 2020, Washington State law reaffirmed commitment to eliminating roughly 95 percent of greenhouse gas emissions and sequestering the remaining 5 percent by 2050.

Geologic Carbon Sequestration

Carbon sequestration diverts the release of CO₂ into the atmosphere, and instead places it in the ground. CO₂ gas is captured from stationary emission sources and compressed into a liquid. Then, it is pumped deep into the ground to be buried under thousands of feet of rock. Underground, the carbon turns into a stable mineral for permanent storage. The diagram below shows this process.



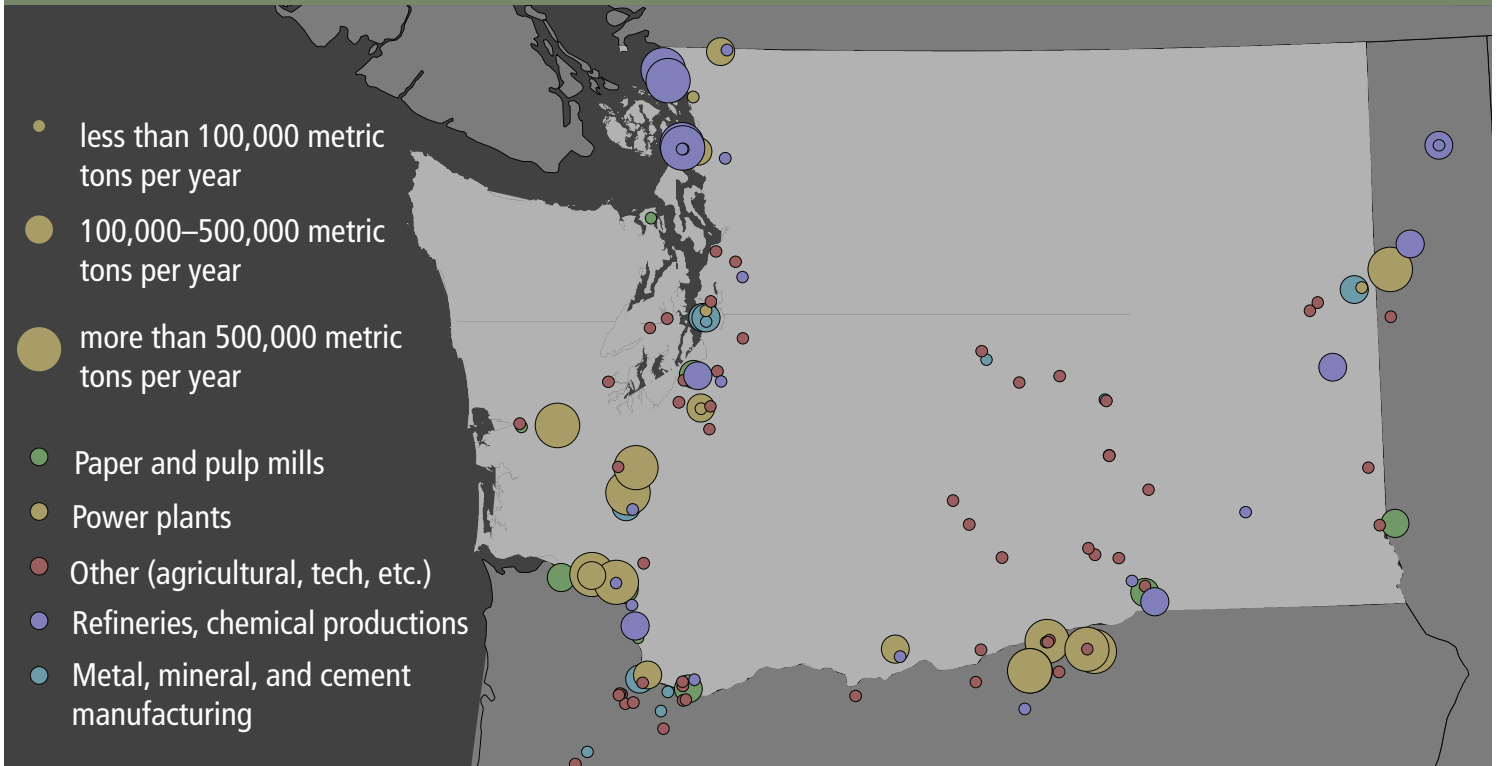
Washington CO₂ emissions in millions of metric tons per year



GEOLOGIC CARBON SEQUESTRATION IN WASHINGTON

Point sources

Point sources are fixed structures where CO₂ is emitted. They account for about half of all Washington CO₂ emissions (the other half are from vehicle tailpipes and are harder to estimate and capture). Point sources in Washington are grouped along the Interstate 5 corridor in western Washington and spread across the Columbia Basin in eastern Washington.



WHERE IN WASHINGTON COULD WE STORE CO₂?

In western Washington

Western Washington hosts conventional sandstone reservoirs that can be used for CO₂ storage. In Texas and Norway, sandstone is a common rock for storing CO₂.



Sandstone from Green Canyon, King County, WA. Photo by Will Gallin.

In eastern Washington

Eastern Washington is covered with volcanic rock called basalt. The basalt is very thick, extensive, and contains many layers which make it particularly suited for CO₂ storage. Studies show that basalt can mineralize CO₂ much faster than sandstone—within years instead of tens of thousands of years.



Basalt from Frenchman Coulee, Grant County, WA. Photo by Guy McWethy.