Considering Purchasing a Heat Pump?

Experience the Benefits of a Heat Pump

March 23rd, 2022





Land Acknowledgement

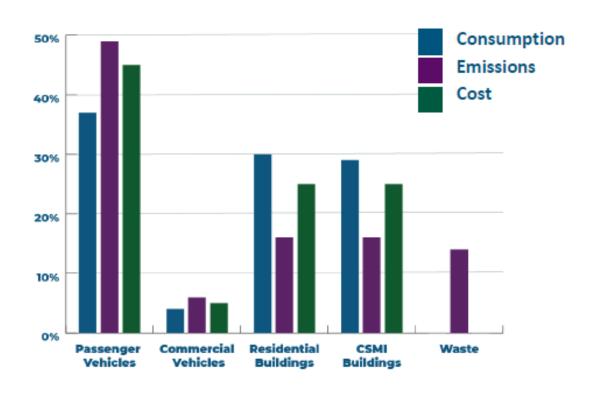
We like to acknowledge with respect the Coast and Straits Salish and WSÁNEĆ peoples on whose traditional, unceded territory we are presenting today, and the Lekwungen, Songhees, Esquimalt, and WSÁNEĆ whose historical relationships with the land continue to this day.

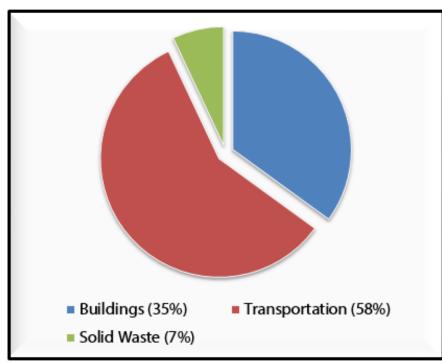
















Targets for Reducing Our Emissions

Community targets show the urgency of the challenge we are facing and the call to action to reduce our GHG emissions. Penticton's long-term community target is aligned with the Province of BC's targets.

Our new community targets are:



40% reduction in emissions below 2007 levels by 2030

100% reduction in emissions below 2007 levels by 2050



These were the targets chosen by workshop participants and confirmed in the public survey.



New Buildings













Energy Efficiency

BOOST INSULATION

To reduce heat loss, increase insulation in walls, floors, roof, and foundation.





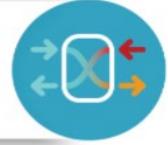
BAN BRIDGES

A break in your insulation acts like a bridge that carries heat straight out of the house. Take care with corners, junctions, gaps and studs!



VENTILATE SMARTLY

Bring plenty of fresh air into the home and recover heat from the exhaust air leaving the building.





SEAL IT UP

Air leaks are heat leaks. Wrap the home tightly, taking care to seal around ducts, pipes, fixtures, and wires that pass through walls, ceilings, and roof.



Specify efficient appliances, and ensure your heating system will meet - but not exceed - the home's needs.





THINK ABOUT DOORS & WINDOWS

Carefully consider their energy performance, size, and location.

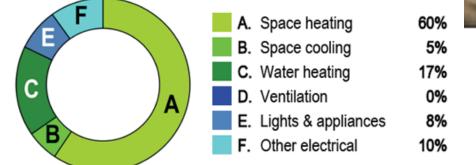




Existing Buildings

The Home Energy Loan Program (HELP)!

Energy Consumption



Air Sealing

- Available through the Electric Utility for residential customers
- Loans of up to \$10,000 for energy efficiency upgrades
 - Repayable on utility bill
 - Prime + 0.5% interest
 - 10 year amortization





Summerland

Odessa Cohen

Sustainability/Alternative Energy Coordinator

Summerland Emission Reduction Goals

- CEEMP (2021):
 - 18% reduction from 2007 levels by **2025**;
 - 30% reduction from 2007 levels by 2030;
 and
 - 80% reduction from 2007 levels by **2050**

Figure 1: Proportion of Emissions by Sector, 2016

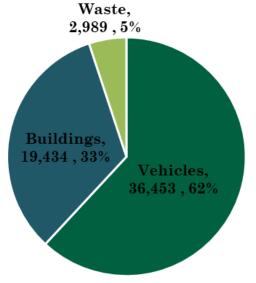
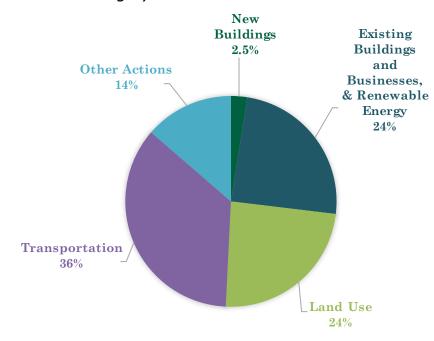


Figure 2: GHG Emissions Reductions from Each Action Category in 2025



Planning and Development

NB1: Implement BC Energy Step Code Suite

- Feb 14th: Building Bylaw amended and approved by Council for Step 1
- Sept 2022: Proposed Step 3 amendments to Building Bylaw



Figure 3: Step Code 'steps' to 2032

Summerland Rebates and Incentives

EBB1: Promote electricity, natural gas, and other energy efficiency programs

- Fees and Charges Bylaw amended to include rebates for achieving higher Step Code level in new buildings
- Matching FortisBC rebate of \$400 for mid-construction compliance
- CleanBC Betterhomes rebate and information/education awareness

BC Energy Step Code – Step Level	Rebate as a factor of Building Permit Fee
Step 3 (for Part 9 buildings only, expiring September 1, 2022)	5% Fee rebate
Step 3 (for Part 3 buildings only)	5% Fee rebate
Step 4 (Part 9 and Part 3 buildings)	10% Fee rebate
Step 5 (Part 9 and Part 3 buildings)	20% Fee rebate

Figure 4: Fees and Charges Bylaw 2022-007 rebate table



Community Energy Saving Platform

Funding proposal for pilot:









Community Energy saving platform

The Senior Energy Specialist has primary goals:

- Increase corporate and community participation in FortisBC's programs, particularly in the areas of conservation and energy management
- Strategically advance the development of policies and programs that move the RDOS toward a low carbon energy future.



Community Energy saving platform

The challenge:

For residential energy saving renovations, every house is different and each householder has different needs, budget and energy aspirations.

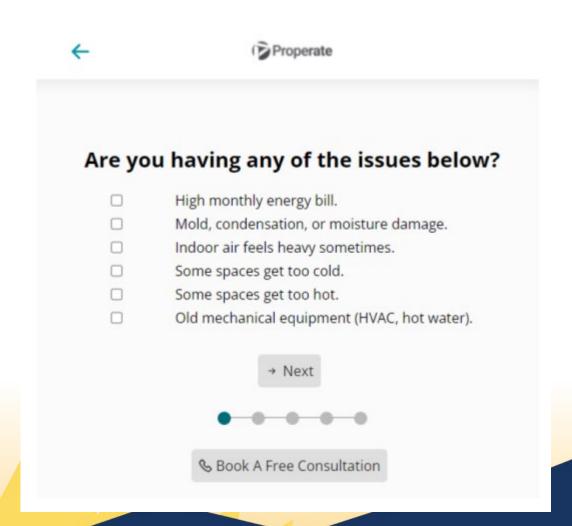
At most there are 5 Energy Assessors to serve the region. To get round 42,000 homes for EnerGuide assessments is impossible. This software platform allows for energy audits, recommendation and retrofit budgeting to a high standard digitally.



Community Energy saving platform

What does it do?

- Free upgrade suggestions for a home within 5 minutes
- Creates usable models of each user's home with customized energy retrofit actions.
- Provides relevant guidance for the situation





The benefits of this proposal for homeowners

- EnerGuide score estimate
- Embodied and operational GHG emissions results
- Deep Energy Retrofit Interface
- Direct connection with relevant FortisBC and CleanBC incentives
- Direct connection with approved professionals for an end-toend deep energy retrofit design experience.



The benefits of this proposal for RDOS Community Energy Saving program

- Organize properties by age and type including a map of areas with low scores.
- Allows RDOS to facilitate targeted energy saving actions and facilitate achieving economies of scale for neighbourhoods.
- Allows for future gap analysis of retrofit needs rate vs retrofits
- Ongoing analysis of uptake and success in the community.
- Unique tools for the community to use through the pilot



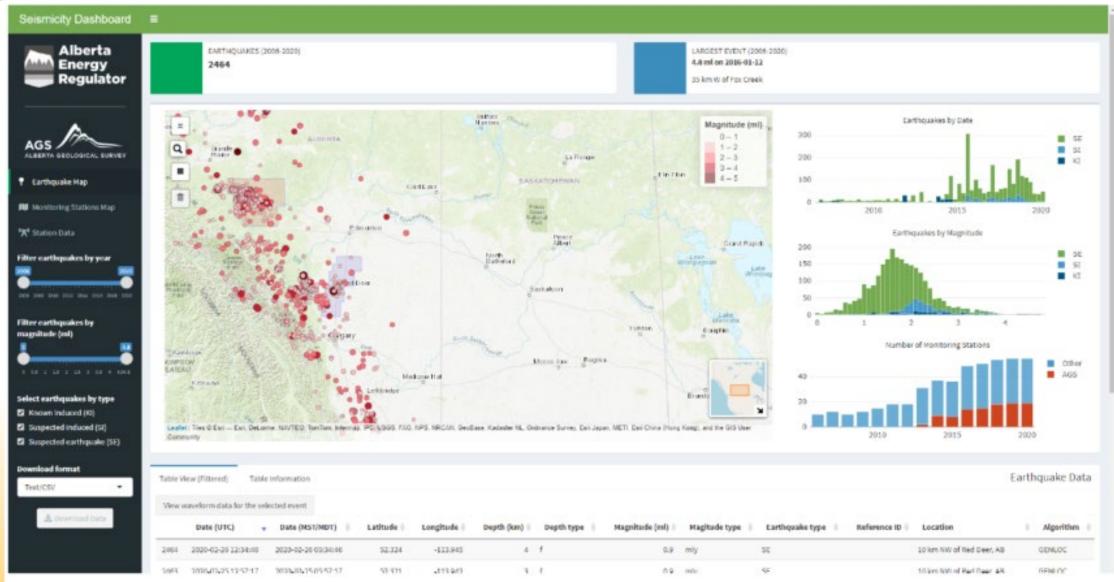
Identify and assist areas of need

Properate: Maps





Dashboard for tracking results



AGENDA

- 1. Why a Heat Pump
- 2. What is a Heat Pump
- 3. Heat Pump Types
- 4. Heat Pump Myths
- 5. Know before you Buy
- 6. Finding a Heat Pump Contractor
- 7. Available Rebates

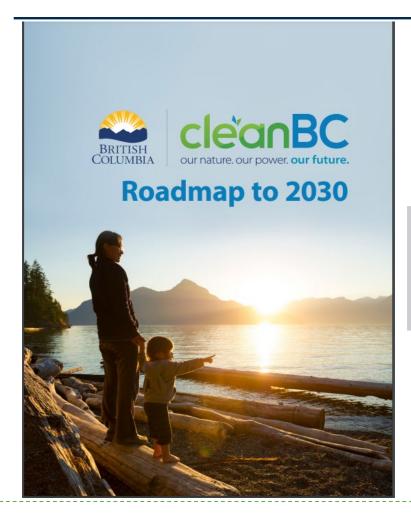
- 8. Low-Interest Financing Program
- 9. Heat Pump Group Purchase Rebate (GPR)
- CleanBC Income Qualified Program
- 11. Canada Greener Homes Program (CGHG)
- 12. CleanBC Energy Coach Service
- 13. Q&A



HEAT PUMPS: WHY?



CleanBC - Roadmap to 2030



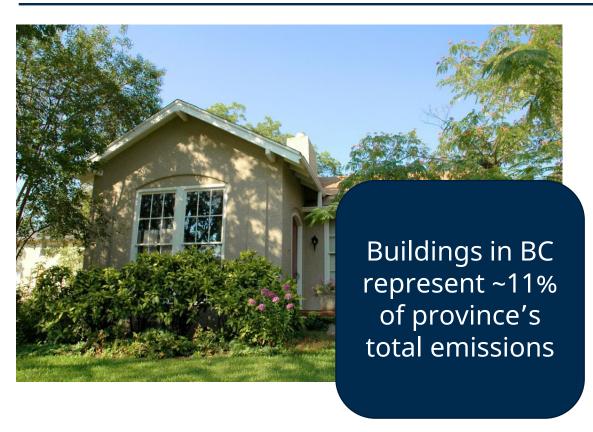
Decarbonization of buildings

Low carbon technologies – heat pumps Drastically reducing GHG emissions by 2030 in order to contribute to meeting net zero emissions target by 2050.

https://www2.gov.bc.ca/assets/gov/environment/climate-change/action/cleanbc/cleanbc_roadmap_2030.pdf



Emissions Reductions



54% of homes heated by fossil fuels



Shift towards heat pumps

https://www.bchydro.com/content/dam/BCHydro/customerportal/documents/corporate/electrification/Electrification-Plan.pdf



Future of our Homes - Electric



Shift towards electrification in homes

Heat pumps are 300% energy efficient



HEAT PUMP BENEFITS

- Increased efficiency
- 2 for 1 heating and cooling
- Long-lasting

(In comparison, electric baseboards are 100% efficient)



Benefits of a Heat Pump?

The most energy efficient heating and cooling system currently available

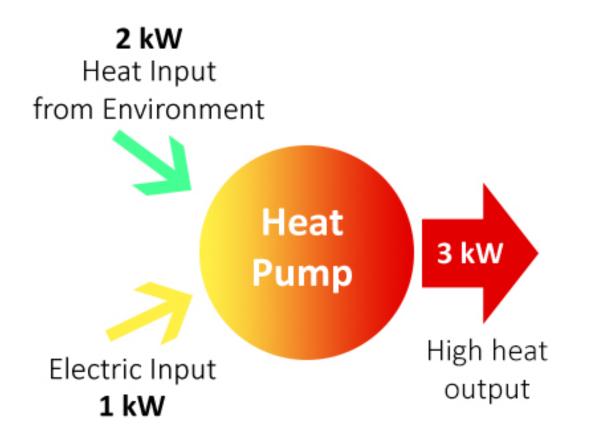
Year-round comfort

A climate-friendly home

Healthier home

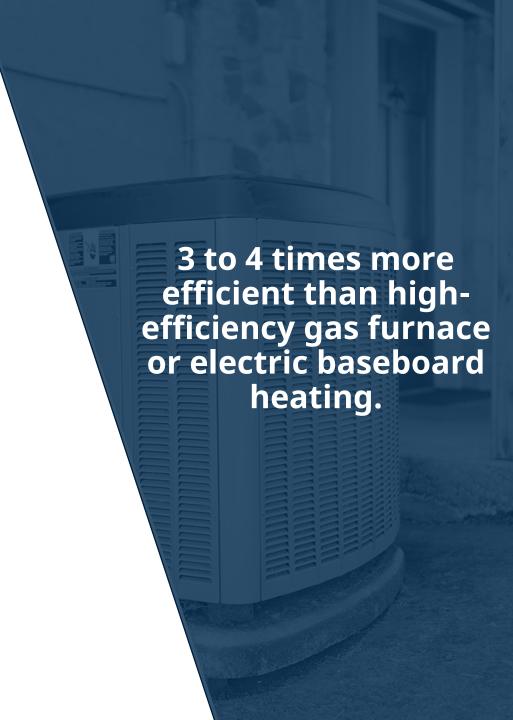
You pay no carbon tax on your energy bill





MAXIMUM EFFICIENCY

The most energy efficient heating and cooling system currently available





Jens, Realtor/Farmer, Saanich

COST-EFFECTIVE HEATING

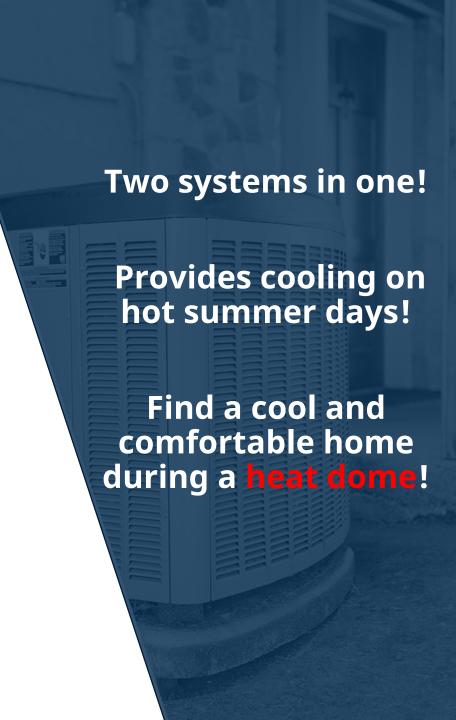
The most energy efficient heating and cooling system currently available

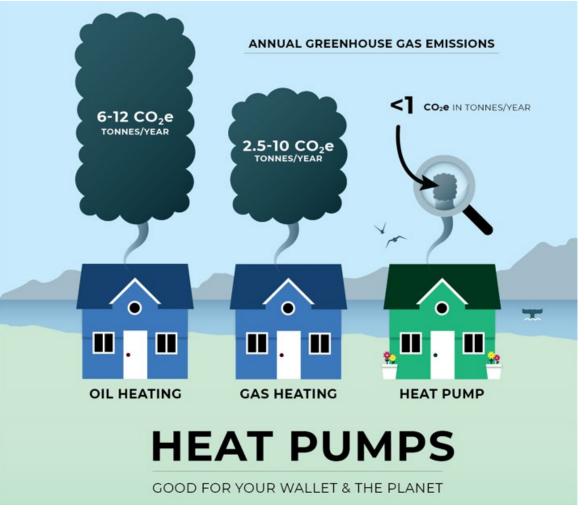




COOLING AND DEHUMIDIFICATION

Year-round comfort





CRD (January, 2022).

CLIMATE-FRIENDLY

A climate-friendly home





Provides air filtration and humidity control!

Helps rid your home of indoor pollutants, dust, pollen, and other allergens.

BETTER INDOOR AIR QUALITY

Healthier home

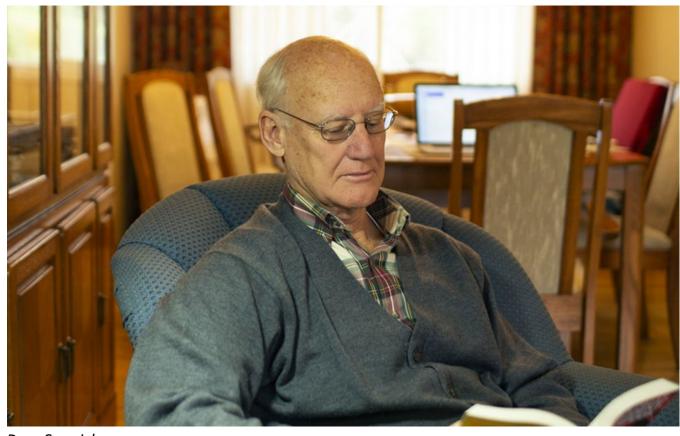


ZONAL HEATING OPTIONS Ductless Heat Pump Systems

Efficient heating of rooms you are using.

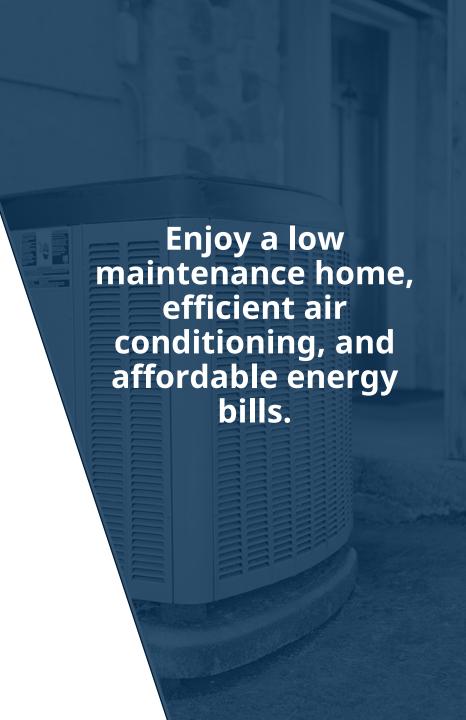
Different heating controls for different areas of a home or separate systems for rental or inlaw suite.

Meets the comfort needs of different members of the household.



Don, Saanich

EASE OF USE





Lorne, Saanich

NO MORE CUTTING OR HAULING WOOD

(unless you want a fire for ambiance)



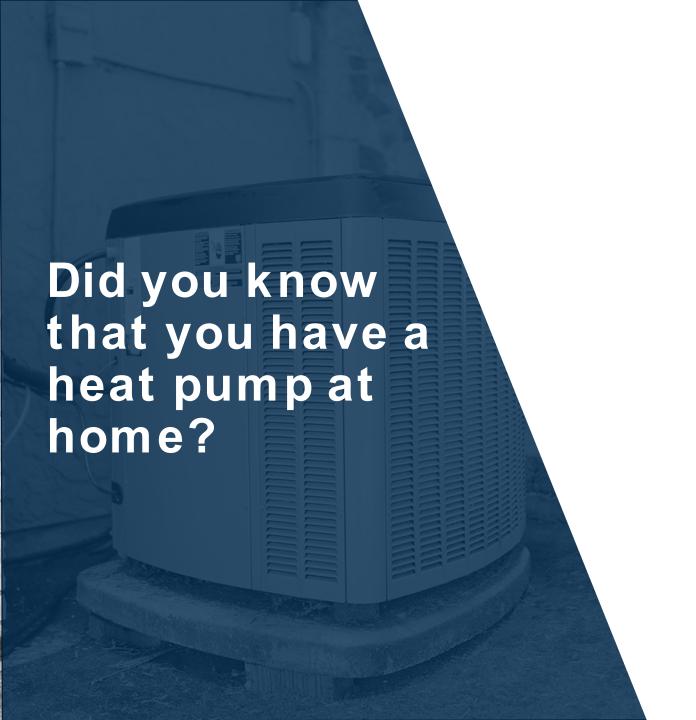


Ted and Carol, Saanich

MODERN – THE HEATING SYSTEM OF THE FUTURE

Like electric vehicles, efficient heat pumps are the heating systems of the future (that are available today)



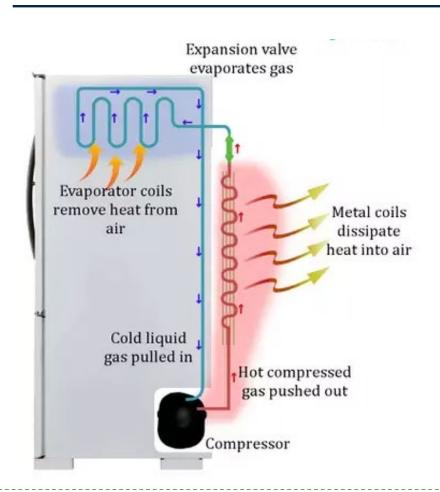




CONSIDERING BUYING A HEAT PUMP

Your Refrigerator Is...

An insulated box with a type of heat pump in it



Heat is removed from inside a refrigerator and the temperature inside the refrigerator drops.

The coils on the back of the refrigerator give off the heat that is removed from the refrigerator.

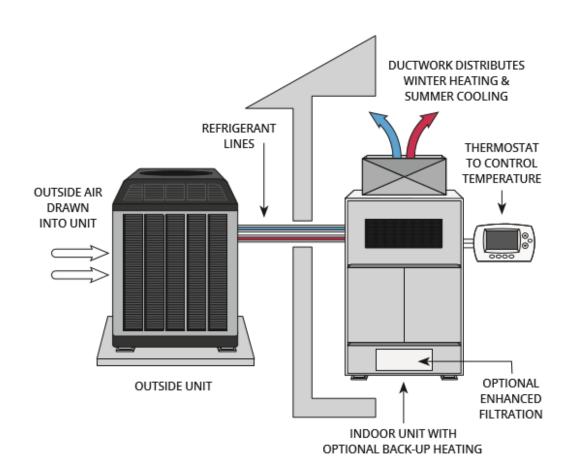




37

HEAT PUMPS: THE TYPES

Central Ducted Heat Pump



- Uses ductwork connected to vents in your home to circulate warmed or cooled air.
- Provides whole home heating and cooling.





Cold Climate Heat Pumps (ccASHP)



- Work efficiently in conditions down to -25 degrees Celsius
- Maintaining an efficiency of over 200% at -18 degrees Celsius
- Talk to your contractor if a cold climate heat pump is right for your home
- Ducted or ductless options

How is a ccASHP Different?

- ccASHP combine variable capacity compressors with improved heat exchanger
- maximize the heating capacity at colder air temperatures
- maintaining high efficiencies during milder conditions.
- They typically have higher HSPF and SEER ratings, which is how heat pumps efficiency is measured.

Did you know?

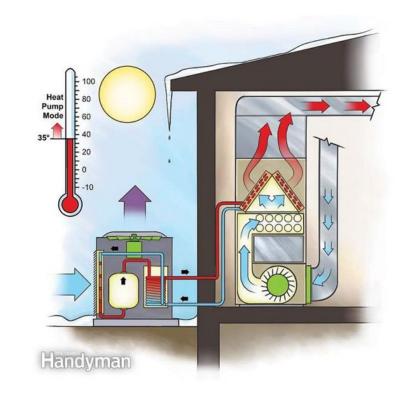
Air at -18°C contains about 85% of the heat it contained at 21°C

As long as a heat pump can make its refrigerant cooler than the outdoor air, it can capture thermal energy and deliver it as indoor heat.



Dual Fuel Ducted Heat Pump

- Central ducted heat pump with an integrated natural gas, or propane furnace.
- Provides a backup heat source for colder temperatures determined by the outdoor switch over set point.
- Heat pump acts as the primary heating system of the home, determined by a heat load calculation provided by the installation contractor.
- Requires purchasing/replacing two heating systems & paying two annual maintenance fees.

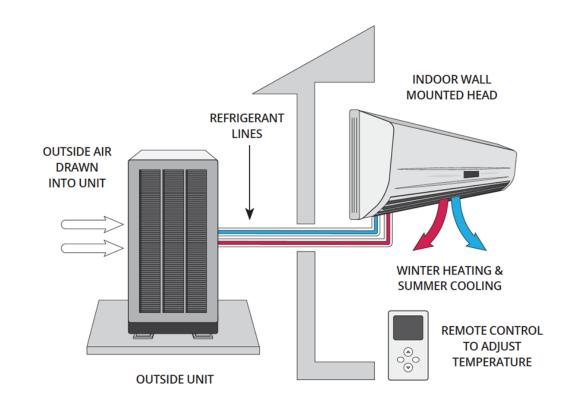




Ductless Mini-Split Heat Pump

- Provides heating and cooling via indoor heads, without the use of ducts.
- Provides zonal heating and cooling.



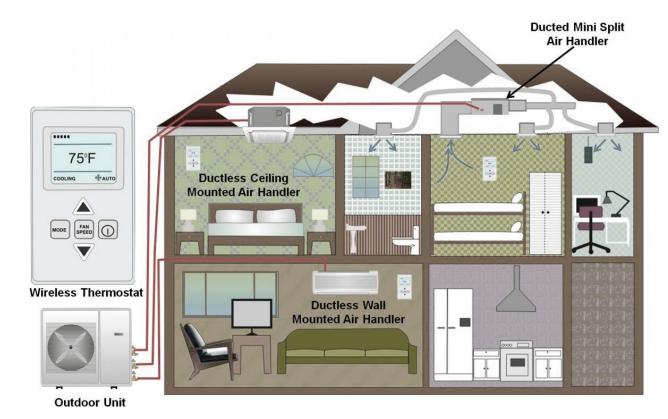


Ducted Mini-Split Heat Pump?

Other common names include:

- Mini-split
- Multi-split
- Split system
- Ducted mini-split*





*Some ducted mini-split systems may be classified as a central heat pump, check <u>Qualifying Product List</u>.

https://basc.pnnl.gov/sites/default/files/H VAC%20132minisplit-5_DS2014.jpg



Ducted Systems Vs. Ductless Heat Pumps

Factor	Central Ducted Heat Pump	Ductless Mini-Split Heat Pump	
Air Conditioning?	\checkmark	\checkmark	
Zonal Heating?		\checkmark	
Ductwork Required?	\checkmark		
Air Filtration & De- Humidification	✓	✓	
Ideal Installation in Homes:	✓ Existing ductwork✓ Central heating✓ More effective air filtration	 ✓ Zonal heating ✓ Open concept layout ✓ No ducting or older inefficient ducting ✓ Electric baseboards, wood stoves, gas fireplace ✓ Removing ductwork in basement ✓ Lower cost system for part of home (common area, basement suite, addition) 	



HEAT PUMPS: THE MYTHS

Myth #1 – Heat Pumps are Expensive To Purchase

Heating System Comparison	High-Efficiency Gas Furnace	Central Ducted Heat Pump
Equipment and Installation Cost	Range: \$6,000 to \$18,000 Average: \$7,000	Range: \$12,000 - \$27,000 Average: \$18,000
Rebates Available	Up to \$1,000	Up To \$8,000
Cost After Rebates	Average: \$6,000	Average: \$10,000
Air Conditioning	No	Yes
After Upgrade Greenhouse Gas Emissions Emitted Per Year	3 to 6 Tonnes	Under 1 Tonne



Myth #2 – Heat Pumps are Noisy

- Modern heat pumps are around 50-60 decibels (dB)
- Newer ultra quiet models with lower ratings
- Many household appliances are louder than the average heat pump
- City of Vancouver has a <u>Heat</u>
 <u>Pumps & Noise FAQ here</u>.



Quiet: Where to Locate the Outdoor Unit

Locate Away from Property Line

- Avoid the side yard
- Favour the front or rear yard

Keep Away of high travel and weather-exposed areas

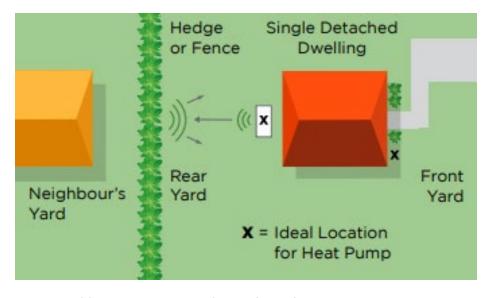
• The unit should not be under a drip line

If you can see it, you can usually hear it

- Use existing barriers like fences, landscaping, or decks
- Keep the unit away from neighbouring windows
- Ensure sufficient air flow clearance
- Consider acoustic barriers

Mount the unit on the ground

- Mount on a solid base such as a concrete pad
- Installed with rubber pads or dampeners to minimize vibration



https://vancouver.ca/files/cov/heat-pump-noise-guide.pdf





Myth #3 – Heat Pumps Need a lot of Maintenance



Every heating system requires regular maintenance

Schedule maintenance every 1 to 2 years with your installer

https://www.powersmart.ca/tip/heat-pump-mythbusters

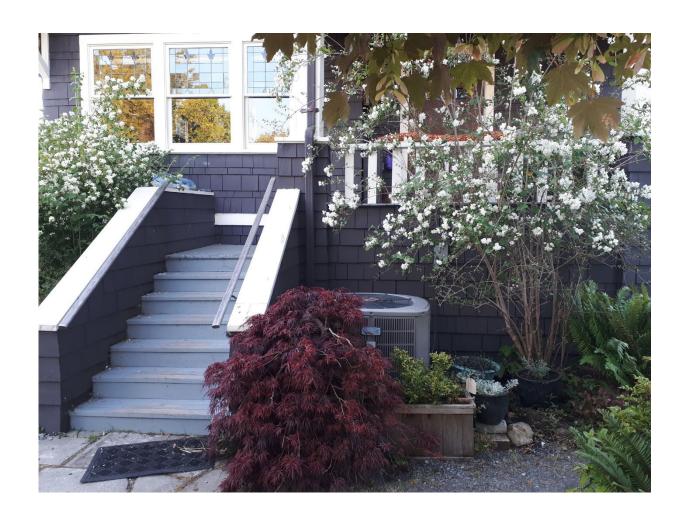


Myth # 4 Heat Pumps are Expensive to Operate

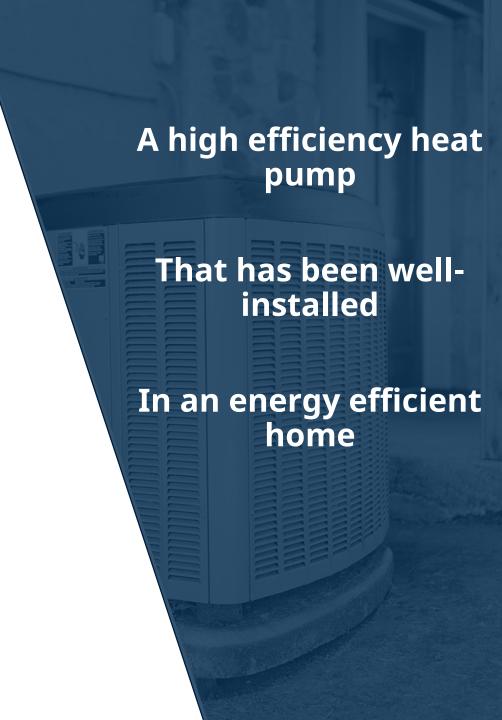
Homes with heat pumps can have comparable to lower operating costs to natural gas homes

- ✓ Changes to your Hydro Bill: If you are switching from fossil fuel heating you will see an increase in your electricity consumption, which will be offset by a decrease in your fossil fuel consumption.
- ✓ Purchase Highest Efficiency Heat Pump: The more efficient the heat pump you purchase the lower your energy consumption and energy bills. In many locations in BC, it may make sense to purchase a cold climate heat pump.
- ✓ **Quality Installation:** A heat pump that is sized for the home and well installed will work more efficiently and cost effectively.
- ✓ **Other Home Upgrades:** By making your home more energy efficient (insulation, windows, air sealing) your home will have lower energy bills.





MAXIMUM EFFICIENCY AND COMPARABLE COSTS



Maintenance Considerations

Regularly:

- Check the manufacturer's manual
- Clean or replace the indoor filters of dust and pollen
- Check the batteries in the remote control and replace if necessary

Seasonally:

• Clear the outdoor unit of any debris, leaves, snow, and dirt

Annually:

• Schedule a servicing appointment with your installer

Heat Pump Operation Tip #1

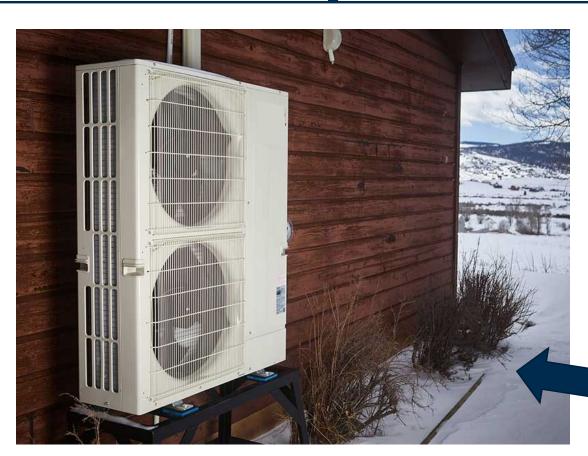
Set It & Forget It:

In <u>really cold weather</u>, best practice is to set your thermostat to your preferred comfort temperature and then let it be.

A heat pump is designed to maintain a steady temperature and work gradually and efficiently.



Myth #5 – Heat Pumps Don't Work in Cold Weather



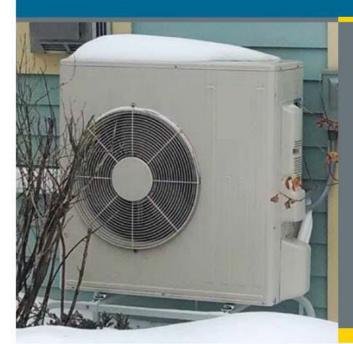
- Operates in temperatures as low as -25 degrees Celsius.
- Higher HSPF (performance in the heating season)
- Examples all around North America

-13 degrees Fahrenheit winters in Colorado is -25 Celsius!

Heat Pumps in the North Eastern United States



Technology Solutions for New and Existing Homes



Building America Case Study

Field Performance of Inverter-Driven Heat Pumps in Cold Climates

Connecticut, Massachusetts, and Vermont

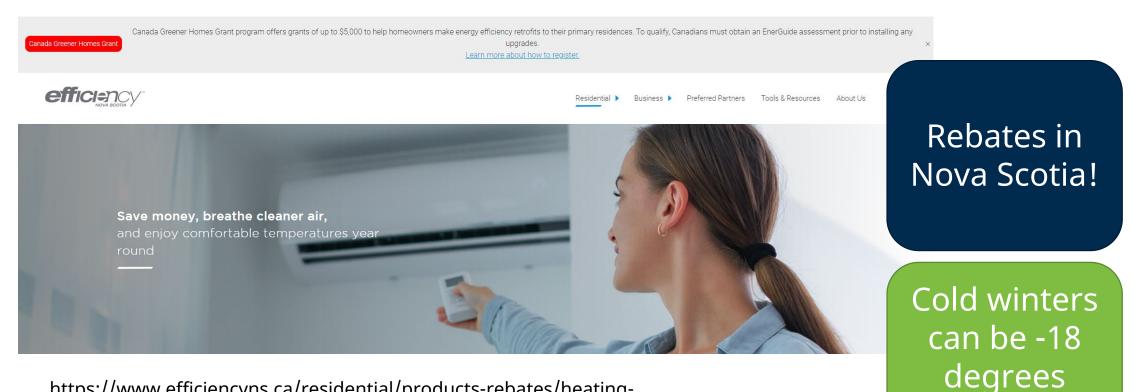
New England Heat Pumps!

Winters average -8 degrees Celsius.

https://www.energy.gov/sites/default/files/2015/09/f26/ba-case-study-inverter-driven-heat-pumps-cold.pdf



Heat Pumps in Nova Scotia



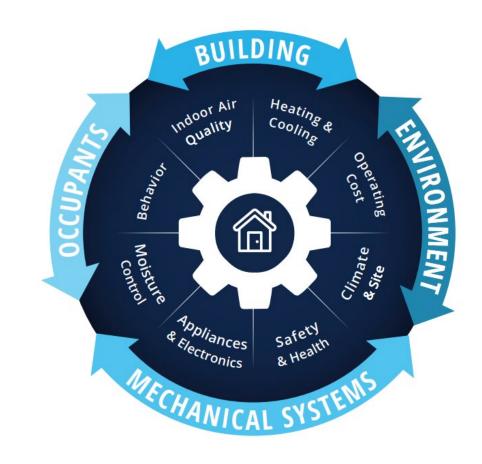
https://www.efficiencyns.ca/residential/products-rebates/heating-cooling/heat-pumps/

Celsius!

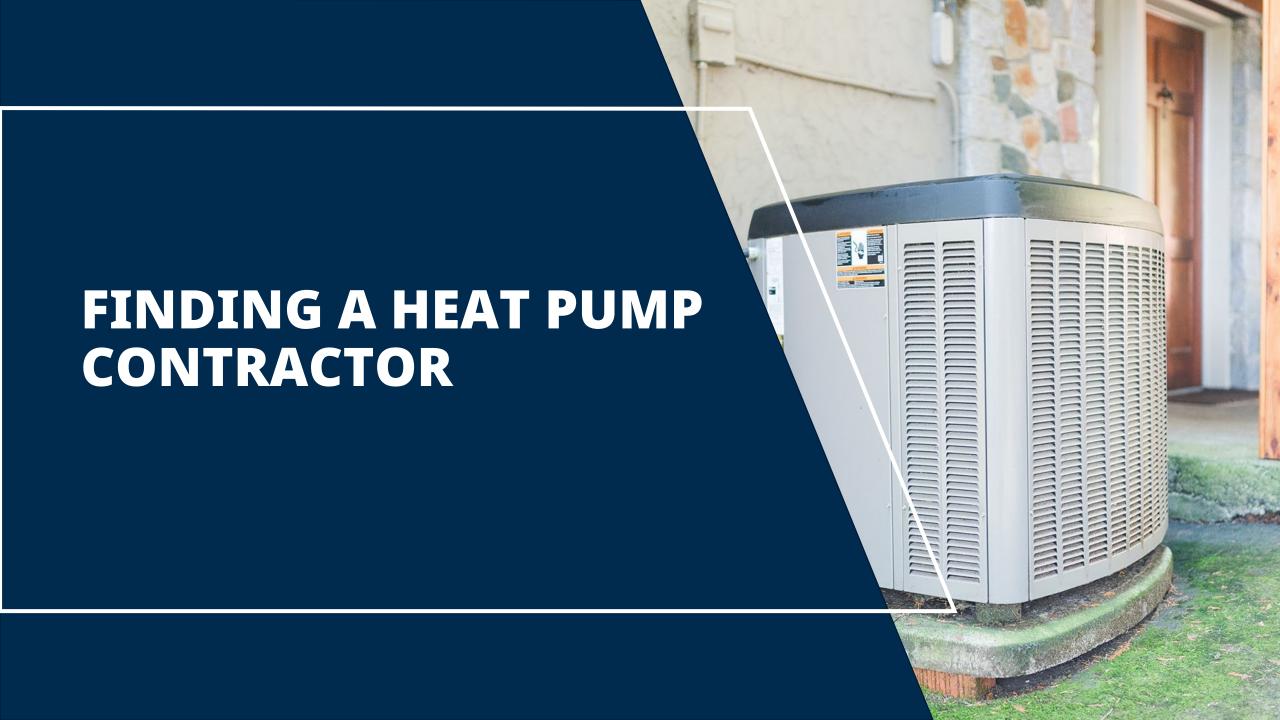


Buyer Best Practices

- ✓ Buy through a **qualified installer**, avoid buying wholesale or online.
- ✓ Obtain multiple quotes from different installers.
- ✓ House as a System Address air leakage and insulation issues before purchasing your system to ensure high performance, comfort and affordability.
- ✓ Select a heat pump that is properly sized for your home, designed for your climate, and includes a supplementary heating system if necessary.
- ✓ Consider starting with an EnerGuide Home Evaluation (and access extra federal rebates)







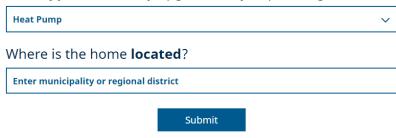
Finding a Heat Pump Contractor



What to expect from Program Registered Contractors

Find a Program Registered Contractor near you

What **type** of efficiency upgrade are you planning?



Become a Program Registered Contractor

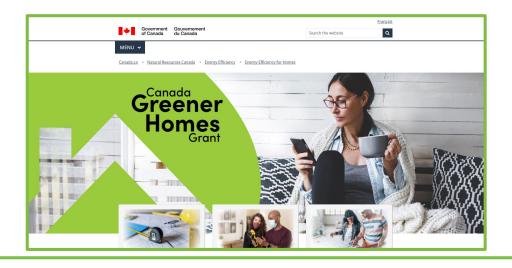




Two Stackable Programs



Provincial – CleanBC Better Homes and Home Renovation Rebate Program (CBC)



Federal – Canada Greener Homes Grant (CGHG)

All rebates/grants are stackable up to 100% of the upgrade cost (excluding tax)



Heat Pump Provincial Rebates and Federal Grants – Overview

Upgrade	Canada Greener Homes Grant	CleanBC Electric to Heat Pump Rebates	Estimated Total (Electric to Heat Pump)	CleanBC Fuel Switch Rebates	Estimated Total (Fossil Fuel to Heat Pump)
Ductless Mini- Split Heat Pump Single Head	\$0	\$1,200	\$1,200	\$3,000	\$3,000
Ductless Multi- Split Heat Pump	Up to \$5,000	\$2,000	Up to \$7,000	\$3,000	Up to \$8,000
Central Ducted Heat Pump	Up to \$5,000	Up to \$2,000	Up to \$7,000	\$3,000	Up to \$8,000
Dual Fuel Heat Pump	Up to \$5,000	-	Up to \$5,000	\$3,000	Up to \$8,000
Air-to-water Heat Pump	\$0	-	\$0	\$3,000	\$3,000



Rebate Search Tool

About Us

Contact Us





Better Homes helps British Columbians find rebates that save energy and lower greenhouse gas emissions.





Find rebates for **building a home**



Not sure where to start? Follow our step-by-step guide









©2019 CleanBC Better Homes





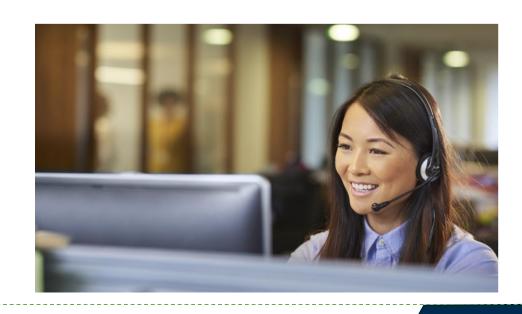
CleanBC - Energy Coaching

Self-Serve Online Resources

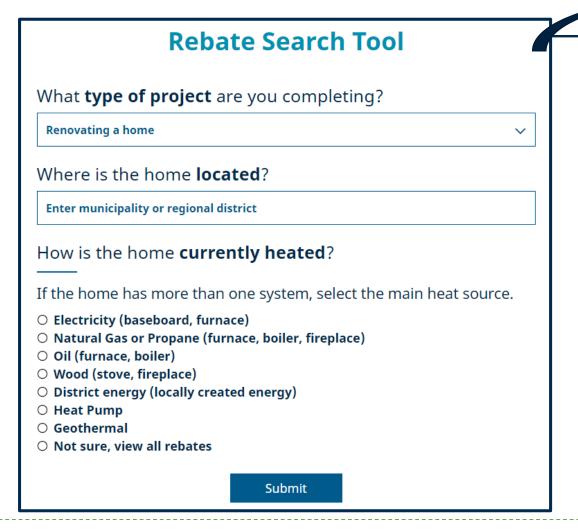
- Incentives, rebates, contractor and financing search tool
- Resources to learn about energy efficiency products and services
- Frequently asked questions

Free Energy Coaching Support

- www.betterhomesbc.ca
- 1-844-881-9790
- ask@betterhomesbc.ca



CleanBC Rebate Search Tool









Provincial Heat Pump Rebates – Eligibility Criteria

- Eligible homes (Single family, side-by-side rowhome or duplex, mobile home on permanent foundation)
- Rebate values dependant on participant's primary space heating system prior to the heat pump installation
- Must serve as the primary space heating system for the home;
- Maximum one (1) primary space heating system rebate per home;
- Rebates cannot exceed the cost of the invoice and paid cost of the upgrade;
- Must be found on CleanBC Heat Pump Qualifying Product List.



Heat Pump Rebates:

FortisBC Electric (Including municipal providers)

Heat Pump Type	Rebate Amount *
Ductless Mini Split Heat Pump (Single Head) HSPF ≥ 10.00, SEER ≥ 16.00, Variable Speed Required	\$1,200
Ductless Multi-Split Air Source Heat Pump (Two or more Heads) HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$2,000
Tier 1 Central Ducted Heat Pump HSPF ≥ 8.50, SEER ≥ 15.00, Variable Speed Not Required	\$1,200
Tier 2 Central Ducted Heat Pump HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$2,000

^{*}Rebate amounts will differ for BC Hydro Electricity customers.

Replacing or adding to an existing heat pump is not eligible for provincial rebates



Heat Pump Rebates: Fossil fuel heated homes

For converting from oil, natural gas, or propane to a heat pump

Heat Pump Type	Rebate Amount* (FortisBC Electric Territory)
Ductless Mini Split Heat Pump (Single Head) HSPF ≥ 10.00, SEER ≥ 16.00, Variable Speed Required	\$3000
Ductless Multi-Split Air Source Heat Pump (Two or more Heads) HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$3000
Tier 2 Central Ducted Heat Pump HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$3000

*Rebate amounts will differ for BC Hydro Electricity customers.



Heat Pump Rebates:

Fossil fuel heated homes... Continued

For converting from oil, natural gas, or propane to a heat pump

Heat Pump Type	Rebate Amount
Dual Fuel Ducted Heat Pump HSPF ≥ 9.30, SEER ≥ 16.00 (no variable speed required)	\$3000
Air-to-Water Heat Pump	\$3000
Combined Space & Hot Water Heat Pump	Up \$4000 + \$300
Electric Service Upgrade Upgrade electrical service to 100, 200, 400 amp service	\$500



Heat Pump Low-Interest Financing Program

- Interest Rates of 0% over 60 months (5 years)
- Loans of \$1,000 to \$40,000 available
- Access CleanBC financing OR the CleanBC heat pump rebate, but not both.
- Upgrades must be installed by a Finance Registered Contractor.
- Homes must be switching from fossil fuel (oil, gas, propane) to a heat pump
- Same heat pump requirements as the provincial heat pump rebates



Group Purchase Rebate

The GPR rewards groups of homeowners working together to switch from natural gas, oil or propane heating to an air source heat pump.

Group Purchase Rebate: Up to \$500 more in rebates.

- + up to a \$6,000 Heat Pump Rebate from CleanBC
- + the \$500 Electrical Service Upgrade Rebate
- + applicable municipal top-ups
- + the Canada Greener Homes Grant: Up to \$5,000

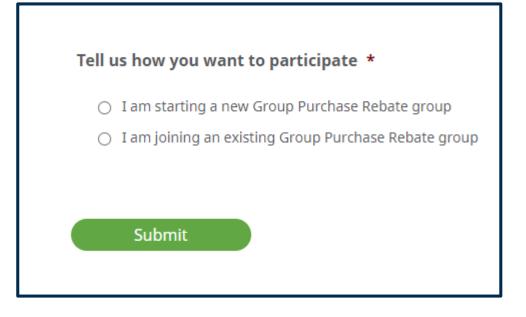




GPR Rebate Amount is Based on Group Size

Size of Group*	Each Participant Receives
2-4 Homes	\$200
5-9 Homes	\$275
10-14 Homes	\$350
15-19 Homes	\$425
20-30 Homes	\$500

^{*}Groups must be from the same electric utility area.



- 1) Start a group register and start a new group.
- 2) Join an existing group receive a GPR Code from another participant.



CleanBC Income Qualified Program

Number of people living in your home	Combined pre-tax annual income of all adults in your home (excluding dependents):		
(including adults and children)	Income Level 1	Income Level 2	
1	\$42,593	\$55,903	
2	\$53,026	\$69,596	
3	\$65,189	\$85,560	
4	\$79,147	\$103,880	
5	\$89,768	\$117,820	
6	\$101,242	\$132,880	
7 or more	\$112,718	\$147,943	

- Enhanced rebates that cover 60-95% of your home upgrade costs
- Support in multiple languages
- Meet income qualifications (see table)



CleanBC Income Qualified Program

- Heat pump rebates up to \$9,500
 - Up to \$9,500 when switching from fossil fuel
 - Up to \$5,000 when switching from electric baseboards/furnace, or wood
- Work with an Income Qualified
 Program Registered Contractor
 - Contractor will submit rebate and deduct the rebate from the final cost of the upgrade

Pre-Registration Form

Already know what upgrades you want to complete? Submit the online pre-registration form using your computer or mobile device.

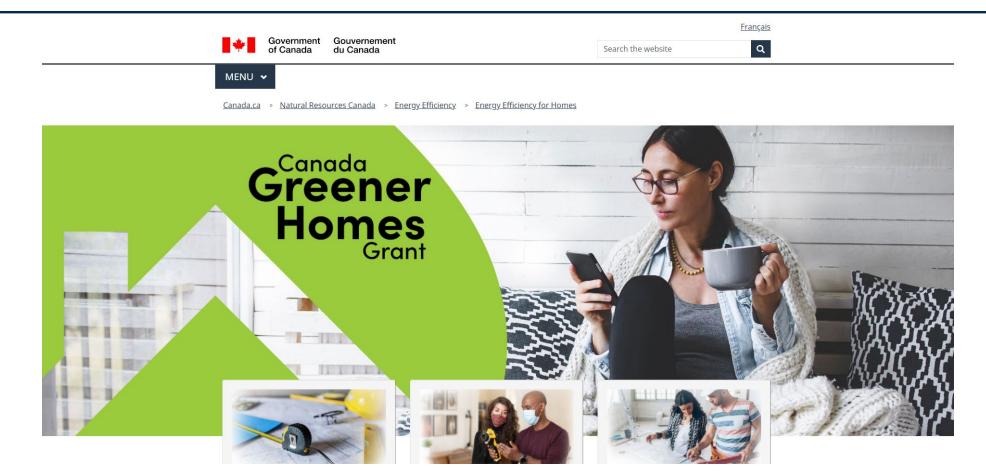
Estimated time to complete: 10 minutes

Get started





Canada Greener Homes Program





Canada Greener Homes Grant (CGHG)

- Up to \$5,000 towards upgrades plus up to \$600 towards EnerGuide Evaluations
- Heat Pump grants range between \$2,500 and \$5,000
- Homeowners must register in the Homeowner Portal and have both a Pre- and Post-Retrofit EnerGuide Home Evaluation
- Home must be homeowner's primary residence
- Grants can stack with the CleanBC rebates, up to 100% of the total cost



CGHG Heat Pump Eligibility

- Grants between \$2,500 and \$5,000
- HSPF \geq 10.00
- Ductless Single-head heat pumps are not eligible
- System must distribute heat to the entire home with a minimum of one outlet/head per floor

Air Source Heat Pumps and Cold Climate Air Source Heat Pumps (Select a New Product)

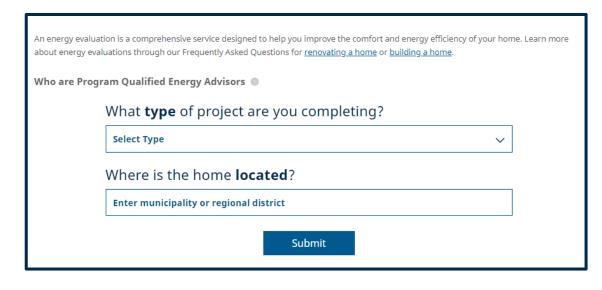
Eligible air source heat pump (ASHP) and cold climate air source heat pump (ccASHP) models for the <u>Canada Greener</u> <u>Homes Grant</u> – excluding residents of Quebec and Nova Scotia

In order to be eligible to receive a grant for this product, the Renovation Upgrade Report that homeowners receive must recommend a heat pump (Air Source Heat Pump, Cold Climate Air Source Heat Pump, or Ground Source Heat Pump) as a way to improve the energy efficiency of their home.



Both Programs?

- Start with an EnerGuide Home Evaluation
 - Requirement for Canada Greener Homes
 - Optional for CleanBC
- Register with the federal program
- Call the Energy Coach Service



Find energy advisors at betterhomesbc.ca/ea



Where to Get Started

- Be sure to review all requirements for both programs.
 Eligibility may differ.
- All CleanBC rebates have a 6 month deadline to apply from the evaluation date, or invoice date.
 - Best practice is to apply as you go.
- All Canada Greener Homes Grants are applied for after the Post-Upgrade EnerGuide evaluation is completed.
 - After the applicable upgrades are installed.



Questions, Contacts

CleanBC Energy Coach Service

- Free coaching support, rebate and contractor search tools
- 1-844-881-9790
- ask@betterhomesbc.ca
- www.Betterhomesbc.ca

Canada Greener Homes

- 1-833-674-8282
- Nrcan.canadagreenerhomesgrantsubventionmaisonsvertes.nrcan@Canada.ca



THANK YOU!

For more information visit betterhomesbc.ca

