



RENEWABLE CITY ACTION PLAN

ECONOMIC MODELLING RESULTS



To better understand Vancouver's energy needs, the city worked with BC Hydro and Navius Research to estimate the energy needed for buildings and transportation.

The study takes into account a variety of decision points for residents and businesses, from purchasing a new vehicle or deciding whether to drive or to take the bus, to replacing a furnace or building a new home.

All of these decisions affect energy use, carbon pollution, and costs, and Vancouver-specific data has been used to paint a picture of energy-use scenarios in Vancouver to help guide policy choices.

SCENARIOS

The modelling project simulates Vancouver’s energy demand out to 2050 with four scenarios explored – each of which was designed to achieve the Renewable City 2050 objectives.

Scenario 1. A policy package primarily focused on reducing carbon pollution with **more optimistic** assumptions about the cost and availability of bioenergy.

Scenario 2. A policy package primarily focused on reducing carbon pollution with **less optimistic** assumptions about the cost and availability of bioenergy.

Scenario 3. A policy package focused on reducing carbon pollution plus an **extra emphasis on energy efficiency**, and **more optimistic** assumptions about the cost and availability of bioenergy.

Scenario 4. A policy package focused on reducing carbon pollution plus an **extra emphasis on energy efficiency**, and less optimistic assumptions about the cost and availability of bioenergy.

All scenarios focus on reducing carbon pollution:

SCENARIOS 1 AND 3
are optimistic about
different sources
of bioenergy



SCENARIOS 2 AND 4
are pessimistic about
different sources
of bioenergy



SCENARIOS 3 AND 4
add an extra
emphasis on energy
efficiency



Bioenergy is renewable energy derived from biological sources, rather than fossil fuels. Sources can include wood, straw, manure, and byproducts from a agriculture and waste processes. Bioenergy derived from waste sources such as waste wood typically has a lower environmental footprint.

*All four scenarios use BC Hydro’s anticipated **population growth rate of 1.6% per year.***

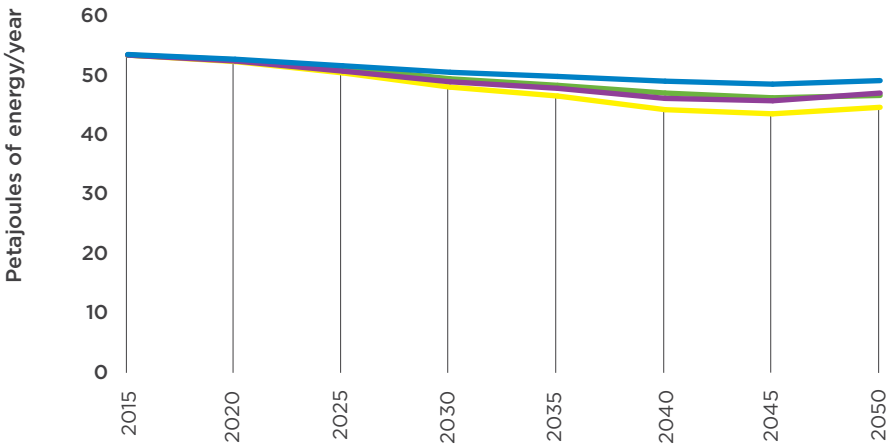
The full package of policies is available in the Navius report.

RESULTS:

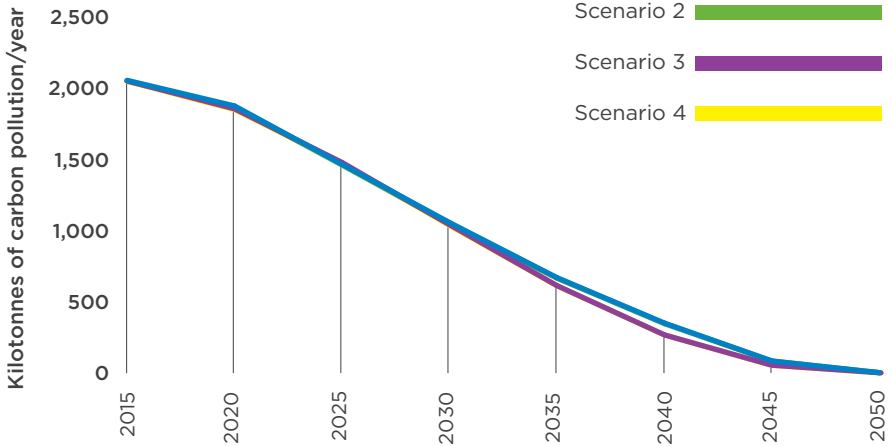
Total Energy Use and Carbon Pollution

The first two charts show Vancouver's energy use and carbon pollution for the four different scenarios.

City-wide energy use



City-wide carbon pollution



VANCOUVER WILL GROW, WHILE USING LESS ENERGY

In all of the scenarios, city-wide energy use declines because of improvements in energy efficiency.

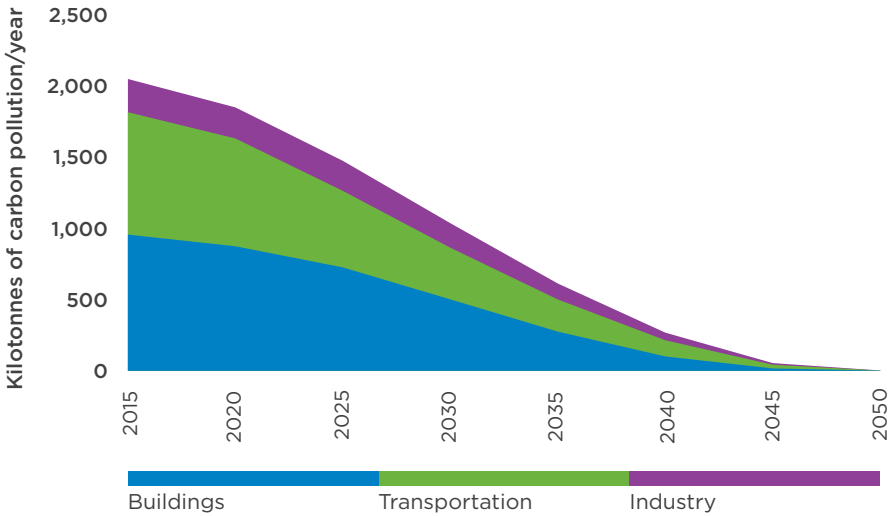
As expected, the scenarios that place a higher priority on energy efficiency result in less energy consumption. That said, the difference is relatively small because many of the solutions that reduce carbon pollution also improve energy efficiency.

There is minimal difference in carbon pollution between the scenarios.

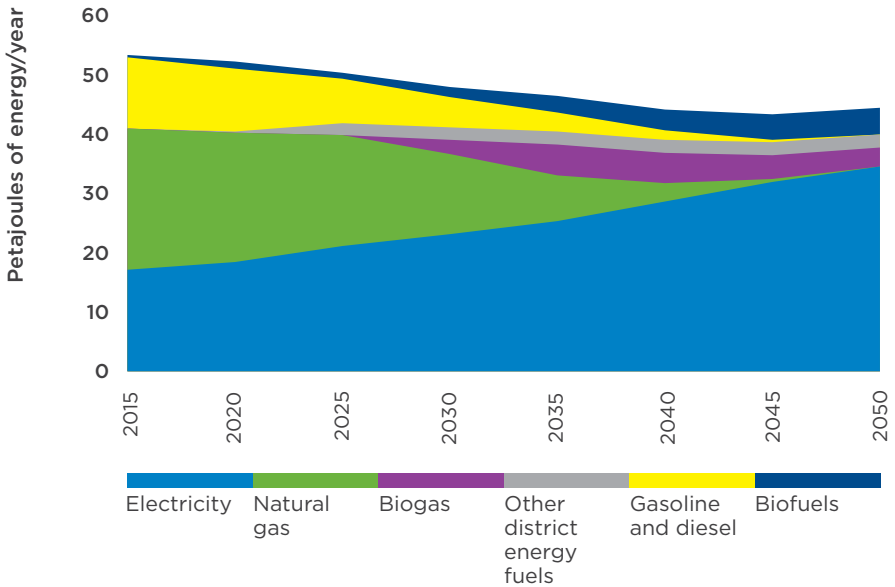
TARGET: Achieve
100%
renewable energy
before 2050

The next two charts show carbon pollution by sector and energy use by type of energy. The results presented are from Scenario 4.

Carbon pollution by sector



Energy use by type



ELECTRICITY AND BIO-ENERGY DRIVE DEEP CARBON REDUCTIONS

As shown in the first chart, carbon pollution drops in all sectors, with the declines happening fastest in transportation, followed by buildings, and then industry.

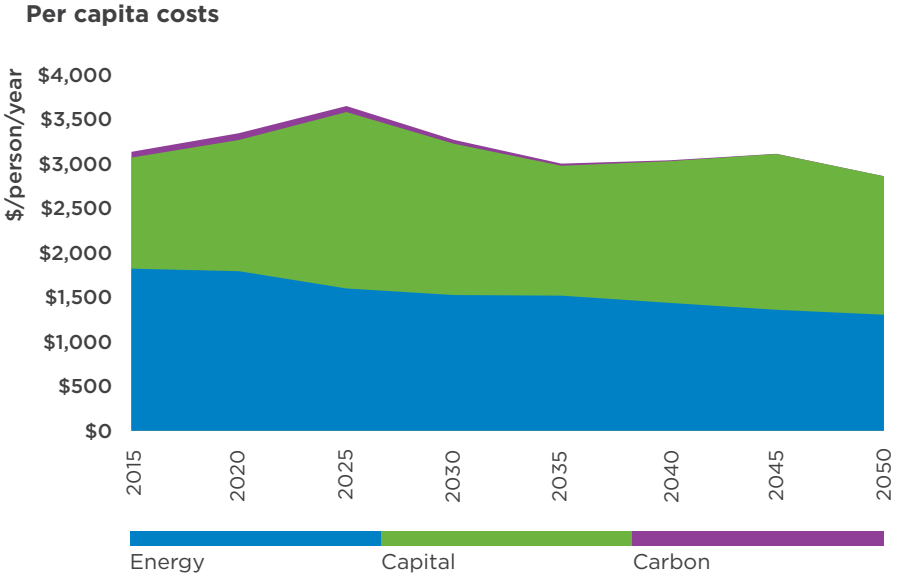
The energy-use-by-type chart shows a transition from electricity meeting about one-third of Vancouver's total needs in 2015 to three-quarters in 2050.

The remaining quarter will be primarily different types of bio-energy.



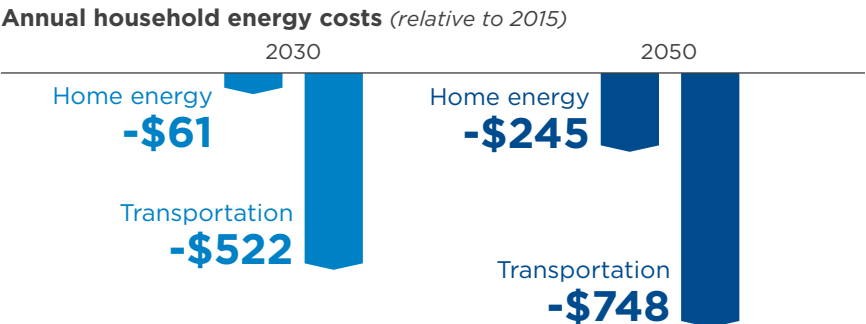
RESULTS: Costs

The following chart demonstrates per capita costs (in 2015 dollars) associated with energy, capital and carbon taxes.



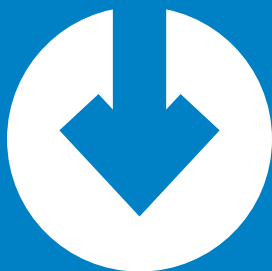
Overall, per capita energy, capital and carbon tax costs will decline by 9% between 2015 and 2050. This net savings is possible because of significant improvements in energy efficiency.

The following chart shows per household energy costs relative to 2015. In 2030, households could save \$61 from home energy costs and \$522 from transportation. By 2050, those savings could grow to \$245 and \$748 per household.





Cost savings
per capita energy, capital
and carbon tax



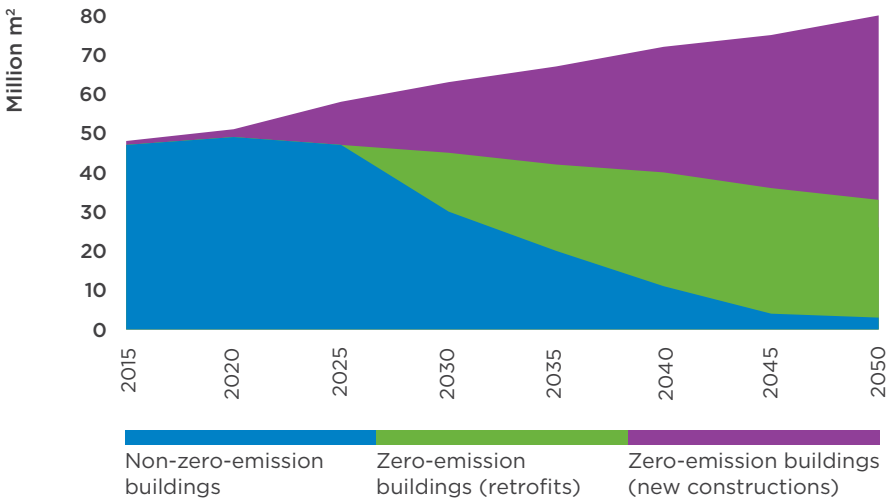
9%

RESULTS:

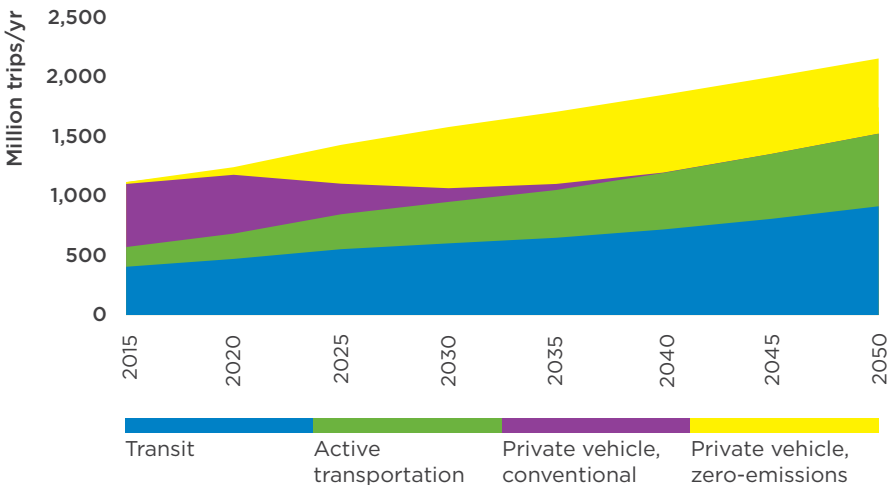
Buildings and Transportation

The next two charts illustrate how buildings and personal transportation evolve from their current state to 100% renewable energy. The results presented are from Scenario 4.

Building floorspace in Vancouver



Mode share



GROWTH TAKEN UP BY ZERO EMISSION NEW BUILDINGS, TRANSIT AND ACTIVE TRANSPORT

For the buildings chart, existing buildings (blue and green combined) decline over time, as the growing purple wedge shows new (and redeveloped) buildings built to a zero-emission standard.

The transition from blue to green shows existing buildings transitioning to a zero-emission standard through retrofits and fuel-switching.

For the personal transportation chart, the growing blue and green wedges show the increasing importance of transit and active transportation in the City.

The transition from purple to yellow shows the relatively steady number of private vehicle trips transitioning from conventional vehicles to zero-emission vehicles.

LIMITATIONS

There are two important limitations to the model worth highlighting.

This model does not include carbon pollution from the Vancouver Landfill, which is included in our inventory and targets. City of Vancouver estimates of waste emissions were added to the Navius results.

This model is limited in its ability to simulate city-level policies aimed at mode-shifting (e.g., investments in walking and cycling infrastructure). To ensure the energy and carbon pollution estimates reflect these important actions, the outcomes targeted by Transportation 2040 are built into the scenarios as assumptions.

Interested in finding out more?

[VANCOUVER.CA/RENEWABLECITY](https://vancouver.ca/renewablecity)



For More Information:

Visit: vancouver.ca

Phone: 3-1-1 TTY: 7-1-1

Outside Vancouver: 604-873-7000

Hỏi chi tiết **Obtenga Información**

資料查詢 **ਜਾਣਕਾਰੀ ਲਏ** **3-1-1**