# Considering Purchasing a Heat Pump?

Experience the Benefits of a Heat Pump

May 26th, 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.



## **Climate Action in New Westminster**

• In 2019, the City declared a Climate Emergency recognizing the City's role in the fight against climate change and has endorsed the Seven Bold Steps to help move our city towards a Zero Carbon Future by 2050.

#### **NEW WEST'S SEVEN BOLD STEPS:**

Carbon Free Corporation, Car Light Community, Carbon Free Homes and Buildings, Pollution Free Vehicles, Carbon Free Energy, Robust Urban Forest, and Quality People-Centred Public Realm.



#### **CARBON FREE HOMES AND BUILDINGS:**

By 2030, all new and replacement heating and hot water systems will be zero emissions.



#### **CARBON FREE ENERGY:**

The City of New Westminster will invest in a smart electrical grid and solar energy generation in order to accommodate the required rapid conversion to building and vehicle electrification.





## **Community Energy & Emissions Plan**

- Primary document for the City's climate action planning and it will support the implementation of the Seven Bold Steps.
- Roadmap for reducing community-wide energy consumption and GHG emissions over the next 30 years. Will help achieve the City's new and ambitious 2050 emission reduction targets.

## **Key Action Area: Buildings**

- High performance requirements for new construction
- Building electrification
- Building retrofit strategies

Please stay tuned for updates on our Be Heard page!



Heat Pump is an efficient electrification solution





## **Energy Save New West (ESNW)**

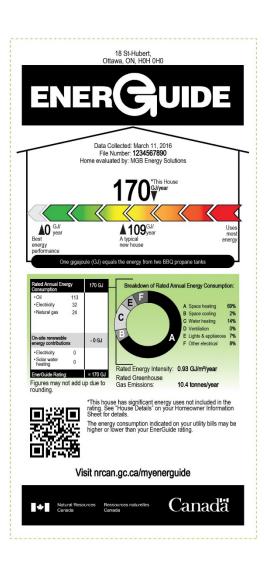
- Energy Save New West is a community energy program designed to provide an on-the-ground and personal dimension to the emission reduction and energy efficiency objectives reflected in New Westminster's Official Community Plan, Community Energy & Emissions Plan and Climate Emergency Declaration.
- Program advances energy efficiency solutions for local residents and businesses through the provision of participant support and technical advice services, incentives / rebates, and training.







## **Existing Home Program Services**



### Pre-upgrade Energy Evaluations:

ESNW provides the FREE PRE-Upgrade Energy Evaluation opportunity for New West residents. Homeowners will require to pay only a \$75 upfront fee with over \$420 subsidy from the City.

No minimum energy retrofit/post-upgrade evaluation is required but you must register through the ESNW Existing Homes Program.

**HOW TO REGISTER**: Visit ESNW website or call **604-515-3818** <a href="http://www.energysavenewwest.ca/existing-home-registration/">http://www.energysavenewwest.ca/existing-home-registration/</a>

## New Westminster Heat Pump Top-up:

Additional \$350 is available for your electrification retrofit with a heat pump!

### Monthly E-newsletter:

Considering a Heat Pump Webinar

Sign-up for ESNW e-newsletter to stay up-to-date.

http://www.energysavenewwest.ca/sign-up-for-e-news/





# Homeowner Experience (Ductless Heat Pump)













## **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)
- 10. Municipal Top Ups
- 11. CleanBC Income Qualified Program
- 12. Canada Greener Homes Program (CGHG)
- 13. CleanBC Energy Coach Service
- 14. Q&A



# HEAT PUMPS: WHY?



# CleanBC - Roadmap to 2030



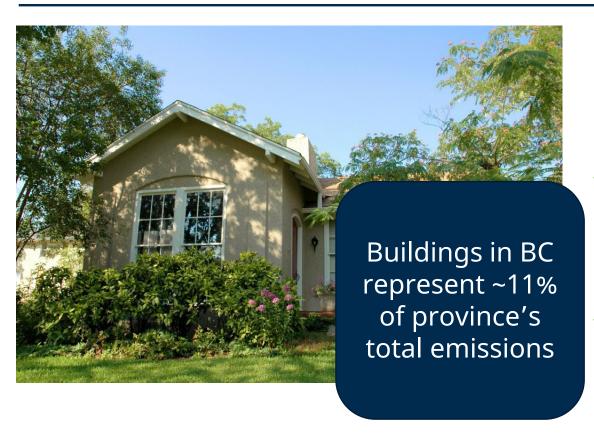
Decarbonization of buildings

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

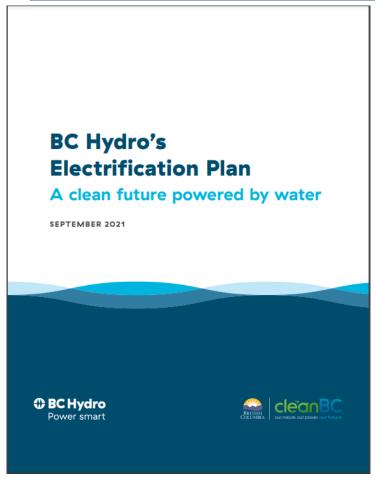


Shift towards heat pumps

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



# Future of our homes – Electric BC Hydro's Plan



Raise awareness of heat pumps Make heat pumps more affordable through rebates

\$6,000 heat pump rebate (CleanBC and BC Hydro) GHG target: reduce 200,000 tonnes in the next 5 years

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

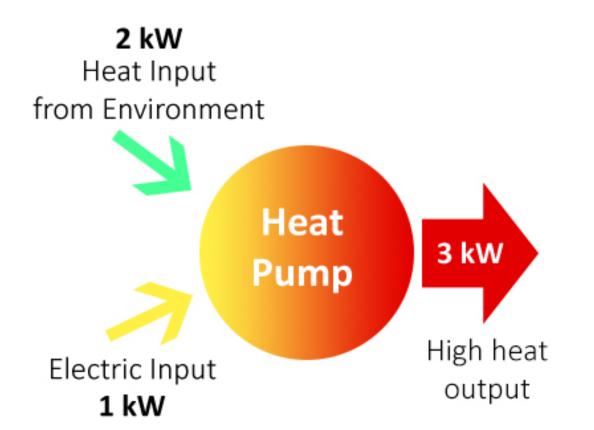
**Year-round comfort** 

A climate-friendly home

**Healthier home** 

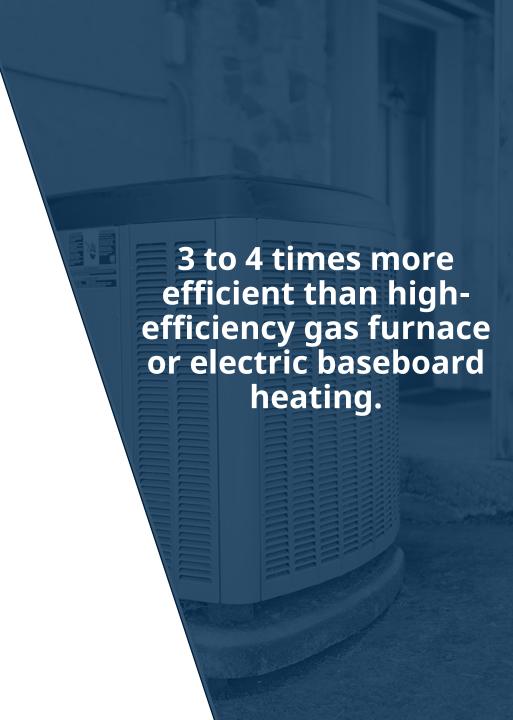
You pay no carbon tax on your energy bill





## **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

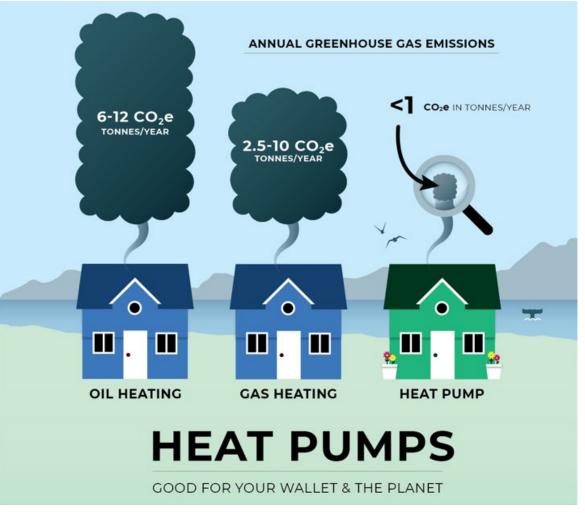




# COOLING AND DEHUMIDIFICATION

**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** 

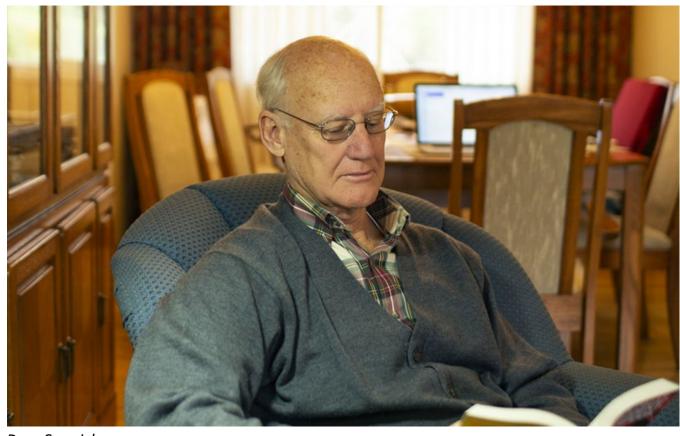


# **ZONAL HEATING OPTIONS Ductless Heat Pump Systems**

Efficient heating of rooms you are using.

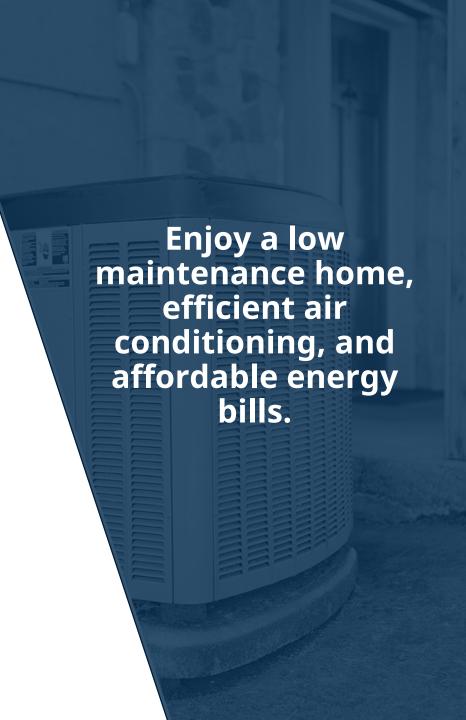
Different heating controls for different areas of a home or separate systems for rental or inlaw suite.

Meets the comfort needs of different members of the household.



Don, Saanich

## **EASE OF USE**



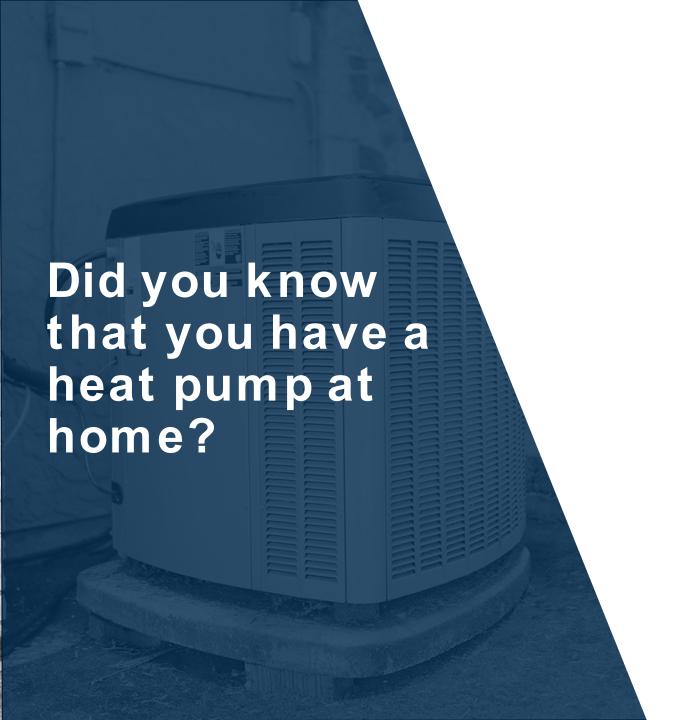


Ted and Carol, Saanich

# MODERN – THE HEATING SYSTEM OF THE FUTURE

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



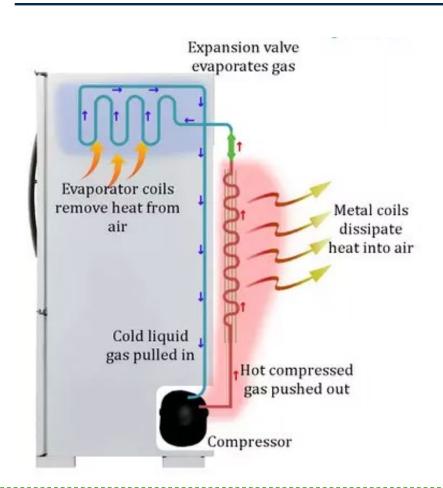




CONSIDERING BUYING A HEAT PUMP

# Your Refrigerator Is...

# An insulated box with a type of heat pump in it



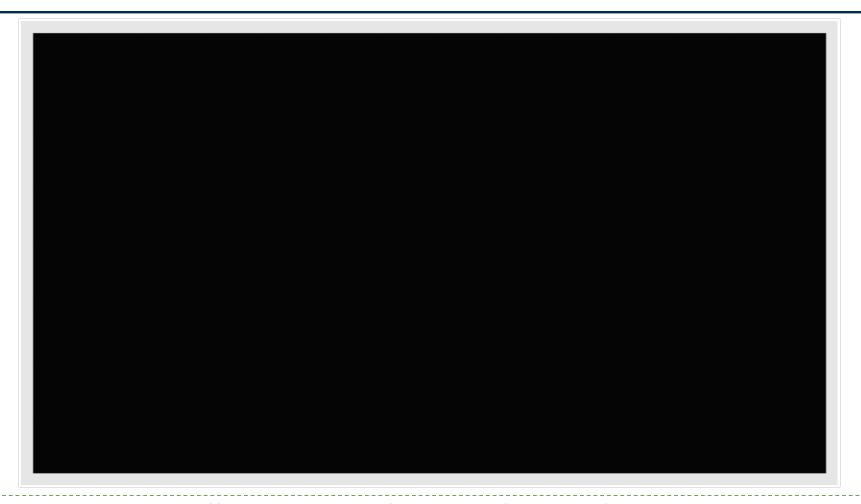
Heat is removed from inside a refrigerator and the temperature inside the refrigerator drops.

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





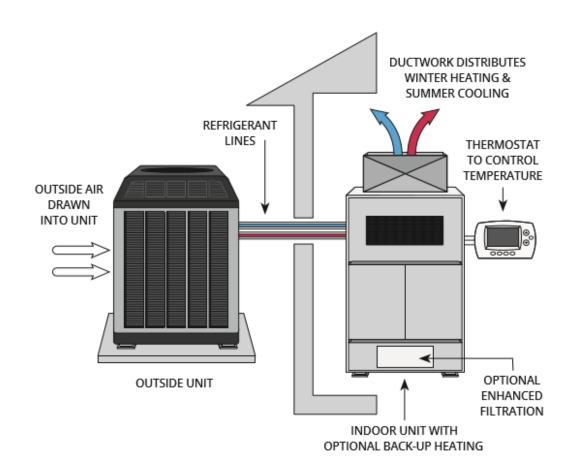
# **How Do Heat Pumps Work?**





# **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.





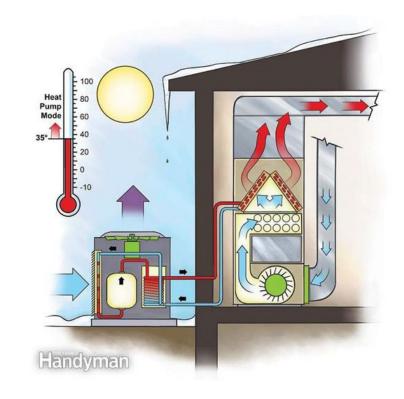
# **Cold Climate Heat Pumps**



- 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

# **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.

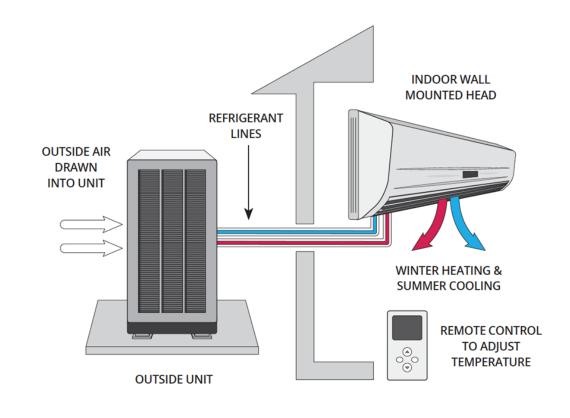




# **Ductless Mini-Split Heat Pump**

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



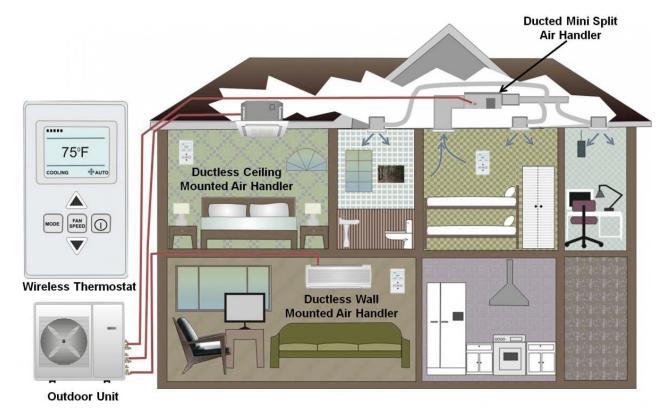


# **Ducted Mini-Split Heat Pump?**

#### 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?	$\checkmark$	✓
Zonal Heating?		✓
Ductwork Required?	$\checkmark$	
Air Filtration & De- Humidification	✓	✓
Ideal Installation in Homes:	<ul><li>✓ Existing ductwork</li><li>✓ Central heating</li><li>✓ More effective air filtration</li></ul>	<ul> <li>✓ Zonal heating</li> <li>✓ Open concept layout</li> <li>✓ No ducting or older inefficient ducting</li> <li>✓ Electric baseboards, wood stoves, gas fireplace</li> <li>✓ Removing ductwork in basement</li> <li>✓ Lower cost system for part of home (common area, basement suite, addition)</li> </ul>



# **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 \$11,000
<b>Cost After Rebates</b>	Average: \$6,000	Average: \$7,000
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

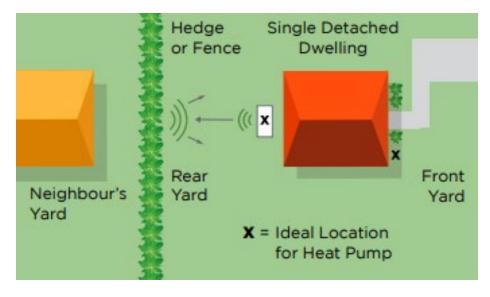
• The unit should not be under a drip line

#### 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

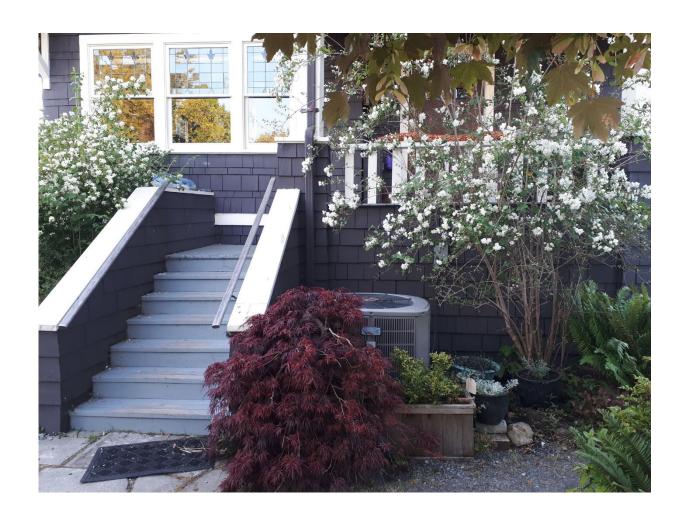


# Myth # 4 Heat Pumps are Expensive to Operate

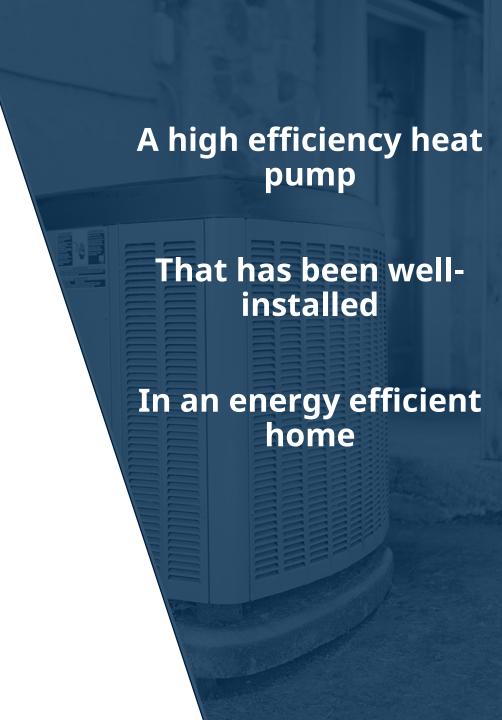
Homes with heat pumps can have comparable to lower operating costs to natural gas homes

- ✓ 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

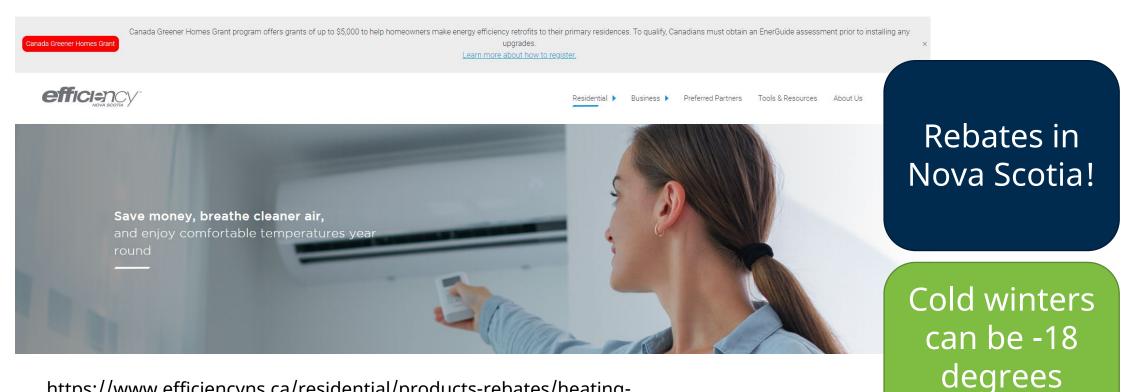
New England Heat Pumps!

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!

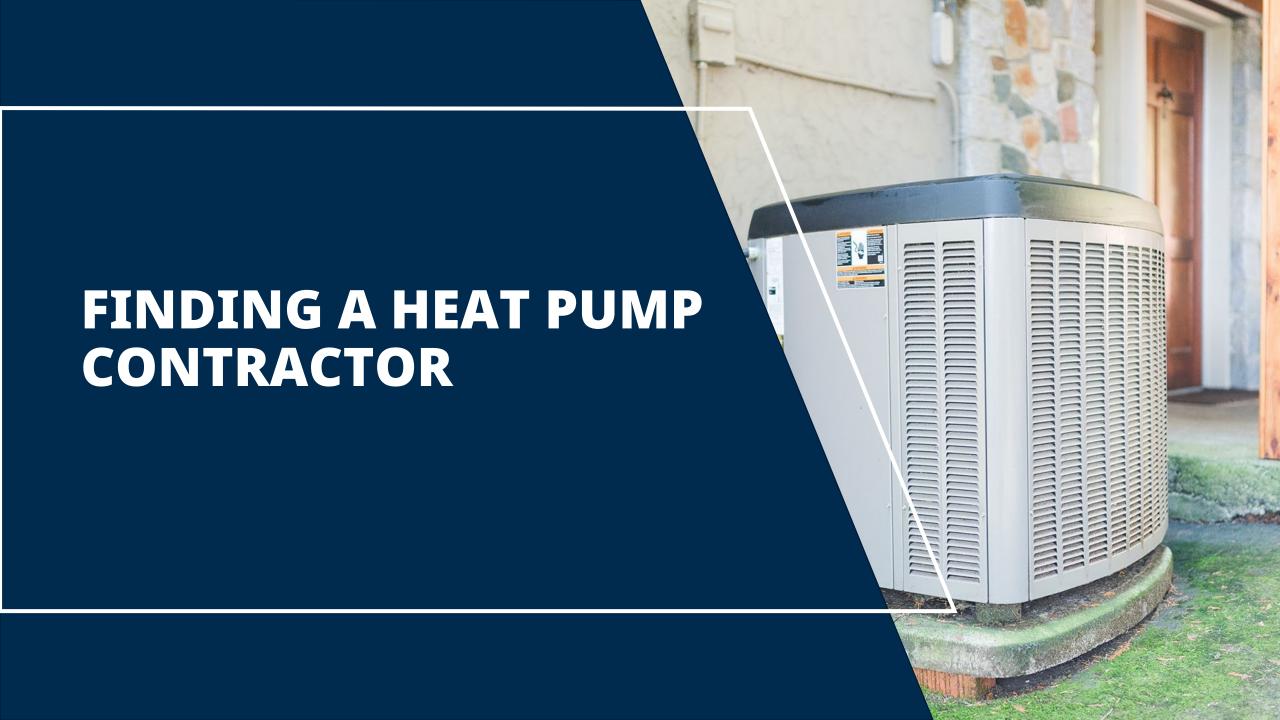


## **Buyer Best Practices**

- ✓ 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)







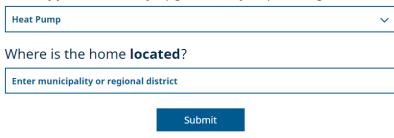
# Finding a Heat Pump Contractor



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)

+ Municipal Top Ups



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	\$1,000	\$1,000	\$6,000	\$6,000
Ductless Multi- Split Heat Pump	Up to \$5,000	\$1,000	Up to \$6,000	\$6,000	Up to \$11,000
Central Ducted Heat Pump	Up to \$5,000	\$2,000	Up to \$7,000	\$6,000	Up to \$11,000
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





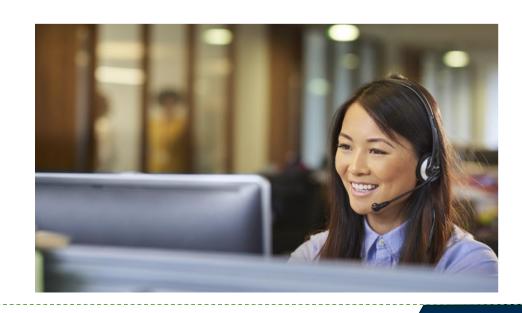
# **CleanBC - Energy Coaching**

#### **Self-Serve Online Resources**

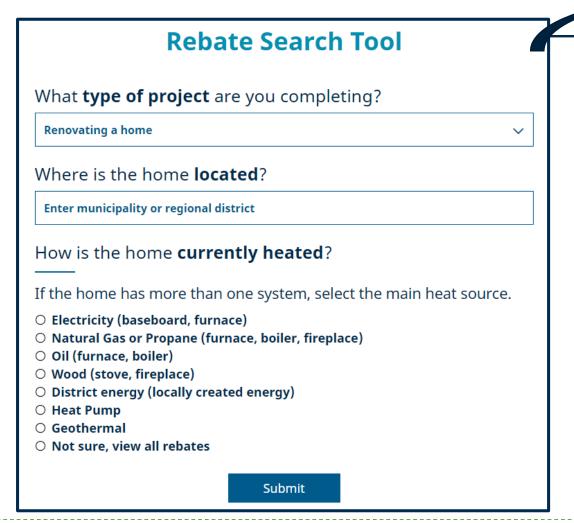
- Incentives, rebates, contractor and financing search tool
- Resources to learn about energy efficiency products and services
- Frequently asked questions

### **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: BC Hydro Electrically heated homes

- Electrically heated homes in BC Hydro's Service Area must meet a minimum electricity consumption to be eligible.
  - Check eligibility by entering your BC Hydro account number and home's square footage at bchydro.com/hero/eligibility

Heat Pump Type	Rebate Amount
Ductless <b>Mini Split</b> Heat Pump (Single Head) HSPF ≥ 10.00, SEER ≥ 16.00, Variable Speed Required	\$1000
Ductless <b>Multi-Split</b> Air Source Heat Pump (Two or more Heads) HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$1000
<b>Tier 2 Central Ducted</b> Heat Pump HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$2000

\*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 (BC Hydro Territory)
Ductless <b>Mini Split</b> Heat Pump (Single Head) HSPF ≥ 10.00, SEER ≥ 16.00, Variable Speed Required	\$6000
Ductless <b>Multi-Split</b> Air Source Heat Pump (Two or more Heads) HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$6000
<b>Tier 2 Central Ducted</b> Heat Pump HSPF ≥ 9.30, SEER ≥ 16.00, Variable Speed Required	\$6000



# **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
<b>Dual Fuel Ducted</b> 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.**

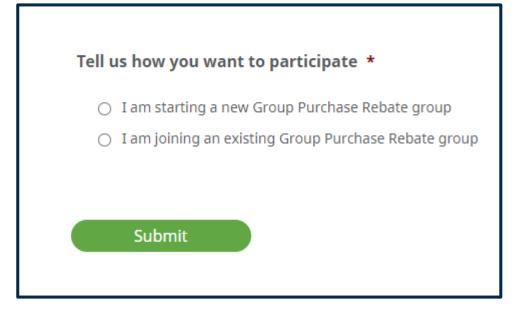
- + up to a \$6,000 Heat Pump Rebate from CleanBC
- + the \$500 Electrical Service Upgrade Rebate
- + applicable municipal top-ups
- + the Canada Greener Homes Grant: Up to \$5,000





# **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



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



## **Municipal Top Ups**

## - When Switching from Fossil Fuel

**Limited time offer – Act now.** Municipal top-up rebates will be approved on a first-come, first-served basis. Municipal funding is subject to availability and top-up rebates are not guaranteed.

Municipality			Heat Pump Water Heater Top-up
City of New Westminster	\$350	-	-

Visit https://betterhomesbc.ca/municipal-offers/ for the full list of municipal top ups



# **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.

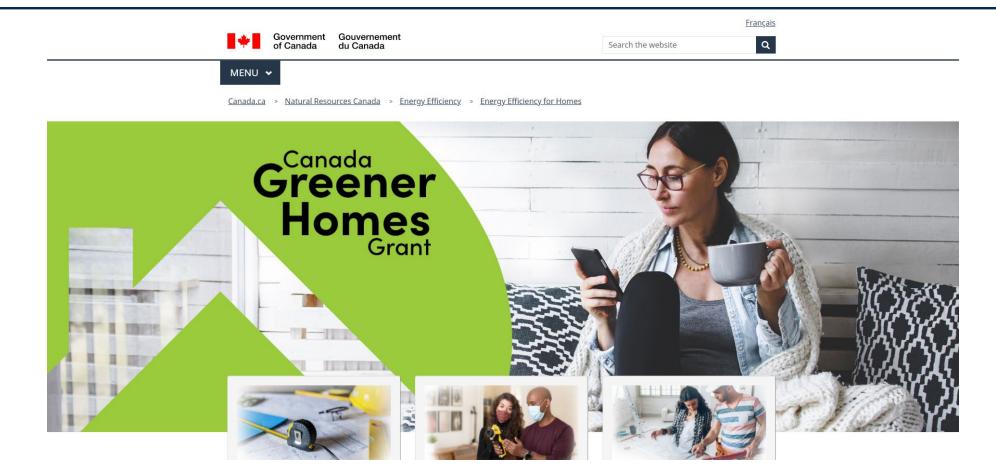
Estimated time to complete: 10 minutes

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)

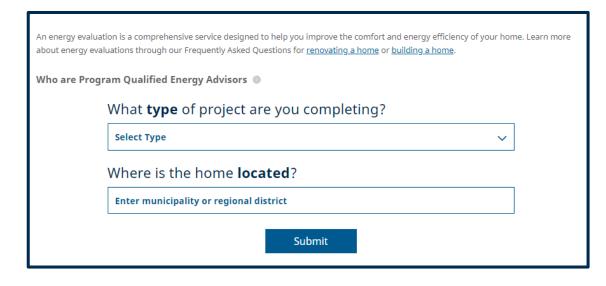
Eligible air source heat pump (ASHP) and cold climate air source heat pump (ccASHP) models for the <u>Canada Greener</u> <u>Homes Grant</u> – excluding residents of Quebec and Nova Scotia

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

