# Energy Transition- common questions

This document provides answers to commonly heard questions about the energy transition. Additional information including definitions and terminology can be found in Metro Vancouver's *Climate 2050 Energy Roadmap*.

## About the Energy Transition

### What is an energy transition?

The energy transition means using energy more efficiently, expanding the use of clean and renewable forms of energy, and relying less on fossil fuels. Residents and businesses use energy to heat buildings and water, fuel vehicles, and power industry. Burning fossil fuels such as natural gas, gasoline, diesel, and propane for this energy emits health-harming contaminants and greenhouse gases that are causing climate change. Fortunately, in this region there are many opportunities to use clean and renewable forms of energy, and switch away from fossil fuels.

### Why is the energy transition needed?

The energy transition will improve health, stimulate economic opportunities, and help curb climate change. Metro Vancouver needs to keep pace with economies across the globe that are already benefitting from the energy transition. This transition will also create good jobs. Delayed action on climate change will create more dangerous conditions, and impose higher household costs over time.

Supporting facts:

- Switching to electrified transportation and heating systems reduces health-harming air contaminant emissions. The potential regional health benefits from implementing the Metro Vancouver *Clean Air Plan* between 2020 and 2030 were estimated at $1.6 billion.
- Regionally, the green building industry stands to gain $3.3 billion in revenue between 2018 and 2032 as a result of regulations for improved energy efficiency and low-carbon heating systems in new construction.
- In 2023, global investment in the energy transition reached a record high of $1.8 trillion, including investment in power grids, electrified heat and transportation, and renewable energy.

### What is Metro Vancouver's plan for the energy transition?

Metro Vancouver has developed a roadmap for the region to reduce greenhouse gas emissions and achieve carbon neutrality by 2050. *The Climate 2050 Energy Roadmap* (2023) involves substantially reducing energy use by increasing energy efficiency; transitioning to 100% clean, renewable energy; and developing an energy system that is resilient to future impacts of climate change.

### Is the energy transition going to aggravate affordability issues? Won't this cost residents more?

The upfront costs for some low-carbon technologies can be higher than fossil fuel alternatives, therefore policies need to ensure that lower-income households are not unfairly burdened and can access

financial support to benefit from these solutions. Meanwhile, the costs of climate impacts for residents will continue to worsen without strong climate action. The energy transition also presents significant economic opportunities, including good jobs. While financial considerations are complex and some individuals and families face particular challenges, average energy costs for households in BC are expected to decline with a transition to clean and renewable energy. All levels of government need to work together on the most cost-efficient, fair, and equitable policies that minimize affordability impacts on residents.

### Won't phasing out fossil fuels mean job losses?

Across Canada, and across the globe, job gains are increasing significantly from the increased use of renewable energy. New clean energy jobs are projected to far outpace the loss of jobs in the fossil fuel industry.

### Who makes decisions about what types of energy will be used in the province?

This responsibility primarily falls to the Government of BC. In BC, energy utilities must file long-term resource plans with the BC Utilities Commission (BCUC). Currently, to meet CleanBC targets, FortisBC has proposed a gas-centric pathway, whereas BC Hydro's plan emphasizes growing the supply of clean, renewable electricity. A coordinated approach is critical to secure the necessary supply of low carbon energy, and to ensure peak energy demand is met, in the most efficient and affordable way. Metro Vancouver and other local governments continue to provide information and input to provincial processes to advance the energy transition. Local scale energy systems, such as low-carbon district energy, also have a role to play.

### Why is the energy transition important for human health?

The energy transition will reduce severe health impacts as we transition away from fossil fuels. Many low-carbon technologies and practices can also help to protect people from the impacts of climate change. For example, heat pumps, which are around three times more efficient than a high-efficiency boiler or electric baseboard heaters, also provide cooling. And well-insulated buildings can maintain safer temperatures during a power outage. Benefits include cleaner air, and buildings that provide needed cooling and protect occupants from extreme weather.

Climate change has already impacted the health of Metro Vancouver residents. For example, 321 people in the region died due to the heat dome in 2021. We also see increased hospitalizations for respiratory and cardiovascular illness during forest fires and heat waves. By shifting to cleaner sources of energy at all levels of government, we will reduce these and other human health impacts of climate change.

## Types of Energy

### Is electricity actually a clean energy source?

The generation, transmission, and use of electricity in BC has very low emissions compared to fossil fuels. In BC, 98% of electricity generated by BC Hydro is from renewable sources, mainly hydroelectricity, as well as biomass, wind, and other sources. The Intergovernmental Panel on Climate Change has found that over the its lifecycle, a hydropower facility produces far fewer emissions than

coal, natural gas, and biomass, slightly less than solar or geothermal, and slightly more than wind or nuclear.

## Is natural gas a fossil fuel?

Yes. Fossil natural gas was formed from the pressurized and heated remains of organic material over millions of years, and is mostly composed of methane, a potent greenhouse gas. This methane can and does leak from oil and gas production and refinement facilities and during its transmission, right up until it is burned in appliances in homes and businesses. When fossil natural gas is burned, it emits carbon dioxide and health-harming air contaminants. In Metro Vancouver, burning fossil natural gas causes 32% of the region's greenhouse gases.

Supporting facts:

- Across Metro Vancouver, approximately 75% of the energy used in the region comes from burning fossil fuels (including fossil natural gas, gasoline, diesel, and coal). Altogether, burning fossil fuels produces 90% of the region's greenhouse gas emissions.
- Renewable natural gas (RNG) is produced from waste products and can act as a lower-carbon alternative to fossil natural gas for some applications (see below).

## What is renewable natural gas? Can it replace fossil natural gas?

Renewable natural gas (RNG) is a gaseous biofuel produced using microbes to break down organic materials such as food, agricultural, and forestry waste, in a sealed container in the absence of oxygen (anaerobic digestion). RNG is composed mostly of methane, just like fossil natural gas. It can be substituted directly in natural gas-burning equipment.

Depending on the source of the feedstock used to produce the RNG, it can be considered a renewable, lower-carbon alternative to fossil natural gas. RNG is more expensive to produce compared to fossil natural gas. As a scarce resource, RNG needs to be prioritized for sectors that are the most challenging to decarbonize, such as some industrial applications. FortisBC is currently working to increase the supply of RNG, and Metro Vancouver produces RNG at several facilities that it sells to FortisBC.

## What other forms of renewable, clean energy should we be using?

In BC we are fortunate to have a clean and renewable electricity grid that will play a key role in the energy transition. At the same time, we need to continue to improve energy efficiency and explore other local, clean and renewable energy sources such as low-carbon thermal networks. These measures will enhance the reliability of our energy system. Examples include:

- Shifting to more efficient ways to get around (e.g. walking, cycling and transit instead of personal vehicles), and to heat and cool buildings (e.g. using heat pumps, which are three to four times more efficient than gas systems or electric resistance), to reduce the demand for electricity.
- Using batteries to store electricity within the grid and for individual buildings, to improve resilience and provide back-up power.

- Developing thermal networks to supply a neighbourhood with heat from sources such as waste heat from the sewer system (including Metro Vancouver's sanitary sewers), industrial facilities, data centres, or heat from the ground (geoexchange).
- Developing microgrids to allow locally produced electricity, such as solar panels coupled with battery storage, to supply a campus or neighborhood.
- Deploying smart grid technologies so that vehicles or buildings can feed excess power back into the electrical grid.
- Using biofuels and hydrogen for select uses that are difficult to electrify.

## Increasing the use of Electricity

### As we transition away from fossil fuels, how can we be confident there will be enough electricity to supply all our energy needs in the long term?

The BC Utilities Commission accepted BC Hydro's Integrated Resource Plan (IRP) in March, 2024. This long-term plan includes strategies to use electricity more efficiently and investments in infrastructure to produce and transmit more electricity to meet growing demand. This IRP will be updated by October 2025 to respond to the rapid pace of the energy transition. Specific elements of this plan include:

- Adjusting energy rates to encourage using power outside of peak electricity demand times throughout the day
- Incentives for residents to implement energy efficiency upgrades in their homes and businesses
- Upgrades to generation, transmission and distribution infrastructure
- Renewing existing electricity supply agreements
- Acquiring new clean or renewable energy

In short, BC Hydro is planning for anticipated electricity needs for building, vehicle, and industry electrification to meet the scale required for achieving climate targets right across BC.

### What about power outages?

Power outages can disrupt all energy users, whether residential, commercial, or industrial. In BC, these outages are rarely long-lasting. Relying on natural gas creates similar concerns for power outages as relying on electricity alone. Most gas heating systems (e.g., furnaces) will not operate during a power outage as they use components that require electricity to operate.

Supporting facts:

- As the efficiency of homes and buildings improves, they are more resilient to power outages. Well-insulated and high-performance buildings will remain warm or cool for longer in the case of power outages.
- Large buildings and essential services are required to have backup generators to keep occupants safe during power outages.

## What about the environmental impacts of critical minerals required for electric batteries? Are they really better than fossil fuels?

While we need to pay attention to the environmental impacts of mining for critical minerals needed for batteries and make sure it is done as sustainably as possible, renewable energy technologies still have a much smaller environmental impact compared to fossil fuels. New battery technologies are also emerging which rely on more easily sourced materials, and at the end of their life batteries can be repurposed and the large majority of their components and minerals can be re-used and recycled. The generation, transmission, and use of electricity in BC has very low emissions over its lifecycle in comparison to the production, transport, and combustion of fossil fuels.

## Do heat pumps work in the cold? Do you need to have gas back-up?

Heat pumps are used as primary heating sources in cold climates around the world, including in Canada's north. Heat pump technology has improved over the decades and is proving to be a cost-efficient and zero-emissions solution to heating in cold climates as well as cooling during hot weather. In Metro Vancouver's climate, a back-up heating source is not normally needed for heat pumps in the cold, provided they are chosen with appropriate specifications and properly sized.

Supporting facts:

- There are approximately 200,000 heat pumps installed across BC, or 10% of the province's homes.
- The specific efficiencies of heat pumps at colder temperatures can vary widely. Modern heat pumps rated for cold climates usually function at optimum efficiency down to -10C or even as cold as -30C. Some systems decline in their efficiency in sub-zero temperatures, meaning they still function but may use a little more energy in these periods. A well-informed heat pump contractor can guide you to choose the best system to optimize efficiency and cost.
- There are many ways to incorporate heat pumps to replace or complement existing heating systems, whether they are gas or electric.

## Why does BC sometimes import electricity from outside the province? What does that mean for the reliability and sustainability of our energy?

BC has a large and diverse network of electricity supply and storage sources extending across the province, allowing operations to be ramped up in one region when it's dry in another. The BC electrical system is also tied to the grids in neighbouring provinces and states. These "interties" allow the utility to buy extra power when rates are low, and sell it when rates are higher.

BC's hydroelectric dams act as giant batteries, meaning we can buy imported power and hold more water back in these reservoirs to get us through dry spells and times of higher demand, such as cold snaps. Together with the ability to tap into a larger network outside the province, this creates a resilient and flexible energy system.

Supporting facts:

- 98% of the electricity that BC Hydro generates is from clean and renewable sources.

- Over the past 10 years (2013-2023), BC has exported more power than it imports. In 2023, the electricity imported was higher than average.
- Despite record-breaking electricity demand during a cold snap in early January, 2024, BC did not need to import electricity, and in fact had enough generating capacity to sell electricity to its neighbours in Alberta and the Pacific Northwest who were experiencing demand and system challenges.
- Today, unsubsidized solar and wind are the cheapest options for new electrical power in most countries, including Canada.
- Electrical grids across the globe are transitioning to clean and renewable energy.

## Resources and Additional Information

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