Seattle
Office of Sustainability
& Environment

Fire Station #30

Fighting climate pollution & protecting public health and safety

Photo Credits: Chloe Collyer

Seattle's 33 fire stations and the hundreds of firefighters who eat, sleep, and work in these buildings provide essential services to thousands of Seattle residents and business owners. Fire stations provide both a living space and storage for service facilities like fire engines, ambulances, and other emergency equipment.

Safety is Seattle's firefighters' number one priority. Removing combustible fuels from buildings not only helps fight climate pollution, it also makes buildings safer by reducing the risk of gas leaks and explosions. From 2020 to 2022, the City of Seattle converted the heating, cooling, and domestic hot water systems at Fire Station #30 from using high-emissions fossil gas to clean electricity to power the building, reducing the station's emissions by 80%.

Over 90% of building-related greenhouse gas emissions in Seattle come from burning fossil fuels like gas and oil for hot water, space heating, and appliances. The City understands that its facilities are part of the solution. Seattle has reduced energy use by 25% and emissions by 24% from 2008 to 2021, and will continue on the path to transitioning all municipal buildings to carbon-neutral electricity.

About

Address: 2931 South Mt. Baker Boulevard

Size: 9,417 SF

Original construction: 2011

Owner: City of Seattle

Energy use reduction 2020-2022: 27%

Greenhouse gas reduction 2020–2022: 80%

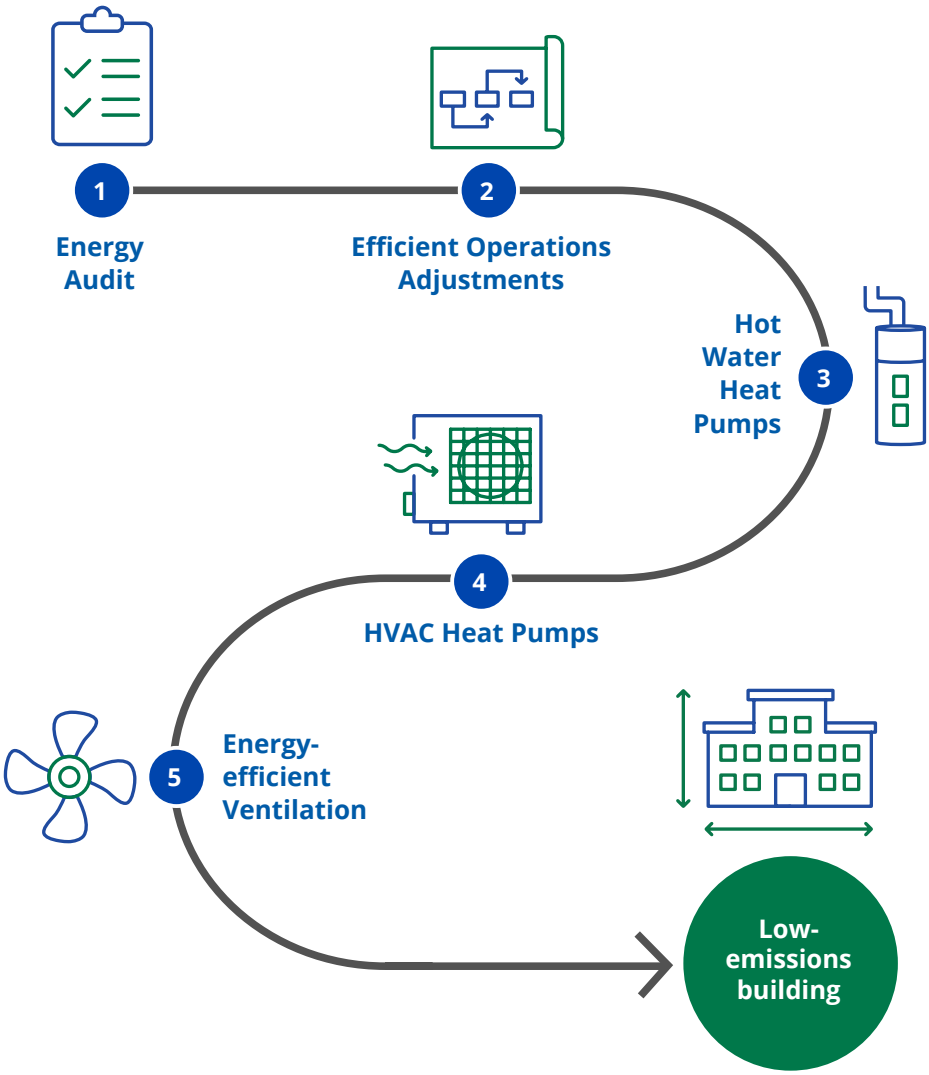
Energy service providers: Siemens, Vital Mechanical Service, Static Energy, and Auburn Mechanical

Why upgrade newer buildings?

The City of Seattle has completed 53 full or partial building electrification projects since 2018, including Fire Station #30. Constructed in 2011, the station is a modern LEED Gold-certified building that was well-insulated with plenty of electrical capacity — a good baseline for swapping out high-emissions gas-fired systems for electric ones. Many Seattle buildings were constructed in the last 10–15 years and are similarly primed to switch to electric systems. Switching hot water systems from gas to electric is a cost-effective way to start reducing emissions.

Steps to reducing carbon emissions

An energy audit of Fire Station #30 revealed several opportunities to improve heating, cooling, and ventilation systems and significantly reduce gas use. Electrification measures included replacing gas-fired water and space heaters with electric heat pumps that provide both heating and cooling. A new electric ventilation system was also installed to improve airflow and indoor air quality.



Fire Station #30 is a great example of how easy it can be to electrify newer, smaller buildings. For many of these buildings, the hard work is already done by having a good envelope and sufficient electrical capacity. We didn't have to use cutting-edge technology to achieve drastic emissions reductions. The heat pump technology available today can be used to make a large impact on carbon emissions.

Evan Cobb, Resource Conservation Advisor, City of Seattle

1 Energy audit

An energy audit in April 2019 found a connection between the existing gas hot water tanks and the ground loop system (a geothermal heat pump system that transfers heat from the ground) that was causing high summer gas bills. The audit also found the building's air was refreshed too often and thermostat setpoints were outside of normal ranges, resulting in energy being wasted overheating and overcooling the air inside the building. Plus, there were no "lockout" sensors in the vehicle bay to turn the HVAC system off when the roll-up doors were open.

2 Efficient operations adjustments

Thermostat settings were reprogrammed to meet the city's approved high and low-temperature limits for municipal buildings. Ventilation was reduced per ASHRAE* guidance, and the outside dampers were programmed to be closed when the system was off. Duct heaters were turned off when fans were not running. Electric resistance heaters in bunks and training rooms were turned off when heat pumps serving the rooms were not running. The water flow between the hot water tanks and the ground loop was turned down to lower the energy losses while waiting to remove the connection.

3 Domestic hot water

In 2020, the connection between the existing hot water tanks and ground loop system was removed, and the two gas-fired water heaters were replaced with one electric AO Smith 120-volt heat pump water heater.

4 Vehicle bay heating & cooling

In 2021, two 60-MBH gas-fired Reznor heaters were removed and replaced with one rooftop-mounted 5-ton Daikin electric heat pump and two electric 2.5-ton Daikin heat pump units. A "lockout" sensor was also installed so that when the garage doors are open, the HVAC system shuts off. In 2022, four wall-mounted electric radiant heating panels were also installed to provide additional localized heating needed for fire department functions such as banquets and community events.

5 Energy-efficient vehicle bay ventilation

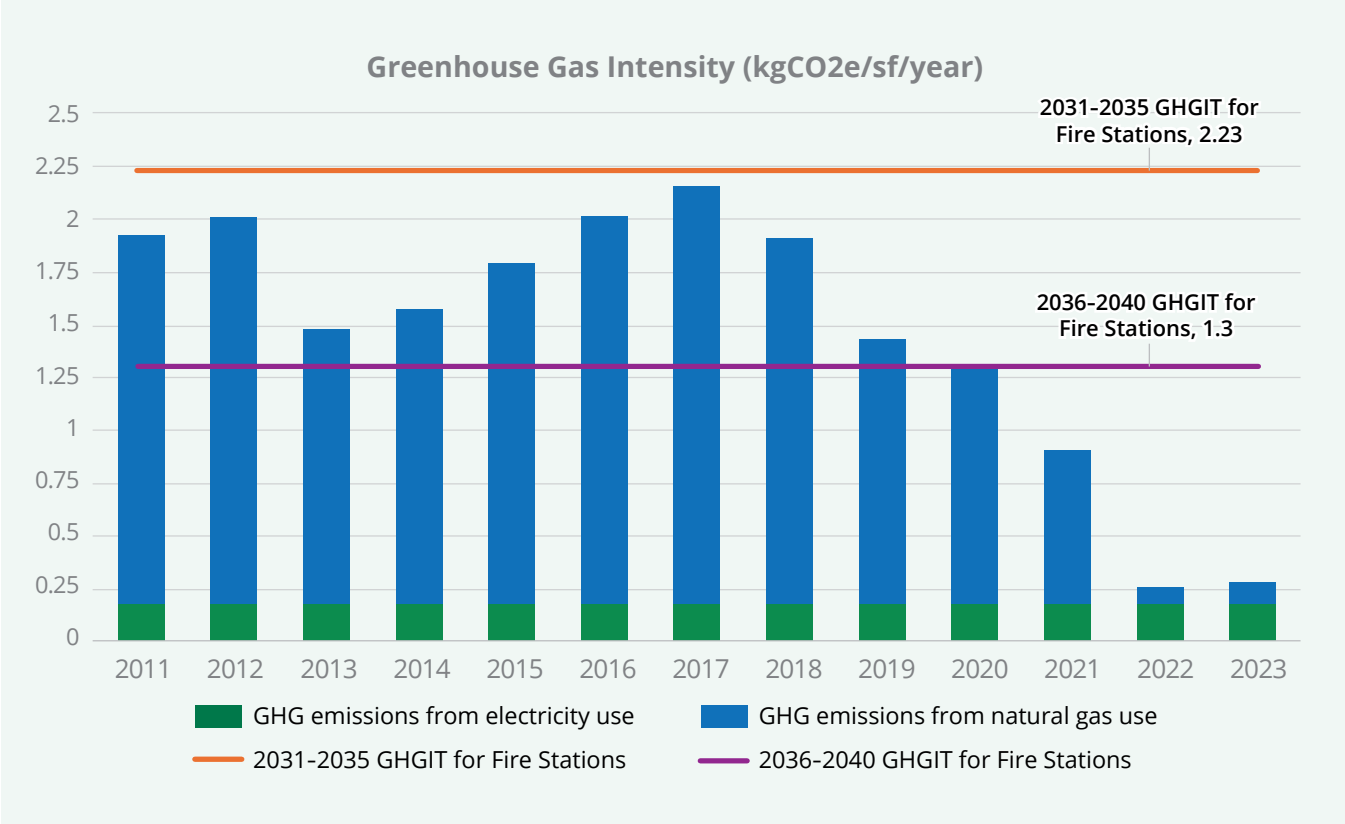
Two Intelli-Balance Dedicated Outdoor Air Systems were installed to supply fresh air into the garage, as well as energy recovery ventilators to temper the air coming in and reduce the need to run the heating and cooling systems.

*American Society of Heating, Refrigerating and Air-Conditioning Engineers

Watch our greenhouse gas emissions plummet

The City of Seattle is committed to a net-zero emissions future. Fire Station #30 shows just how much can be accomplished with straightforward system upgrades. The building is already out-performing the city's 2036–2040 greenhouse gas intensity (GHGI) targets for fire stations with a GHGI of only 0.25 $kgCO_2e/SF/year$.

Fire Station #30 Greenhouse Gas Intensity 2011–2023:**



**The City of Seattle has established greenhouse gas intensity targets (GHGIT) for fire stations greater than 20,000 SF of 2.23 $kgCO_2e/SF/year$ for 2031–2035 and 1.3 kgCO2e/sf/year for 2036–2040. Fire Station #30 already outperforms the 2036–2040 target with a current GHGI of about 0.25 kgCO2e/sf/year.

Why reduce building emissions?

In Seattle, buildings are one of the largest sources of climate pollution, responsible for more than a third of our City's greenhouse gas emissions. These emissions pollute our air, accelerate climate change, and harm people's health and the environment, disproportionately impacting communities of color and people with lower incomes. Seattle's new **Building Emissions Performance Standard (BEPS)** requirement is one of the most impactful climate actions Seattle is taking.

Get started today.

Addressing emissions from buildings is one of the most powerful levers for tackling climate change. Get started on your own path by talking with your facility staff and independent service providers to explore energy efficiency and options like heat pumps well before you need to replace equipment. Contact **cleanbuildings@seattle.gov** for more information about free City technical support.

Published January 2025