3. Energy

Energy sources have major emissions implications; broad electrification presents a major opportunity to reduce emissions.

Gasoline cars and trucks accounted for 38% of 2016 emissions, while natural gas heating accounted for another 43%. Emissions related to electricity accounted for only 6% of GHGs, as BC's predominantly hydroelectric-powered grid is one of the cleanest in Canada.[11]

Continued growth and electrification may create electricity supply constraints and load management challenges, however. Energy conservation and demand management are important strategies to avoid reaching the limit of grid electricity supply. These initiatives will entail both using less energy and better managing energy use through smart technologies, resulting in household energy cost savings and reduced need for new electricity infrastructure.

New Westminster can also address increased grid demand through local renewable energy generation. As solar photovoltaics, solar thermal, renewable energy storage, and other technologies evolve, there will be on-site and community-scale opportunities to build grid resilience.

The actions in this section help to implement energy conservation and demand management initiatives, encourage local renewable energy systems, embrace emerging smart grid technologies, and expand connections to district energy systems. As a City with its own electric utility, New Westminster is well positioned to take bold action on energy.

11 Emissions from electricity use in BC stem from imported electricity that is generated by fossil fuels outside the province. The provincial government and BC Hydro have committed to 100% net-zero emissions electricity delivery by 2030.

WHAT COMMUNITY MEMBERS ARE DOING

- Switching to energy efficient light bulbs.
- Turning off lights and disconnecting charging plugs from outlets when not in use.
- Air drying dishes and clothes.
- Switching from baseboard heating to a heat pump to use less electricity.
- Installing solar panels to take advantage of New Westminster's net metering program.

Targets

2030

- Per capita energy demand is reduced by 30% from 2016 levels.[12]
- 2% of electricity is generated from local and renewable sources of energy.

2050

- Per capita energy demand is reduced 60% from 2016 levels.
- 5% of electricity is generated from local and renewable sources of energy.

12 Per capita targets allow for some change due to population growth, but a decrease in energy demand when divided by the population of the City. Per capita demand will be determined as a community-wide average.

Energy Sector Actions	GHG Reduction	Benefits	Resources	Timeline
Energy Conservation and Demand Management				
1. Continue to implement and expand on educational campaigns to encourage and raise awareness about energy conservation, including providing additional information on utility bills.	Low	Equity Resilience	$	Short-term
2. Encourage the use of smart technology to better manage energy usage (e.g., smart thermostats).	Low	Resilience	$	Short-term
3. Collect and share resources on energy conservation programs developed by BC Hydro and other partners to build knowledge and capacity among commercial and institutional building Electric Utility customers to reduce their energy consumption.	Medium	Resilience	Current staffing	Short-term
4. Work with Electric Utility and BC Hydro to implement energy conservation and demand management strategies, including continuing to ensure New Westminster customers have access to programs offered by BC Hydro or an equivalent program offered by the City.	Medium	Resilience	Current staffing	Short-term

5. Evaluate New West Electric rate structure and explore development of a low-income home energy assistance program that assists eligible households with their heating and cooling costs, weatherization, and energy-related home repairs.	Medium	Equity Resilience Health	Current staffing	Short-term
6. Continue to lead by example with phasing out the use of fossil fuels in City hand-held landscaping equipment and explore further regulating their use for personal and commercial purposes in the community.	Low	Health	$	Short-term
7. Implement the strategies of CEERS related to formalizing the internal application of carbon pricing as part of the City's internal processes and adopting a procurement policy that considers energy and emissions.	Low	Equity Resilience	Current staffing	Medium-term
8. Advocate to senior levels of government to adjust carbon pricing over time, or consider a regional carbon price supplement, to prompt industry emissions reduction.	High	Equity Resilience Health	Current staffing	Short-term
Local Energy Generation				
9. Complete a renewable energy study that identifies viable supply sources and a prioritized list of initiatives.	High	Equity Health Resilience	$	Short-term

10. Explore how to encourage cost effective, on-site renewable energy generation in new and existing buildings through incentives and policy tools, such as preferential net-metering rates.	Medium	Equity Health Resilience	$	Short-term
11. Explore opportunities to expand urban solar gardens that enable community members to invest in solar projects.	Low	Health Resilience Equity	$	Ongoing, on a priority basis
District Energy and Waste Heat Recovery				
12. Explore the viability of extending Sapperton's district energy system or developing new systems as new opportunities arise.	Medium	Resilience	$$$	Short-term
13. Explore opportunities to encourage on-site waste heat recovery systems in buildings with a net positive internal rate of return.	Medium	Resilience	$	Short-term
Smart Grid Technologies				
14. Assess the business case and feasibility of energy storage within the City's existing grid.	Medium	Resilience	$$	Medium-term
15. Explore opportunities to partner on a pilot of a solar-battery demonstration project on a building.	Low	Resilience	$	Short-term

16. Conduct feasibility studies that test low-carbon backup power systems to reduce reliance on fossil fuel backup power generators.	Low	Resilience	$	Short-term
17. Continue to explore upgrading electrical metering equipment with advanced metering infrastructure to allow community members to better monitor and assess their energy use.	Medium	Equity Resilience	$$$	Ongoing

URBAN SOLAR GARDENS

There are two urban solar gardens in New Westminster. They consist of community-owned solar photovoltaic arrays. One is located on the City public works yard and the other is located on the Queensborough Community Centre. This City-led renewable energy project provides an opportunity for interested residents, businesses, and non-profit organizations to voluntarily subscribe to a portion of the total electricity generated by the array. The solar power generated is credited back to each subscriber's electricity bill twice per year for up to 25 years. As of the end of 2021, the two arrays had generated over 325 MWh of renewable energy.

DISTRICT ENERGY

The Sapperton district energy project will supply clean, affordable, and renewable heating to residents in the area while reducing emissions. The Royal Columbian Hospital will be an anchor customer for the system, with its significant annual heating requirements. The system will also serve new residential and commercial development. As the underground piping network expands into new neighbourhoods near Sapperton and Braid Stations, it may be possible to connect existing commercial and multi-unit residential buildings, replacing their heating equipment as it reaches replacement age. New buildings along East Columbia Street may also be able to connect.

The district energy system has potential to generate local revenue and keep energy dollars within the community. The system is anticipated to reduce GHG emissions by approximately 8,600 tCO2e per year—125,000 tCO2e over its lifespan.

THE ROLE OF RENEWABLE AND LOW-CARBON FUELS

As energy and carbon prices change and senior government directives further the energy transition, industry is changing and new types of pipeline fuels are emerging, including green and blue hydrogen, renewable natural gas (RNG), and biomass. However, the supply of low-carbon fuels is anticipated to be limited.[13] Also, accounting for lifecycle emissions, not all of these options are necessarily low-carbon.

The modelling underpinning the CEEP strategically anticipates that fuels such as RNG may be used to decarbonize hard-to-electrify industrial processes, for example, but that the transportation and buildings sectors will largely electrify. While the City will continuously monitor and adapt to changes in the energy sector, urgent emissions reductions require reducing energy demand, increasing efficiency, and relying on our grid electricity supplemented by district energy and local renewable energy generation.

13 B.C. Renewable and Low-Carbon Gas Supply Potential Study (2022). Province of BC, Fortis BC, BC Bioenergy Network. *https://www.cdn.fortisbc.com/libraries/docs/default-source/about-us-documents/renewable-gas-study-final-report-2022-01-28.pdf*