

HOMEOWNER HEAT PUMP GUIDE

THIS 5-PART GUIDE WILL HELP YOU NAVIGATE THE HEATPUMP RETROFIT PROCESS, FIND THE RIGHT SYSTEM FOR YOUR HOME, AND ACCESS RESOURCES AND REBATES THAT CAN HELP.



THE HEAT PUMP RETROFIT JOURNEY

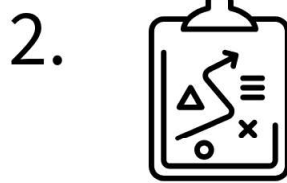
If you are reading this, chances are you're on the first few steps of your heat pump retrofit journey. Don't worry, you've come to the right place: this guide will map out key points in the process, providing information, links, and questions to ask at each step of the way. And you can get free personalized help any time from a local Energy Concierge -- sign up for an initial consultation at: jumponaheatpump.ca.

The 8 stages of the heat pump retrofit journey are mapped out below. On the next page, you'll find a chart which explains which section of this guide can help with each stage, and what additional resources you can reach out to.

Navigating your heat pump journey



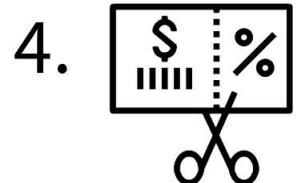
Do your homework: do some research to learn the basics about heat pumps and energy efficiency.



Make a plan: figure out what you currently have for home heating and what you want out of a heat pump.



Get help: book a free Virtual Home Energy Consultation to get answers and support from a local energy expert.



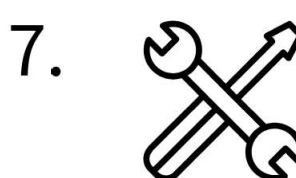
Review support programs: check program websites to identify rebates or financing you may be eligible for.



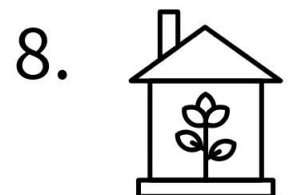
Reach out to contractors: find local contractors through the CleanBC search tool and get at least 3 quotes.



Select a contractor: pick a contractor who can provide the system you want at a cost that meets your budget.



Schedule your installation: time to let the professionals get to work!



Enjoy: Learn about your new system; submit your rebate applications; and enjoy your comfortable, green home.

NAVIGATING THE HEAT PUMP JOURNEY

STAGE OF THE JOURNEY	GUIDE SECTION
1. Do your homework	Section # 1 How Heat Pumps Work can help you learn the basics get up to speed on the technology.
2. Make a plan	Section #2 Types of Heat Pump Systems and Section #3 Is a Heat Pump Right for You can help you make a plan.
3. Get help	You're ready to talk to a person: sign up for a Virtual Home Energy Check-Up at jumponaheatpump.ca to get free local expert advice.
4. Review support programs	Section #4 Navigating Heat Pump Rebates can help you figure out what kinds of financial assistance you may be eligible for.
5. Reach out to contractors	Section #5 Installing a Heat Pump can help you connect with, evaluate, and pick a contractor to work with on your project.
6. Select a contractor	
7. Schedule your installation	Your contractor will guide you through this stage.
8. Enjoy	No guide needed :-)

Remember, you can get free personalized help any time from a local Energy Concierge -- sign up for an initial consultation at jumponaheatpump.ca



1. HOW HEAT PUMPS WORK

You already have a heat pump in your home - your refrigerator! But how exactly do they work to heat and cool our homes?



HEAT PUMPS DON'T MAKE HEAT, THEY MOVE IT.

A heat pump is an efficient heating and cooling system that uses electricity not to make heat -- but to move it around. In the winter, a heat pump extracts heat from the outside air and transfers it indoors. In the summer, it works in reverse to providing cooling.

THEY ARE EFFICIENT

Gas furnaces are 75%-98% efficient, and electric baseboard heating is 100% efficient, meaning 75-100% of the energy you pay for is used to make heat.

In contrast, electric heat pumps up to 300% efficient in providing heat.

How is that possible? By using electricity to extract heat and move it around, they provide more heat than could be created by the same amount of electricity.

THEY CAN HANDLE THE COLD

While they have been around for decades, recent advancements in cold climate heat pumps have made them a practical option across Canada

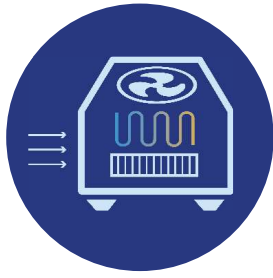
THEY CAN WORK IN ANY HOME

Heat pumps can be installed in any home. There are stand-alone units, as well also models that can replace your furnace or work with your radiant heating system. "The Types of Heat Pump Systems" resource covers this in detail.

THEY ALSO PROVIDE COOLING

In summer, heat pumps can work in reverse to provide cooling, transferring from heat from inside your home to the outdoors like an -- a major benefit as our summers get warmer. And with cooling from your heat pump you can avoid opening windows, an added benefit when extended heat spells or wildfires cause poor air quality.

How exactly do heat pumps work? Keep reading to find learn more!



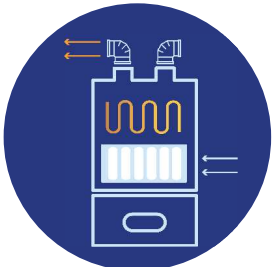
STEP 1: EXTRACT HEAT ENERGY

A cool liquid refrigerant flows through the coils of the outdoor condensing unit, absorbing heat energy from outside air and becoming a gas. Heat pumps can extract heat from air at temperatures as cold as -30°C.



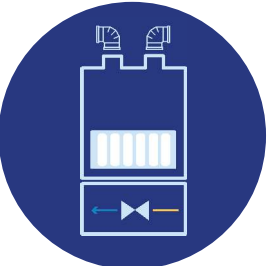
STEP 2: CONCENTRATE HEAT ENERGY

The warm gas then moves through a compressor in the condensing unit, concentrating heat energy and becoming a hot liquid. The hot liquid is then pumped to the inside unit.



STEP 3: DISTRIBUTE THE HEAT

Air (or water) moves across the hot liquid flowing through the coils of the indoor unit, absorbing the heat and circulating it through your home either through an indoor head or duct work, or pumped hot water through radiant heating loops.



STEP 4: BACK TO THE START

The transfer of heat into your home cools the liquid refrigerant in the heat pump loop. The cooled liquid then passes through an expander unit, moving from high-pressure to low-pressure and decreasing in temperature, and the cycle repeats.

This process can also work in reverse to cool your home. Check out this [video](#) from BCIT's Zero Energy Buildings Lab for more of the science behind heat pumps.



**JUMP ON A NEW
HEAT PUMP**

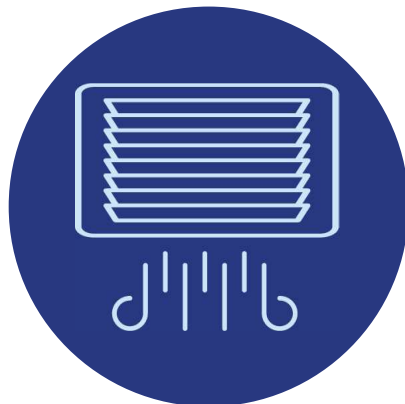
2. TYPES OF HEAT PUMPS

Homes are designed with either a central heating system or a heat source in each room. The right heat pump for your home will depend largely on the design of your current heating system.

WHICH HEAT PUMP SYSTEM WILL WORK IN YOUR HOME?

Heat pumps can extract heat from air at temperatures as low as -30°C . On the North Shore, you'll want a cold climate heat pump rated to a minimum of -7°C .

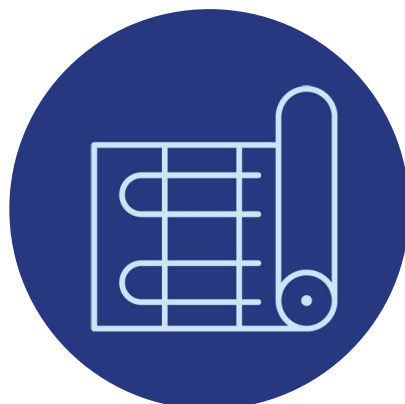
Beyond that, below is an overview of heat pump types that can help you identify the right system for your home.



FORCED-AIR FURNACE → AIR-TO-AIR HEAT PUMP

In a central forced-air system, the furnace is replaced by an air-to-air heat pump, with an outdoor condensing unit supplying heat to an indoor air handler which blows warm air through your duct work. The system can also work in reverse, using your existing ducts to cool your home.

Your duct work needs to have return air and be sized correctly to ensure that the system can comfortably heat and cool your home.



RADIANT HEATING → AIR-TO-WATER HEAT PUMP

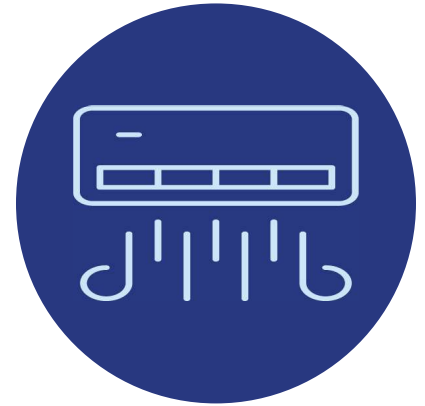
In air-to-water systems, an outdoor condensing unit supplies heat to an indoor hot water tank, which pumps hot water through heating loops in your floor or through radiant panels.

Air-to-water heat pumps operate at lower temperatures than boilers, so they work best with heating loops designed in parallel (dedicated heating loops for different areas of the house).

ELECTRIC BASEBOARD → DUCTLESS HEAT PUMPS

Ductless heat pumps can be installed in any home. **Mini-splits** use an outdoor condensing unit to supply heating or cooling to one indoor unit. **Multi-splits** uses one outdoor condensing unit to heat or cool up to eight different indoor units, with separate temperature controls in each room.

Indoor evaporator units are usually installed near the ceiling and supply warm or cool air to the room, though floor-mounted units also exist. Alternately, slim duct units can be installed in ceilings or walls with only the supply and return air vents visible.



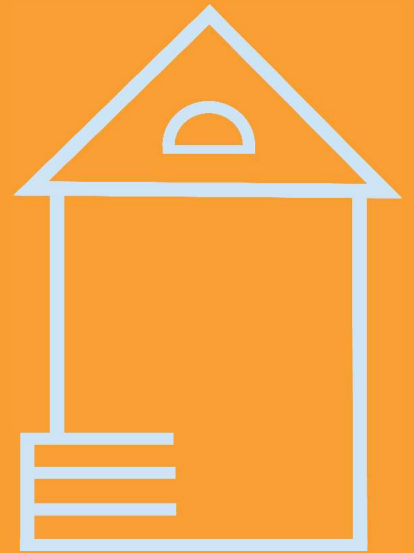
DOMESTIC HOT WATER

There are also air-to-water heat pumps for domestic hot water and combined heating and hot water systems, which provide hot water at a similar cost to a gas-fired system but without the associated emissions. For domestic hot water systems, consider a heat pump with a Carbon Dioxide (CO₂) refrigerant to further reduce your home's greenhouse gas emissions.



3. IS A HEAT PUMP RIGHT FOR YOU?

You may have questions about switching to a heat pump. Here are a few things to consider to help you make the right decision.



THE ENVIRONMENT

We all want to do our part for the climate and reduce our carbon footprint. With BC's clean hydroelectricity, upgrading from a gas furnace to an electric heat pump has the same impact as not driving your car for 9 months of the year. No contest, switching to a heat pump is the best option for the planet.



COOLING

As summers get longer and hotter, the demand for air conditioning is increasing. Air-source heat pumps have both heating and cooling modes -- no more need for expensive, noisy, energy-wasting air conditioners.



UTILITY SAVINGS

Heat pumps are up to 3 times more efficient than conventional heating systems. Upgrading from an electric furnace or baseboard heating to a heat pump can save you 60-70% on your heating bill. If you're switching from a gas furnace to a heat pump, the [latest local research](#) suggest you'll pay slightly less in utilities. Take advantage of additional rebates to improve insulation or replace windows and doors to further reduce your utility costs.



AIR QUALITY

For many people, indoor air quality is a real concern -- especially with recent increases in wildfires. Since heat pumps provide cooling, you can stay comfortable while keeping windows closed when outdoor air quality is poor. You can even add HEPA filters to your indoor unit to improve indoor air quality. Switching from gas to electric heating also eliminates indoor and outdoor air pollution from natural gas combustion.



REPLACEMENT COST

The cost of a heat pump upgrade will vary based on the size of your home and your current heating system. Typical whole-home installations can range from \$10,000 to \$20,000, with rebates and zero-interest financing through [CleanBC](#) and [Canada Greener Homes](#).

4. NAVIGATING HEAT PUMP REBATES

CleanBC rebates, municipal top-up rebates, and zero-percent financing are available to help homeowners make the switch to heat pumps. For up to date information visit The Province of BC's [CleanBC Better Homes Website](#).

HEAT PUMP REBATES

There are two groups of heat pump rebates available through the [Provincial CleanBC Program](#):

Fuel Switching from Gas to Electric and Electric Heating Upgrades

To be eligible for a rebate, all heat pumps must meet a minimum Seasonal Energy Efficiency Rate (SEER) and Heating Seasonal Performance Factor (HSPF). Air-to-water heat pumps and combined space and hot water heat pump systems must be selected from the Province of BC's [Qualifying Product List](#).



ADDITIONAL RELATED REBATES

REBATE	WHAT IS IT?
Home Energy Improvement Bonus	This can be claimed if you complete three or more upgrades and a pre- and post- EnerGuide Home Evaluation within 18 months.
Two Upgrade Bonus	Just what it sounds like. Cannot be claimed with the Home Energy Improvement Bonus
Electrical Service Upgrade	Available if you're switching from natural gas to a heat pump. The same rebate applies for upgrading to a 100, 200, or 400 amp service.
Building Envelope Upgrades	Receive rebates for installing insulation, or replacing windows or doors with qualified products, to improve your home's energy efficiency.
Income Qualified Program	Households within an established income threshold are eligible for enhanced rebates on heat pumps and other energy efficiency upgrades.

TIPS FOR CLAIMING REBATES

1. Qualifying Criteria

In addition to energy efficiency ratings, there may be other qualifying criteria or required documentation. Call an Energy Coach or visit [CleanBC.ca](https://www.cleanbc.ca) to confirm.

2. Application Deadlines

You must apply for equipment rebates within 6 months of installation. For the multiple upgrade bonus, all projects must be completed within 18 months including [EnerGuide Home Evaluations](#).

3. Contractors

Upgrades must be installed by a licensed contractor with a valid BC business license for the trade applicable to the installation work.

4. Invoices

Invoices for the work must include:

- Company name, contact information, address and GST number.
- Materials purchased including equipment brand, model number and purchase date. If there are material receipts, they must be clearly referenced on the invoice.
- Clear description of the work in plain language.

5. Apply Online

When applying online for rebates you will need your BC Hydro and FortisBC account numbers.



**JUMP ON A NEW
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Rebate programs are subject to change. Check the [CleanBC website](#) or contact a CleanBC Energy Coach at 1-844-881-9790 for up-to-date details.



MUNICIPAL TOP-UP REBATES

Local governments throughout BC are offering limited top-up rebates to help homeowners make home energy upgrades.

No application is required -- homeowner eligibility is automatically assessed through the CleanBC Better Homes program. Visit the [CleanBC website](#) for up to date offers.

ZERO-INTEREST FINANCING

The Government of Canada is providing 0% financing on 10-year loans of up to \$40,000 to help homeowners make the switch from natural gas to heat pumps and energy efficiency upgrades.

Only energy upgrades recommended by an [EnerGuide Home Evaluation](#) are eligible for financing. Find out more by visiting the [Canada Greener Homes Loan](#) webpage.

5. INSTALLING A HEAT PUMP

HERE ARE A FEW THINGS YOU SHOULD KNOW BEFORE YOU GET STARTED.

WHAT TO TACKLE FIRST

Hiring a [Certified Energy Advisor](#) to complete an EnerGuide Home Evaluation is a good way to start. A pre-upgrade evaluation costs \$400-\$600 and a post-upgrade evaluation is \$200-\$300.

The evaluation will provide you with an EnerGuide rating along with recommendations on upgrades to maximize energy savings. An energy efficient home, with a well-insulated and air-tight building envelope, will require a smaller heat pump and less energy to heat, reducing the cost of equipment and utility bills.

FIND THE RIGHT CONTRACTOR

Choosing the right contractor will make sure your heat pump works well. Firms on CleanBC's list of [Program Registered Contractors](#) have received training on heat pump upgrade best practices. Your heat pump must be installed by a licensed contractor with a valid BC business license for applicable trades to be eligible for rebates.

Get quotes from at least three contractors and check their experience installing the heat pump system you need -- ductless, central air-to-air, or air-to-water.

Not all homes are a good fit for a central heat pump. Design limitations can significantly increase the cost. Your contractor should identify these challenges with a home visit before quoting your project.

Rebate programs are subject to change. Check the [CleanBC website](#) or contact a CleanBC Energy Coach for free at 1.844.881.9790 to discuss available rebates before your upgrade starts.



ASK FOR THE CALCULATIONS

Once you've selected a contractor, they should complete a heat loss calculation before finalizing equipment selection. For central air-to-air heat pumps you'll also want to verify heating ducts have return air and are sized to deliver enough heat to all rooms. This is a good time to determine whether you need an electrical service upgrade.

CONFIRM EQUIPMENT SELECTION

On the North Shore, you'll want a cold climate heat pump rated to a minimum air temperature of -7°C. If you're concerned about colder days, a variable capacity unit rated to -12°C is a good option.

For central air-to-water systems and combined space and hot water systems, equipment must be selected from the [Air to Water and Combination Qualifying Heat Pump List](#) to be eligible for rebates.

PERMITTING REQUIREMENTS

All North Shore municipalities have similar permitting requirements, which may include:

1. An **Electrical Permit** for all heat pump upgrades.
2. A **Gas Permit** to decommission or alter your natural gas furnace or boiler.
3. A **Plumbing Permit** to replace your boiler or hot water tank.
4. A **Building Permit** for most wall-mounted outdoor units.

You may also require an inspection. Contact your municipality's development office for details.

EQUIPMENT SITING

In siting your outdoor condensing unit, find a location with good airflow and as close to your indoor unit as possible. The condensing unit needs to be placed where it won't disturb your neighbours and in compliance with local noise or appearance bylaws. Again, contact your municipality for details.

When installed, the outdoor unit should be level and on feet 8-12 inches off the ground to protect it from ice build up in winter.

INSTALLATION

Depending on the size and complexity of your design, it can take 1-3 days to install your heat pump.

SYSTEM SETTINGS

Auto-fan mode is a good idea, but avoid using "auto-heating" mode. Manually switching from heating to cooling prevents cooling mode from kicking in on a sunny winter day or heating mode starting up on a cool summer night. A calendar event in your phone is a great reminder to make the seasonal switch.

If you have a back-up heating system, make sure the temperature setting is 5°C lower than your heat pump.

BC Hydro has a [tip sheet](#) with more details on heat pump maintenance and optimizing energy efficiency.

MAINTENANCE

Just like your furnace, regular maintenance will help your heat pump last longer and perform well over time. Follow your manufacturer's guidelines. This usually includes cleaning or replacing the filter on your indoor unit every 3 months.

Cleaning around the outdoor unit and removing anything blocking air flow will help your system run efficiently. Talk to your contractor about any additional maintenance recommendations.

