Seattle
Office of Sustainability
& Environment

Building Seattle Better

A path to cleaner, carbon neutral buildings

Clean buildings are an essential climate solution.

Buildings — where we live, work, go to school, and more — are one the largest and fastest growing sources of Seattle's climate pollution, contributing more than one-third of the city's core greenhouse gas emissions. The latest inventory of the city's emissions shows we're going in the wrong direction, with climate pollution from buildings increasing more than 8 percent between 2016 and 2018.[1]

The good news is we know how to design, construct, and operate efficient buildings powered by cleaner energy. Increasingly, cities across the United States and around the world are embracing building electrification — and Seattle's electricity is already carbon-neutral.[2] The City of Seattle is committed to a clean energy future — free from the harmful public health and climate impacts of fossil fuels. **Our goal is to reduce building emissions 40 percent by 2030 and be net-zero carbon emissions by 2050.**

of Seattle's building-related emissions come from burning fossil fuels like gas and oil for hot water, space heating, and appliances.

Moving to clean energy now brings many benefits.

- Greater energy efficiency
- Long-term cost savings
- Safer indoor air quality and lower outdoor air pollution
- New green, well-paying jobs
- Lower greenhouse gas emissions
- Improved safety with fewer gas line leaks or accidents

The future is electric.

To meet this goal, every new building should be all-electric, and existing buildings must be retrofitted to replace dirty fossil fuels with cleaner electricity.

Seattle's current commercial energy code limits gas for space and hot water heating in most *new* commercial and large multifamily construction, substantial alterations, and HVAC or hot water system replacements.[3] The State of Washington has set minimum energy performance standards for *existing* commercial buildings over 50,000 square feet, which will also reduce some climate and air pollution from fossil fuel-fired building equipment.[4]

1 https://www.seattle.gov/Documents/Departments/OSE/ClimateDocs/2018_GHG_Inventory_Dec2020.pdf

2 In 2019, City Light emissions factors were 41.57 lbs. Co2/MWh and City Light offsets these emissions to achieve carbon-neutral status as an electric utility. Building owners should, however, participate in the utility's Green Up Program to call their building net-zero at the site. Visit https://www.seattle.gov/city-light/business-solutions/renewable-energy-services

3 https://www.seattle.gov/sdci/codes/changes-to-code/2018-seattle-code-adoption/project-documents

4 https://www.commerce.wa.gov/growing-the-economy/energy/buildings

Steps to carbon-neutral buildings:

While every building is unique, most commercial and large multifamily buildings can use this path as a guide to greater energy efficiency, emissions reductions, and electrification. Check out these steps and see what's right for your building to get to carbon-neutral.[2]

1

Audit & Benchmarking

Assess energy, emissions, and cost savings potential and track progress.

2

Building Tune-Up

Make low- to no-cost operations and maintenance improvements.

3

Energy Efficiency

Maximize efficiency and reduce energy needs to enable right-sized electrification.

4

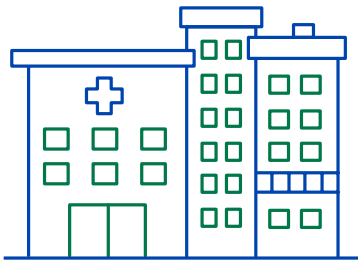
Modern Building Controls

Use smart technologies to sync energy use with tenants' needs for best building performance and comfort.

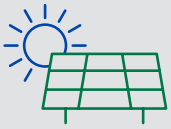
5

Electrification

Replace fossil fuel-powered water, heating, and cooling systems, as well as kitchens with electric equipment.



Carbon Neutral



Solar Energy (Bonus Step)

Install solar panels, where feasible, to generate renewable energy on site.

1 Audit & Benchmarking $

Uncover your building's energy, emissions, and cost savings potential by assessing annual energy and emissions performance and comparing or "benchmarking" it against the building's past performance. Through an energy audit, evaluate different measures and develop an implementation plan to cost-effectively address operations, efficiency, and electrification over time.

Seattle Energy Benchmarking

Owners of commercial and multifamily buildings (≥ 20,000 sf) can use existing benchmarking information to guide a path to lower emissions and track progress. **Learn more »**

2 Building Tune-Up $ *

Simply checking and tuning equipment to operate better improves a building's energy performance and highlights low- and no-cost fixes. For some buildings, going beyond the tune-up with a more comprehensive existing building commissioning process can result in greater savings and may be eligible for a utility incentive.

Seattle Building Tune-Ups

Owners of commercial buildings (≥ 50,000 sf) can review their tune-up reports for additional voluntary measures to realize energy and cost savings beyond the basic tune-up. **Learn more »**

3 Energy Efficiency $ – $$$$ *

On average, 30 percent of the energy used in commercial buildings is wasted.[5] Energy efficiency reduces plug loads and heating and cooling demand, which is critical for right-sizing equipment and reducing or eliminating the need for a future electric service upgrade. Immediate benefits include lower utility costs and improved comfort and aesthetics.

Seattle City Light Energy Efficiency Solutions

From lighting and heat pumps to whole building solutions, discover energy efficiency opportunities to meet your goals. **Learn more »**

Water Fixtures

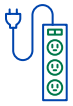
Install low-flow fixtures to decrease hot water use and cost, and future water tank size needs.

Lighting

Install efficient LED lighting and controls for updated aesthetics and energy and cost savings.

Windows

Upgrade windows for significantly lower heating and cooling use, and a quieter building for tenants.



Smart Power Strips

Use smart power strips to reduce plug loads and lower energy use.

Insulation

Improve insulation to reduce heating and cooling demands, ideally before upgrading systems.

Heat Pumps

Replace electric resistance space and water heaters with heat pumps to lower energy use and bills.

$ = relative cost ***** = Seattle City Light incentive may be available

5 https://www.energy.gov/eere/buildings/about-commercial-buildings-integration-program#

4 Modern Building Controls $$ – $$$ *

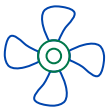
Building controls can be programmed to sync with tenants' needs, like turning on lights, heat, air-conditioning, or ventilation only when needed for best comfort, fresh air, and energy efficiency. Modernizing means upgrading outdated pneumatic or digital systems or installing new controls, if none already exist.

5 Electrification $ – $$$$

Efficient electrification options are available for most equipment, and the technologies continue to improve. Heat pumps are a game-changing technology to replace fossil fuel-powered space and water heating systems with all-electric. These upfront costs pay dividends over time, cutting energy use and climate emissions. And, with most water and heating equipment having a lifespan of 20 to 25 years, going electric when replacing gas-fired equipment that's near or at its "end of life" is a smart way to future-proof your building.

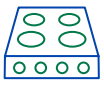
Water Heating $ – $$$

Hot water electrification can be the easiest place to start by replacing gas-fired systems with heat pump water heaters, and may be done before efficiency or control upgrades in many buildings. Heat pump water heaters are three to five times more energy efficient than their gas counterparts.[6]



Space Heating and Cooling $$ – $$$$

Gas-fired rooftop units (RTUs) can be replaced with heat pumps that efficiently supply both warm and cool air. In buildings with gas boilers, replacements include air-to-air and air-to-water heat pumps. These systems can be coupled with a very high efficiency dedicated outdoor air system (VHE-DOAS) to provide fresh, high quality air to your occupants and reduce building energy use by a third or more. Heat wasted from exhaust fans can also safely be recovered and reused for pre-heating fresh air.



Kitchens $ – $$

For buildings with kitchens, consider fast-cooking induction cooktops, which are safer than electric resistance and gas. Unlike gas-burners, induction cooktops don't release harmful indoor air pollutants like carbon monoxide.

Solar Energy (Bonus Step) $$ – $$$

Installing a solar photovoltaic (PV) system is safe, reliable, and has zero emissions. For some buildings, solar can achieve net-zero energy use, which means that all the energy to power the building is generated on site. Solar costs are also decreasing rapidly, making them relatively easy to finance. **Learn about Seattle City Light solar programs »**

6 https://www.greentechmedia.com/articles/read/so-what-exactly-is-building-electrification

Get started today.

Electrifying buildings is one of the most powerful levers for reducing climate polluting emissions. Get started on your path by talking with your facility staff and independent service providers to explore energy efficiency and electrification options well before you need to replace equipment. Contact **cleanbuildings@seattle.gov** for more information.