

CLIMATE CHANGE AND NATURAL HAZARDS MITIGATION, ADAPTATION AND READINESS



Overview

Burnaby is seeing the devastating impacts of climate change every year, with wildfires, droughts, extreme heat, flooding and large storms becoming more frequent. The greenhouse gas emissions (GHG) we produce through the buildings we live and work in, the transportation we use, the things we consume and the waste we create contribute to global climate change that affects us locally.

In 2019, Burnaby declared a Climate Emergency and established targets to reduce GHG emissions. The 2050 carbon reduction targets are:

45%
reduction
by 2030

75%
reduction
by 2040

**CARBON
NEUTRAL
by 2050**

(no longer contributing to the carbon emissions that accelerate climate change)

The policies in this section will help us reduce our GHG emissions faster to meet these targets and take actions that make us more adaptable and better able to respond to and withstand the impacts of climate change.

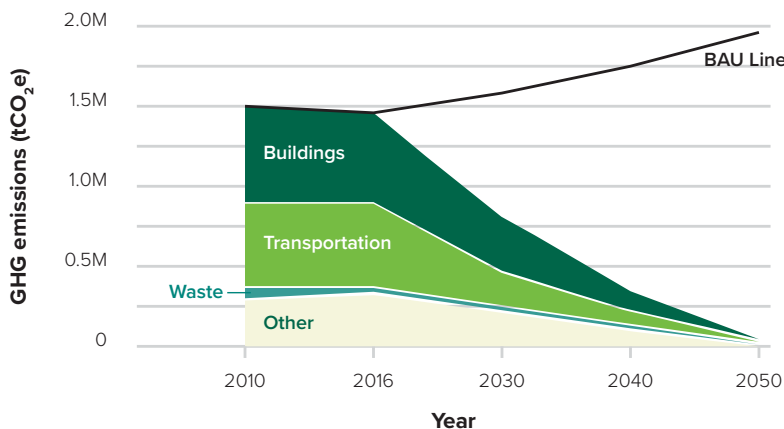


Figure 4. Pathways to Carbon Neutrality in 2050

This graph shows the reduction of greenhouse gas emissions (GHG) by sector if everyone takes more action. BAU means business as usual.

Engagement findings

- » Addressing climate change impacts like extreme heat, smoke and flooding is one of the community's top five priorities.
- » Community members don't want the city to be unsafe, polluted or too dependent on cars.
- » There needs to be greater public awareness and education about climate emergencies.
- » Community members want to see Burnaby focus on:
 - clean energy
 - carbon footprint reduction
 - green infrastructure, such as rain gardens, surfaces that allow rainwater to flow into the ground and more.
 - more buildings that will be safe and comfortable as climate change impacts our city
 - waste management
 - water conservation
 - low and zero-emission vehicles

Challenges and opportunities

Challenges

- » Municipalities have limited power and tools to address climate change.
- » Burnaby has to rely on other orders of government, industry and individuals to make changes in the biggest areas of GHG emissions.
- » It can take a long time to see the benefits of investing in climate adaptation. Impact of policies will be incremental.
- » Since City budgeting processes separate capital and operational costs, it is difficult to understand the long-term financial benefits of investing in climate adaptation.

Opportunities

- » Climate action also helps to build more sustainable and healthy communities, such as better public transit and cycling and walking infrastructure.
- » Burnaby has been a leader in addressing climate change in BC and has strong support from City Council and the provincial government to invest in preventative measures and climate adaptation.
- » BC Hydro provides Burnaby with electricity generated through renewable energy (hydroelectricity). This makes electrification of building systems (heating, hot water), or transportation a way to significantly reduce GHG emissions.

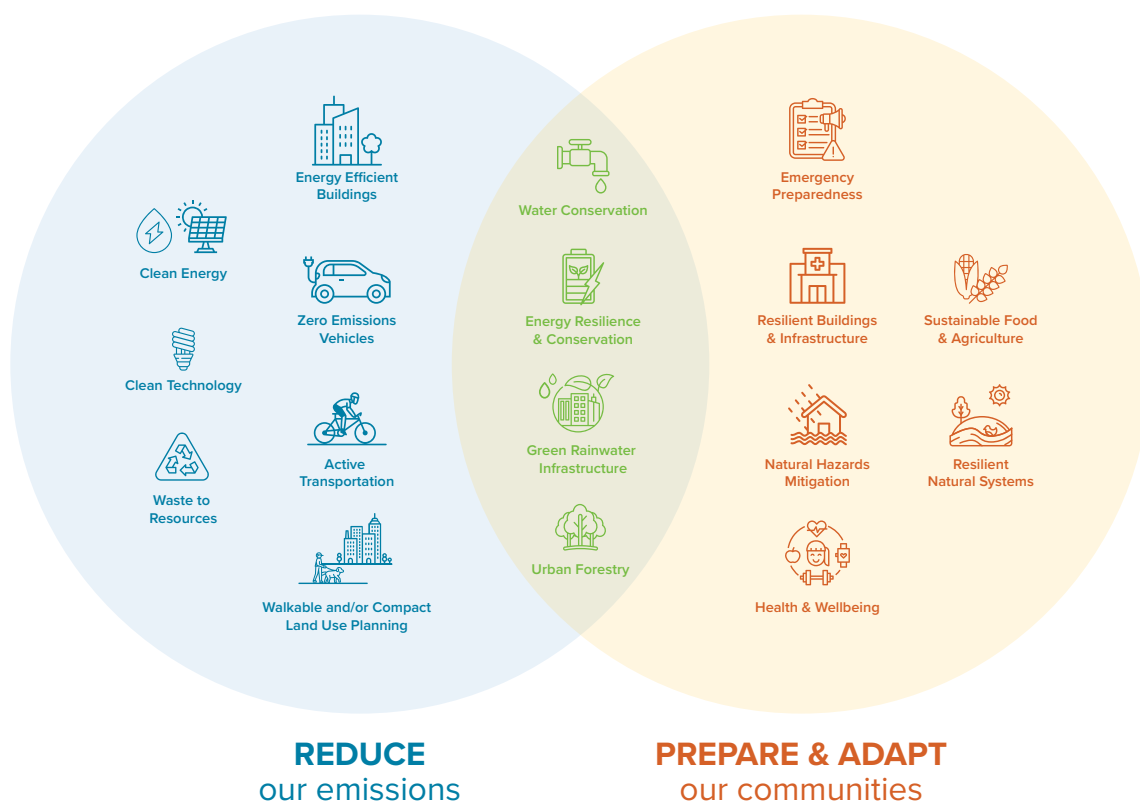


Figure 5. Opportunities to address climate change

Climate change and natural hazards policy directions

City leadership

Policy directions

1. Use research and data on climate change mitigation, climate change adaptation and natural hazards in the City's operational, land and facilities planning.
 - a) Work with host Nations to include traditional knowledge in the City's climate change plans and adaptation strategies.
 - b) Design buildings and infrastructure to lower the impacts of natural hazards and climate change.
 - c) Prevent, respond and recover from natural disasters.

Why we are proposing these policies

- » This policy direction builds on the commitments to address climate change in the City's Declaration of Climate Emergency and the Burnaby Climate Action Framework and the City Energy Strategy.
- » These policy directions align with the Emergency Disaster Management Act and funding opportunities from the federal government.
- » Research by the Canadian Climate Institute shows that for every dollar spent on climate change adaptation measures today we can save \$13 to \$15 in the future.

Low carbon, climate-ready communities and emergency preparedness

Policy directions

2. Build communities that can accommodate growth and support the City's GHG emission targets.
 - a) Use land use and regulatory policies that encourage "complete communities" that include shops, recreational opportunities and other amenities, so people do not need to drive as often.
 - b) Use urban design and development practices that help make the built environment safer and more comfortable as climate change impacts the city.
 - c) Prevent the impacts of natural hazards caused by climate change by protecting sensitive areas through Development Permit Areas (DPA) and guidelines.
3. Help community members become more prepared for climate change, extreme weather and natural hazards.
 - a) Encourage different organizations and sectors to work together to adapt to climate change.
 - b) Educate community members and businesses on how to prepare for emergencies.
 - c) Help build strong communities so neighbours can help each other in emergencies.
 - d) Create a system to understand how vulnerable Burnaby is to climate change.
 - e) Support people who are more at risk or more exposed to the impacts of climate change.

Why we are proposing these policies

- » Transportation emissions make up 36% of the city's GHG emissions. Reducing the need for people to drive to get around will significantly reduce emissions.
- » Building infrastructure that can better withstand and adapt to climate change will save money in the long run and reduce the impact of climate change on people who are more exposed or at risk of extreme heat, wildfires, smoke and more.
- » People who are isolated are more at risk in natural disasters.
- » Individuals and households need to be prepared for emergencies.

Energy sources and storage

Policy directions

4. Explore opportunities for energy sources and storage that reduce GHG emissions, including:
 - a) Systems that distribute energy to multiple buildings or across a neighbourhood (e.g. district energy).
 - b) Renewable energy projects.
 - c) Small- and large-scale batteries and energy storage.

Why we are proposing these policies

- » Different or diversified energy sources can reduce GHG emissions and improve the community's ability to adapt to a changing energy landscape.
- » Energy storage can be used for back up in case of emergencies as well as to store renewable energy when more energy is produced than used.

Buildings

Policy directions

5. Continue to improve energy efficiency and reduce GHG emissions in new and existing buildings.
 - a) Use low-carbon energy sources.
 - b) Speed up the process to make existing buildings more energy efficient and climate-ready.
 - c) Support the measurement and reporting of energy use in buildings.
 - d) Protect natural plants and trees around buildings to provide cool, shady areas and manage storm water runoff.
 - e) Help people who are more at risk or more exposed to climate change.
6. Reduce the amount of waste and carbon emissions in building materials and the development and construction industries by:
 - a) Offering incentives for using low-carbon materials.
 - b) Using guidelines and zoning regulations that promote prefabricated construction.
 - c) Repurposing or relocating buildings instead of demolishing them.
 - d) Establishing and sharing best practices.

Why we are proposing these policies

- » Existing buildings are the source of 40% of emissions across the city and are Burnaby's biggest opportunity to reduce emissions.
- » Every new building contributes to emissions, and it's easier and less expensive to build a low-carbon energy efficient and climate-ready building from the start than to adapt it later.
- » These directions align with the BC Energy Step Code and the BC Zero Carbon Step Code.
- » Embodied carbon (the GHG emissions it took to make and transport a material) is a growing source of GHG emissions in buildings. Reducing the embodied carbon in new buildings could reduce overall GHG emissions of a new building by up to 30%.

Transportation – electric vehicles and other zero emissions vehicles

Policy directions

7. Make it easier for people to own an electric vehicle and other zero emissions vehicles.
 - a) Support the building of more electric vehicle and other zero emissions vehicle infrastructure, including charging stations.
 - b) Consider providing incentives for zero emission vehicle retrofits including upgrades to electrical capacity.
 - c) Education and awareness about electric vehicles and other zero emissions vehicles, and federal government incentives.

Why we are proposing these policies

- » Transportation emissions make up 36% of Burnaby's GHG emissions.
- » Transitioning from fossil fuel powered vehicles to zero-emission vehicles will make up 20% of the emission reduction Burnaby needs to reach carbon neutrality by 2050.



Natural hazards

Policy directions

8. Assess and manage natural hazards to keep the risk at a level acceptable to the community.
 - a) Use strategies to reduce the risk of natural disasters, including protecting, accommodating and relocating infrastructure.
 - b) Direct growth and infrastructure development away from areas that are vulnerable to natural hazards by using Development Permit Areas (DPA) and guidelines.
 - c) Consider how climate change will increase the risk of natural hazards.
 - d) Include host Nations in climate change planning.
9. Manage natural hazards on steep slopes.
 - a) Restrict development on steep slopes through Development Permit Areas (DPA) and guidelines.
 - b) Vary setbacks to avoid development on the top of steep slopes.
 - c) Consider the type of land use on the bottom or top of steep slopes.
 - d) Protect native plants to prevent erosion and runoff and maintain natural beauty.
10. Reduce the risk of flooding on community health and safety, infrastructure, property and natural areas.
 - a) Manage construction or alterations on floodplains using Development Permit Areas (DPA) and guidelines.
 - b) Maintain and update flood data to understand flooding risks.
 - c) Evaluate and prevent the risk of critical infrastructure in flood plains.
 - d) Repurpose and design public infrastructure to minimize the impacts of flooding.
 - e) Work with residents and businesses to protect properties in flood plains.
11. Designate the Still Creek corridor from Boundary Road to Burnaby Lake as a special study area.
 - a) Manage growth in a way that considers natural impacts, restores the flood plain and adapts to climate change.

Why we are proposing these policies

- » Natural hazards, like flooding, extreme weather, and the rise of sea levels, are going to become more frequent and more severe.
- » Protecting, accommodating and relocating infrastructure can reduce the impacts of extreme heat and flooding.
- » The risks of building on steep slopes can be reduced with land use and site-specific guidelines and requirements.
- » Flooding is a major risk to the Still Creek and Big Bend areas, and reducing flood risk will prevent property damage, injuries and loss of life.
- » Still Creek has a high risk of flooding, which is going to become worse with climate change.
- » The Still Creek Integrated Stormwater Management Plan recommended the area should go through a community planning process.



Do you agree with these draft policy directions?
Share your thoughts!
Burnaby.ca/Burnaby2050Survey