

CONSIDERING PURCHASING A HEAT PUMP WEBINAR – August 25, 2022

Northern BC Climate Action Network (NorthCAN), Follow Up Questions.

For the most up to date information on what rebates are available in your area please visit betterhomesbc.ca or contact an Energy Coach by emailing ask@betterhomesbc.ca or calling 1-844-881-9790.

What support is available?

CleanBC Better Homes is BC's online hub for homeowners and businesses to access information, rebates and support to reduce energy use and greenhouse gas emissions in new and existing homes and buildings. Support includes:

- Easy to use [rebate search tool](#) for when you are renovating a home or building a new home
- Information and answers to frequently asked questions on energy efficiency upgrades and [accessing rebates](#)
- [Free Energy Coaching Services](#) for homeowners and businesses undertaking renovations, including a phone and email hotline staffed by energy coaching specialists
- Search tool to find registered EnerGuide Rating System [energy advisors](#) for residential renovations and new construction
- [Contractor directories](#) to find registered contractors in your area

What rebates are available?

[CleanBC Better Homes and Home Renovation Rebate Program](#) – this provincial program provides rebates for upgrades such as insulation, heat pumps, windows and doors, and more. Review the [Program Requirements](#) and [Additional Terms and Conditions](#) to ensure you are eligible for the program. All upgrades must be completed by a contractor with a valid BC business license.

Heat Pump Rebates*

- [Ductless Mini-Split Heat Pump](#) – up to \$9,000 + up to \$500 with the [Heat Pump Group Purchase Rebate](#)
- [Central Ducted Heat Pump](#) – up to \$9,000 + up to \$500 with the [Heat Pump Group Purchase Rebate](#)
- [Dual-Fuel Ducted Heat Pump Rebate](#) – \$6,000 + up to \$500 with the [Heat Pump Group Purchase Rebate](#)
- [Combination Space and Water Heat Pump](#) – up to \$4,300 + up to \$500 with the [Heat Pump Group Purchase Rebate](#)
- [Hydronic Heat Pump](#) – \$3,000 + up to \$500 with the [Heat Pump Group Purchase Rebate](#)
- [Electrical Service Upgrade](#) – \$500
- [Electric Heat Pump Water Heater](#) – \$1,000
- [CleanBC Better Homes Low-Interest Financing Program](#) – receive a loan of \$1,000 - \$40,000 for installing an eligible heat pump
- [Heat Pump Group Purchase Rebate \(GPR\)](#) – receive an additional up to \$500 when switching from fossil fuel to a heat pump. The GPR rewards groups of homeowners working together to reduce greenhouse gas emissions by switching from an oil, natural gas, or propane heating system to an air source heat pump. The GPR ranges from \$200 per home, for a group of 2

homes up to a maximum of \$500 for a group of 20 to 30 homes. To register for the GPR, visit www.betterhomesbc.ca/gpr-register.

*Rebate amounts vary depending on your location, primary space heating system prior to upgrade, and electricity provider. Review the summary pages for more detailed information.

CleanBC Income Qualified Program –Based on your household income, this program offers enhanced rebates to make energy-saving home upgrades more affordable. Visit the program’s page for more details on the income requirements and other eligibility details. Please review the [Rebate Eligibility Requirements](#), [Participant Terms and Conditions](#), and [Contractor Terms and Conditions](#). Keep in mind that **all upgrades must be completed with an Income Qualified Program Registered Contractor**. After completing the upgrade, the contractor will submit the rebate application and deduct the rebate from the final cost of the upgrade.

- You may be eligible to receive enhanced rebates that cover 60-95% of your home upgrade costs, with maximum rebate values of:
 - [Ductless Mini-split, ductless multi-split and central ducted heat pumps](#) – up to 9,500
 - [Dual fuel ducted heat pumps](#) – up to \$9,500
 - [Air-to-water heat pumps](#) – up to \$9,500 or up to \$13,000 for a combined space and water heat pump
 - [Heat pump water heaters](#): Up to \$3,500
 - [Electrical service upgrade](#) – up to \$3,500
- Additional rebates are available for necessary health and safety, ventilation, and electrical panel upgrades.
- Free energy coaching, virtual energy assessments, and support in multiple languages can help identify the home upgrades and rebates that are best for you.
- For more information, please contact the Income Qualified Program directly at 1-833-856-0333 or email incomequalified@betterhomesbc.ca

Canada Greener Homes Grant- this [federal program](#) offers up to \$5,600 in rebates for homeowners completing energy efficient upgrades on their home, including insulation, air sealing, windows, heating systems, solar systems, and resiliency measures. **Up to \$5,000 is available for installing a heat pump.** The completion of an [EnerGuide Home Evaluation](#) before and after upgrades is required to be eligible. You can access rebates from both the Greener Homes program and the CleanBC Better Homes and Home Renovation Rebate Program, however eligibility requirements and application steps differ. Carefully read the Greener Homes [eligibility page](#) to confirm your home is eligible and the [eligible retrofits page](#) to learn about efficiency requirements and available grants for each retrofit.

Webinar Questions:

What are the back up with heat pumps, electric options?

There is no requirement for an electric resistance backup, but sometimes they are recommended. Typically, the air handler for ducted heat pumps will come with integrated resistance heating back up system. For mini-split heat pumps installed in homes without ductwork, electric baseboards or high quality electric fireplaces are a viable back-up option.

The need to rely on back up heating can be minimized by:

- Having a high efficiency heating system, properly sized and installed in the home
- If the home is not energy efficient, considering complementary home energy improvements so there is less heat loss – including upgrading insulation, windows and air sealing.
- Purchasing a cold climate rated heat pump. Cold climate heat pumps are built to work efficiently in conditions down to -25° Celsius, with some systems maintaining an efficiency of over 200% at -18° Celsius. In most climate zones in the province, including the Lower Mainland, there would be no need to install an additional back up heating system with a cold climate heat pump.

Check out some useful FAQs below:

- [Do Heat Pumps Work Well in Cold Weather?](#)
- [Do I need a backup heat source for my heat pump?](#)
- [What is a cold climate heat pump?](#)
- [Am I eligible for a heat pump rebate if it is combined with a gas, propane, or oil furnace as a back up?](#)

My home is on a 100A electrical service. Would I likely need to upgrade to a 200A service?

This will vary depending on the system installed, house size, the other electrical demands in the home. Often a heat pump will require at least 30 amps. When receiving quotes, contractors will gather the technical details needed for your home's specific needs and determine if an electrical service upgrade is required. There are newer heat pumps on the market that have lower power requirements.

If an electrical service upgrade is required to support the installation of a heat pump in your home, and your current primary heating system is natural gas, you can access the [Electrical Service Upgrade Rebate](#) from the provincial CleanBC Program when increasing your amp service to 100, 200, or 400amps.

Is there enough heat in the environment to heat my house during the winter?

Yes, even in the winter there is enough heat energy in the outside air for a heat pump to extract and move indoors. Since the air outside will always contain some heat, a heat pump can supply heat to a house even on cold winter days. In fact, air at -18°C contains about 85 percent of the heat it contained at 21°C.

Heat pumps classified as cold climate heat pumps are able to operate down to very cold temperatures – the specific operation range depends on the system. We encourage you to talk to your contractor about back-up options and cold climate heat pumps that have operational ranges suited to your climate.

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Typically, for much colder climates, a back up heat source is recommended. There are multiple options for back up heating: a wood stove, extra electric baseboards, a fireplace, or integrated NG furnace with a central heat pump (dual fuel). Many modern high efficiency heat pump systems come with an integrated electric resistance heating system that functions as a backup system for use at low temperatures. Alternatively, some heat pumps are designed to operate independently without backup heating, and others are designed to work with a backup heating system such as electric baseboards or furnace.

For mini-split heat pumps installed in homes without ductwork, electric baseboards or high quality electric fireplaces are a viable backup option. Natural gas heating systems can be used as backup systems for central heat pumps as well, but require special modifications to work as part of the same integrated home heating system. In many rural areas, wood heating is commonly used to supplement a heat pump on the coldest days.

Whether or not you need a backup heat source for your heat pump will depend on the type of heat pump you purchase, your climate zone, and the design and efficiency of your home. In many locations of the province, a backup heating system can be avoided by either improving the efficiency of the building envelope and/or installing a cold climate heat pump. Before installing any new heating system all homeowners should consider improving the efficiency of their building envelope so they are using less energy, regardless of the type of energy. Visit the [What is a Cold Climate Heat Pump FAQ](#) for more information.

You can learn more by reading our [“Do Heat Pumps Work in Cold Weather?”](#) FAQ.

How do rural residents find an Energy Assessor?

You can begin your search for an Energy Advisor by using the [energy advisor search tool](#) on the CleanBC website to locate those that service your area. Look for the energy advisor that provides services to the nearest city or town. If you aren't able to find anyone, I'd recommend checking in with the [Canada Greener Homes Grant](#) (federal program administration) as they have some procedures in place to assist those in more remote areas. You can reach out directly at **1-833-674-8282** or send them an [email](#).

Why do some of the HVAC Contractors discourage Heat Pumps?

Some HVAC contractors are specialized in gas heating system installations and this is their business area of expertise. Many of these contractors have less experience installing heat pumps, may have fewer or no staff trained in heat pump installation and/or they may be less familiar with modern heat pumps that are capable of heating down to -25 degrees Celsius. As a result, these contractors may discourage heat pumps. Similarly, if you spoke with a contractor that specialized in installing heat pumps, they would discourage gas heating systems. Homeowners looking to install a heat pump should aim to get quotes from contractors who specialize in heat pumps system installations.

If you are experiencing Registered Contractors that are recommending against installing a heat pumps or pushing you towards a dual-fuel heat pump system only, please contact the CleanBC Provincial Program Administration directly at betterhomesbc@gov.bc.ca. The administration will offer additional support on finding heat pump contractors in their area.

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Is there a wall model that includes everything in one unit without having the two parts (outdoor and indoor units)?

Heat pumps are the most energy efficient and most climate-friendly residential heating and cooling systems available in BC. In most cases, heat pump systems consist of one outdoor unit that contains the compressor and outdoor heat exchanger, and is connected to one or more indoor units via a refrigerant line. However, for through-the wall or “packaged terminal” heat pumps (PTHPs), the indoor and outdoor components are contained within one single unit which is installed through an exterior wall. Packaged terminal heat pumps present a good option for open-concept small homes, apartments, or areas in larger homes heated by baseboards.

Be Aware! Many packaged terminal air conditioning (PTAC) units advertise heating ability as well, but use an electric resistance coil similar to a baseboard. These units look very similar to a PTHP, but do not provide the ultra-efficiency for heating that a heat pump does.

Some of the benefits of through-the-wall heat pump designs are:

- **A 4-in-1 home system:** As with most heat pumps, PTHP system provides heating, cooling, dehumidification, and air filtration, all in one convenient package.
- **Ultra-efficient climate friendly heating:** Like all heat pumps, a PTHP unit is ultra efficient (three times more efficient than electric baseboard or natural gas heating options) and provides climate friendly heating and cooling.
- **Easy installation:** Existing units come fully-contained without the need to mount separate outdoor and indoor units, set up refrigerant lines, ducting, or thermostats. They are fully functional out of the box and can be installed by a qualified contractor who doesn’t specialize in refrigerants.
- **Low-profile:** These units are helpful in situations where there are limited options to place or easily mount an outdoor unit, or where an outdoor unit is not wanted.
- **Generally lower initial cost:** Since these units come pre-assembled and self-contained, buyers can save significantly on set up and installation costs.

Some drawbacks of through-the-wall heat pump designs are:

- **Requires a large opening in the exterior wall:** Since the whole unit is installed in the wall, a large opening needs to be either planned, or in the case of existing buildings, cut in an exterior wall. For existing homes, this may require additional work if electrical or other home components have to be moved from the installation area. This large opening will also have a reduced insulating value compared to the rest of the wall, and air leakage as well as thermal bridging can occur around the unit.
- **Limited capacity:** The size and design of the unit, as well as the layout of the space in which it is installed, can limit the heating capacity. Additional units need to be installed in different areas of the home or building. Currently there are no systems that are appropriate as a standalone heat source for colder climates such as the Interior or Northern BC.
- **Noise:** As the compressor is contained within the building envelope, operational noise can be more noticeable than that of a split heat pump system.

What would be the cost difference for a Cold Climate Air-Source Heat Pump (ccASHP) vs a regular ASHP?

In terms of costs, those can be variable based on the size of the unit, manufacturer, your location, the contractor, the size of your home, etc. Similar to purchasing a new car, there are many considerations when choosing the right system for you. On average however, a ccASHP will be more expensive than their standard counterparts. The best way to determine the cost of a heat pump for your particular home and heating/cooling needs would be to gather a handful of quotes from contractors to compare cost. We can also recommend reaching out to your energy advisor or getting in touch with the CleanBC Energy Coach Service to discuss quotes and how to understand the differences between them when making your decision on a system overall.

How much of ventilation circumference/ perimeter does the heat pump require around it? I am sorry if I had missed this. Kitimat gets a bit more snow than a lot of communities in BC. For snow to reach the height of the first story of a building is an annual occurrence. I am curious about how much seasonal maintenance the heat pump might require.

Generally, installers will mount the system on a higher base or pad above the snow line. The outdoor unit should also be covered by an awning, deck, or other roofed structure to prevent snow build up. For more information, check out the [Heat Pump Best Practices Installation Guide for Existing Homes](#). In areas that have high levels of snow fall it is good practice for homeowners to periodically clear snow from around the heat pump to ensure there is adequate air flow around the system.

Keep outdoor units away from fences, walls, and other surfaces to allow unimpeded air flow around the unit (i.e. to avoid the creation of a microclimate that negatively impacts heat pump performance and efficiency). The City of Vancouver has developed [a guide on where best to locate the outdoor unit](#) with some of these considerations in mind as well.

Do you have any numbers to show the average increase of (Kilowatt) kWh consumed when switching to a heat pump? I know its a tough one to answer specifically however an average would be nice to know. Would it be basically like adding a deep freezer or another fridge to the list of energy using appliances?

We do not have data to demonstrate the operational cost savings from removing a natural gas system and switching to a heat pump. Studies are currently being conducted on this topic and will be available later in the year. We do know informally from homeowners that have switched from natural gas to heat pumps that the heating costs can be lower, comparable, or sometimes higher. It is important to note that natural gas is currently cheaper than electricity but heat pumps are much more efficient. If the higher efficiency heat pump systems are installed and if the heating system switch is complemented by other home energy improvements the heating costs can be lower or comparable to the cost of heating with natural gas.

Has anyone ever hooked one of these up to an off grid system (i.e. solar PV)?

Heat pump systems can be integrated with off grid systems, however the efficiency will vary depending on numerous factors. Firstly, the amount of electricity a solar panel is expected to generate depends on three main factors:

- 1) The size of the solar panel
- 2) The efficiency of the solar cells
- 3) The amount of sunlight in your area (peak sun hours)

Secondly, the actual amount of electricity a heat pump will need to work properly will vary on several different factors:

- 1) The local climate and seasonality
- 2) The condition of the ductwork and insulation
- 3) The condition and size of the home
- 4) How the heat pump is used
- 5) The type of heat pump

Although a solar panel system can work with an air-source heat pump, it functions best with a ground source unit. When one system is at its lowest efficiency yield, the other one is at its peak and vice versa. These two systems provide the best level of flexibility in terms of cooling and heating your home.

The largest downside to combining a solar panel system and a heat pump together is mainly the cost of panels and the heat pump unit itself. Often the high initial costs will lower the potential return on investment that may be better achieved by adding insulation to your home rather than modifying or upgrading your heating and solar system.

We recommend directing your detailed questions regarding this integration with a solar installer that may be able to better model the energy demands for your specific home and considerations based on your location.

Is there training underway for certified installers in the north. I have had issues finding interested HVAC techs.

Indigenous communities can get training, free energy-saving products and rebates to implement home energy upgrades for their community members.

More information can be found here: <https://betterhomesbc.ca/indigenous-support/>

Is there a list of certified installers in BC?

Speaking to contractors and gathering quotes is a vital first step in finding a system that will work well in your home. You can get started with the [Registered Contractor Search Tool](#), and the [Registered Contractor In-Progress list](#). Please keep in mind that in order to access rebates through the provincial CleanBC Better Homes and Home Renovation Rebate Program you must work with a heat pump installer found on one of the list linked above.