**ALL ABOUT HEAT PUMPS**

**Decarbonizing buildings is one of the easiest, most effective, affordable climate actions local governments can take to meet climate action goals. FortisBC’s own research shows that electric heat pumps are the best way to decarbonize buildings.** In BC now, [buildings account for 12% of all GHG emissions](https://pics.uvic.ca/media-release/how-accelerate-energy-efficiency-bcs-buildings). In cities, it’s 40% or higher.

Heat pumps use electricity to both heat AND cool our homes just by moving air around. They’re more comfortable and safer during extreme heat events, and have air filtration to protect against wildfire smoke and other outdoor air pollutants.

Each molecule of gas in the air, such as N2, O2, CO2, contains energy from the sun that causes it to move. When weather is cold, it’s due to lack of heat in these molecules, but they still move – just a bit more slowly! Heat pumps take some of the heat from those slow-moving molecules, concentrate that heat, and pass it into your home to give you even temperatures such as 22 degrees Celcius.

Spend $1 on electricity in moderate temperatures, and you’ll get several dollars-worth of heat from that cost. At -30 Celcius, a heat pump requires more outside air to heat your home – but they still are very efficient – research shows that for every dollar spent to keep the heat pump working, you’d get $1.50 to $ 2.00 worth of heat into the house…. And there’s always more air to use! Same for summer cooling, with hot home air removed!

Buildings are the third largest source of GHGs in Canada. Oil, gas and transport are the largest sources. Heat pumps help because they remove up to 85 % of a household’s emissions.

A September 2023 Oxford University study has found that heat pumps are much more efficient in cold climates than oil or gas systems. And, Canada’s federal government also showed that, for most areas of Canada, standard heat pumps, not cold weather heat pumps, are just fine with NO back-up!

Currently GHG emissions from a typical household with natural gas generates 2 Tonnes of GHG CO2 equivalent – enough to drive a gas car 8000 km.

Got a heat pump already? NO household GHGs are generated in the household from it! A win for you and for the planet!

**Building to Zero Carbon Step Code standards is affordable and effective in all climates.** [According to provincial data tables](https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/reports/part_9_technical_analysis_2022_revoct3_2022.pdf) it costs less than 1% more to build a Zero Carbon home in most climate zones across the province, and if highly efficient electric heat pumps are installed (vs much less efficient baseboard heaters), [the ongoing heating and hot water costs are measurably lower](https://climateinstitute.ca/reports/heat-pumps-canada/) than with gas systems.

Heat pumps have a long and proven track record globally, and are already found in the majority of homes in cold weather countries like Norway and Sweden.

Several studies ([The Big Switch report](https://climateinstitute.ca/reports/big-switch/) & [the David Suzuki Foundation’s Zero Emissions modelling study](https://davidsuzuki.org/science-learning-centre-article/shifting-power-zero-emissions-electricity-across-canada-by-2035/) et al), conclude that by increasing solar and wind capacity, building a smarter and more efficient grid, using existing hydro-electricity capacity, and focusing on improved efficiency across all sectors, we can meet future needs without new large-scale hydro projects. **BC’s electrical grid is ready to handle increased demand** and is forecasting and preparing for scenarios with significantly increased electricity demand due to accelerated electrification of buildings and vehicles.

*Sources:*

\*Natural resources Canada [Canada.ca](https://www.canada.ca/en.html)[Natural Resources Canada](https://natural-resources.canada.ca/home)[Energy Efficiency](https://natural-resources.canada.ca/energy-efficiency/10832)[ENERGY STAR Canada](https://natural-resources.canada.ca/energy-efficiency/energy-star-canada/18953)[About ENERGY STAR Canada](https://natural-resources.canada.ca/energy-efficiency/energy-star-canada/about/22177)

\*[2022 federal government study](https://emrlibrary.gov.yk.ca/ebooks/cold-climate-air-source-heat-pumps-2022.pdf)

*\** <https://www.cbc.ca/news/science/heat-pump-cost-savings-1.6975426>

*\*Canadian Climate Institute:* [A new report](https://climateinstitute.ca/reports/heat-pumps-canada/) and [online calculator](https://heatpumpcalculator.ca/)

\*<https://davidsuzuki.org/story/heat-pumps-save-money-reduce-pollution-and-help-the-climate/>

\*Heat pump [study](https://www.cell.com/joule/fulltext/S2542-4351(23)00351-3), published in the journal [Joule](https://www.cell.com/joule/home),

\*PICS (Pacific Institute For Climate Studies)

\* https://www.environmentalhealthproject.org/post/how-methane-affects-your-health