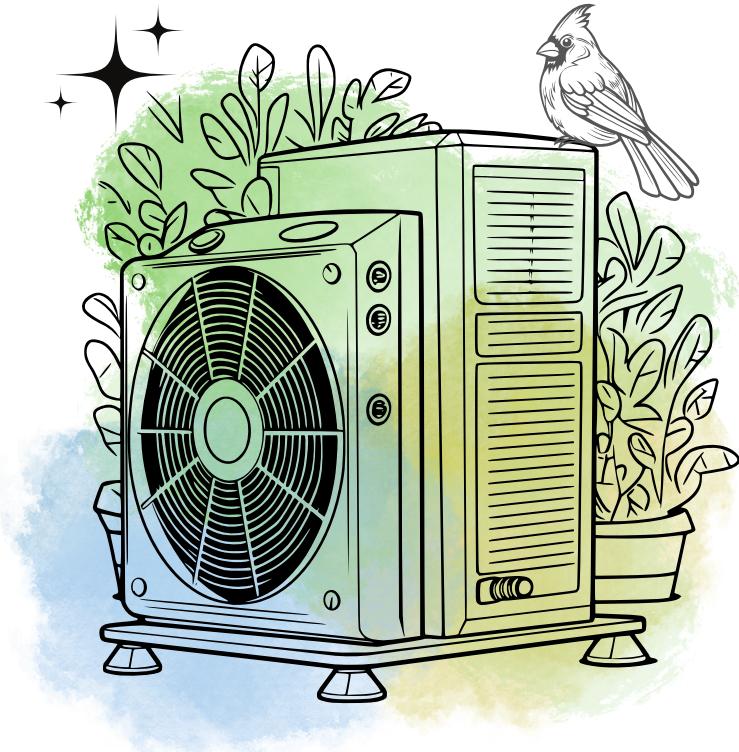




Your First Heat Pump Guidebook



A cold climate heat pump can keep you cozy all winter, cool all summer, and cut your home's emissions



Toronto
Home Energy
Network





Welcome!

Installing a heat pump is a huge boost to your home's comfort — and the single most impactful thing you can do to reduce pollution that comes from heating your home.

The homeowners we've worked with are relieved that they can heat their homes without fossil fuels and improve their comfort at the same time, all for less than the cost of updating a bathroom. But installing a heat pump takes a little more research than swapping one furnace for another.



This Guidebook is your map to the home heating and cooling world. Our goal is to help you install your first heat pump, stress-free.

This bird's-eye tour includes links to in-depth articles where you need them. It will steer you away from those "I wish I had known that sooner!" moments that make home improvement projects so frustrating.

Also, this document is interactive—please scribble away!



**Toronto
Home Energy
Network**

You might be wondering who we are! We're Toronto Home Energy Network, and we're here to support your switch to electric. As a non-profit, we connect you with expert advice, practical resources, and neighbours who've already upgraded.

We're here to support you—just friendly guidance to make your home more comfortable!





We Love Retrofit Advisors

Before we dive in, an important note: we recommend Retrofit Advisors A LOT in this guide.

Retrofit Advisors coach homeowners through heat pump selection and sizing, finding contractors, and (best of all!) they do the rebate paperwork for you (if you qualify)—that's hours and hours of filling out forms that you won't have to do.

In case you're curious, we do NOT receive referral fees for guiding people to Retrofit Advisors—our funding is transparent—see below.

In case study after case study and from our team's experience getting heat pumps installed, Retrofit Advisors have been the difference between stress and success.

There's nothing for sale in this Guidebook. Our mission is to support homeowners who want to move away from heating their homes with polluting fossil fuels. To achieve that, we:

- Write free educational documents like this one.
- Build community groups across Toronto that provide personalized coaching and technology demonstrations.

Ok, enough preamble. Onto the Guidebook!



Thank you to our funders for backing community projects in Toronto:



🔍 Table of Contents

The Guidebook has six sections:

1. 🕒 Heat Pumps Demystified

Understand the basics

2. 📋 Prep

Learn about your home's existing system

3. 🛠 Contractor Visit Cheat Sheet

Make sure the little details don't get missed

4. 🏠 Tips For A Comfortable Install

Stay comfy during the project

5. 📀 Your New Heat Pump

Dial in your settings for better comfort

6. 📖 Phrasebook

If you see this blue book emoji (📘) next to a word, it's defined in this section

Warning....as you start asking around about heat pumps, chances are some people will try to steer you away from them. Old technology, shoddy installations, and misinformation plague the humble heat pump.

So, let's start with some myth-busting before diving into the Guidebook—by the end of the next few pages, you'll be able to sort fact from fiction.



Heat Pumps Work in Canada



A modern cold climate heat pump works efficiently down to -30°C and keeps you cool through a heat wave—they're awesome.



Older conventional heat pumps struggle at -5°C and need backup heating—they're still installed in milder places like British Columbia.



Fun fact: The last time it was -30°C or colder in Toronto was on January 4, 1981, when the temperature reached -31°C . This is the coldest temperature ever recorded in Toronto in recent history.

Bottom Line:

- A cold climate heat pump can probably replace your existing heating without a gas furnace (or anything other than slippers and a sweater) to back it up.
- A hybrid system in which your heat pump is linked to your existing gas furnace, which automatically switches on only on the coldest days, is a valid option if you have a new furnace or a worried partner.
- Every heat pump will replace your A/C.
- $\frac{1}{3}$ of homes in New Brunswick are heated and cooled by heat pumps.
- $\frac{1}{3}$ of homes in Norway and Sweden are heated and cooled by heat pumps.





Rebates are Available

Torontonians often see about \$1,000-2,000 back on their heat pump from Ontario's  **Home Renovation Savings Program.**

There are other programs, but the amount of money you can get depends on your existing system and the work you do.



We host and regularly update a page with info on all the renovation support programs.

[View the article](#)



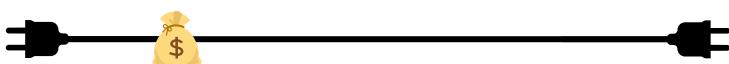
Real Costs

Project Budget: For a typical detached or semi-detached house that already has ducts, with moderate installation complexity, you can expect:

Base cost (equipment & basic install): \approx \$8,000-\$10,000. Like with cars, the cost rises as you get more powerful heat pumps with added features.

More complex jobs (duct upgrades, weatherproofing, adding insulation): \$11,000-\$30,000+. This is still less than a kitchen reno, and you feel the comfort benefits every single minute you're in the home. Rebates can reduce your out-of-pocket costs.

Operating Costs: A heat pump and gas furnace cost about the same to operate, with many homeowners finding that the heat pump actually costs less.





Your Comfort Zone

Let's start with a simple reflection: how involved do you want to be in your heat pump installation? Are you happy to set a budget and trust the pros, or are you curious to learn more about home heating and cooling?

Scan these levels of involvement and check off the one that feels right for you.

1 – Full Service

I want to set the budget, sign the paperwork and trust the experts. Research and planning are not my jam!

2 – Light Involvement

I want to learn the basics, but I'd rather leave the real decision-making and coordination to a professional.

3 – Heating and Cooling Curious

I don't mind learning some new terminology to understand my home's heating and cooling systems.

4 – Active Involvement

I'm happy to do my own homework, then get everything double-checked by a professional before anything is finalized.

5 – Totally DIY

Although Home Depot sells DIY Heat Pump Kits, you will be handling refrigerants and electricity, which can be dangerous. We don't recommend trying this at home!

We start with this reflection because matching your project team to your comfort level is a huge factor in success.



Here is how we recommend using this guide based on your answer:

1s & 2s→

- A Retrofit Advisor will make sure nothing gets missed and that you have a clear roadmap through your heat pump installation.

3s & 4s→

- You can start filling out this guide yourself, then email a Retrofit Advisor to double-check your work.
- You can also do careful due diligence and contact contractors yourself—the **Home Retrofit Forum Facebook group** is a good place to go if you get stuck on a technical question.

5s→

- Although it's tempting to shave costs upfront, getting a team together is a much better way to have your heat pump installed right the first time.

Now is a good time to introduce yourself to a couple of Retrofit Advisors using the link below.



Retrofit Advisors are like the friend who you beg to come with you to the dealership—they'll tell it to you straight!
[Learn more here.](#)



Want to boost your comfort level? The City of Toronto's Better Homes TO page is full of helpful resources.
[Check out the page here.](#)





Types of Heat Pumps

This is the first part of the Heat Pumps Demystified section. We'll start adding technical terminology, but it is not meant to scare you! Getting a few terms down before calling a contractor puts you way ahead of homeowners who wing it.

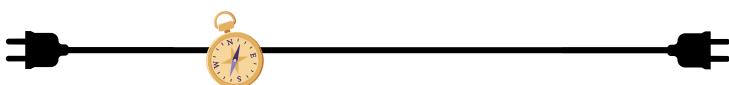
*Remember to flip to the  **Phrasebook** at the end of the Guide if you need a definition!*

Firstly, you don't need to drill underground for any of these systems! Heat pumps in Toronto almost always get their heat from the outside air (called  **air-source**), rather than the ground ( **ground-source**).

Before describing the types and finding which is best for your home, let's start with a few things that all air source heat pumps have. All heat pumps:

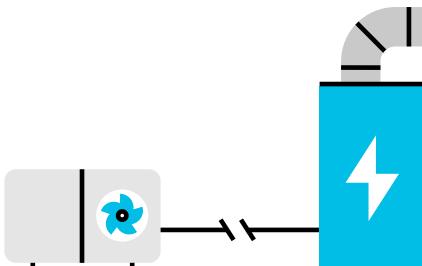
- Both heat and cool.
- Move heat from one place to another rather than creating it, so it uses much less energy than a furnace that burns fuel to create heat.
- Have an outside compressor that looks like an A/C box.
- Have an inside unit that transfers heat to the air or water (if you have radiators and a boiler) that heats your home.
- Have an indoor air handler (a box with a fan inside) that circulates air through your ducts, or a  **"mini-split" head** if you don't have ducts.

There are four main ways a heat pump can provide warm and cool air to your home—we will describe each and the home it's best suited for.



A central heat pump is best if your home has ducts

The heat pump serves the entire house by moving hot and cool air through the ductwork.



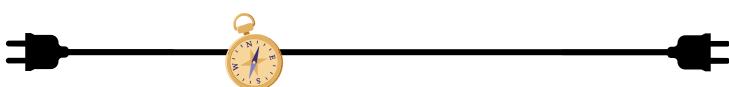
A cold climate heat pump can provide all of a home's heating and cooling.



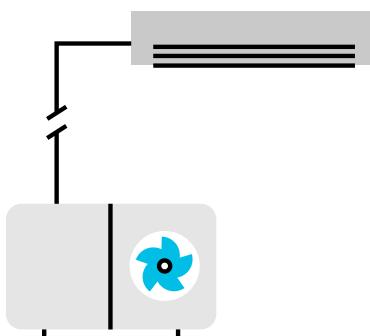
Caution: Some HVAC installers will say you "absolutely need" a furnace for backup heat. This is usually because they aren't confident in sizing your heat pump perfectly—something we cover in the next section—and don't want to hear from you in February.

Every new furnace installation locks a home into 20 or more years of burning fossil fuels. Installing a cold climate heat pump without a furnace is the best thing you can do to reduce your home's carbon pollution.

More confident installers will be able to install a cold climate heat pump alone or with small electric resistance coils for backup for those rare, intensely cold days.



A ductless system is best if your home doesn't have ducts



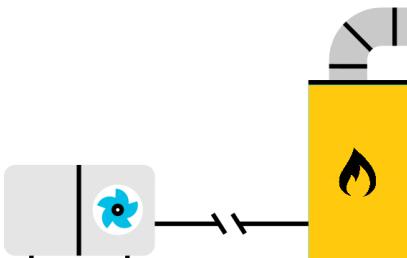
A ductless system uses “mini-split” units mounted on walls or ceilings. These “mini-split” units look like wall-mounted air conditioning units.

The number of indoor units you need will depend on your home's size and layout.

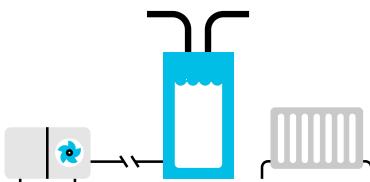
A hybrid system is best if you have a new (~5-year-old) furnace

These systems use the heat pump until the outside temperature drops below a set temperature.

At this point, the system switches automatically to the fossil fuel heating system.



If your home has radiators...things are a little trickier!



You have two choices:

Fully Electric (Aka Air-to-Water Systems): A heat pump transfers heat to a water tank that is then piped through your radiators at a lower temperature than your boiler. These are common in Europe, but not so much in Toronto—there are not many contractors who are trained to install them here.

water tank that is then piped through your radiators at a lower temperature than your boiler. These are common in Europe, but not so much in Toronto—there are not many contractors who are trained to install them here.

Hybrid system: A ductless heat pump provides heat down to -10°C . Your existing boiler kicks in if it gets colder than that—the installation is straightforward.



BC Hydro has an excellent video on the different types of heat pumps and the homes they work best in.
YouTube: Which Heat Pump Is Right For You? | Heat Pump Options Explained
[Watch the video here.](#)





Heat Pumps Sizing

Like cars, heat pumps come in different sizes. The size you need depends on your home's  **heat load**—that's the amount of heat your home needs to stay warm.

With the heat pump sizing done right, you can stare down polar vortexes or heat domes without fear—you'll know that your heat pump will keep you comfortable.



Why sizing matters: An undersized heat pump will run at max capacity a lot of the time, which shortens its life. An oversized heat pump will "short cycle," meaning it will turn on and off constantly, which also shortens its life, and is very energy inefficient.

Calculating your actual heat load takes technical training, but you just need to remember two things:

- Your contractor or Retrofit Advisor should calculate your heat load.
- Your old utility bills are a great way for them to run that calculation.

Sadly, we've seen highly recommended HVAC installers get heat load wrong. If your contractor tells you either of these two things, you can expect problems with your heat pump:

- They say they just need to know your home's square footage. This doesn't work because square footage and heat load are not directly correlated. A drafty small house takes more energy to heat than a larger house that's well-sealed!



- They only look at the size of your old furnace. Furnaces are almost always oversized in Canada (meaning they always “short cycle”).

Old utility bills are a great answer—the bills tell you exactly how much energy it took to heat your home last winter! No guesswork required, especially if you average the past few winters.

If a contractor raises their eyebrows when you pull out your old heating bills, it might be time to contact a Retrofit Advisor or another contractor.

Some contractors haven’t been trained in this highly effective method, but every Retrofit Advisor has been.



Checklist: Your job is to get those bills ready for your contractor or Retrofit Advisor.

Can you log in to your Enbridge account?

Can you log in to your Toronto Hydro account?

Finally, a heat pump’s size is measured in “ tons,” which is a bit confusing. That’s not referring to the weight of the unit itself! It refers to the amount of cooling it can do as compared to a 1-ton block of ice (so a 3-ton heat pump has as much cooling potential as a 3-ton block of ice).

That’s the end of the Heat Pumps Demystified section! You should have some idea of what type of heat pump will work best for your home, why getting sizing right is crucial, and sizing shortcuts to avoid.

The next section will have you look more in-depth at your existing heating and cooling system. This will set you up to make some game-changing updates to your home!





Introduction to the Prep Section

This section calls out some of the biggest heat pump installation speedbumps we've seen while working with homeowners, like:

- Ducts from the Dark Ages
- Drafts that suck all the cool or warm air out of your home
- Contractors who just want to do things their way
- Electrical panel panic

This isn't a list of chores—**using the checklists on the next pages can totally change your home's status quo.**

Many people we've worked with believe their chilly toes and drafty bathrooms just come with living in an older home. The reality is that simple, inexpensive improvements can rid your home of those annoyances and make your heat pump more efficient.

Soon you'll be wondering why you put up with an uncomfortable home for so long!



The best part? The most common comment from people who install a heat pump is surprise at just how even and comfortable the heat feels. What they're experiencing is how a heat pump steadily brings all of their home—the air and objects—to one stable, cozy temperature. With a furnace, the home gradually becomes chillier, then a blast of hot air is released to warm it up



Your Existing Heating and Cooling System

Your contractor will definitely ask you about your existing system over the phone, so getting your answers together beforehand will make getting quotes much easier.



Checklist: Ducts or ductless?

If your home has vents in the walls or floor where hot and cool air comes out, then you have ducts! Remember, heat pumps can work with or without ducts.



I have ducts
I don't have ducts



If these look familiar, you have ducts!



Checklist: Your Primary Heating System

You either have a system that uses ducts:

Forced Air Gas Furnace
Forced Air Heating Oil Furnace
Forced Air Propane Furnace
Forced Air Electric Furnace

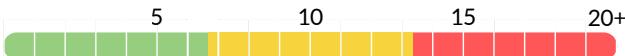
Or a system that doesn't use ducts:

Electric Baseboards
Radiators with a Gas/Heating Oil/Electric Boiler



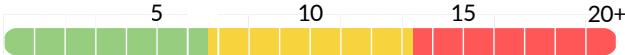


Checklist: How old is your heating system?



Its Age: _____

Checklist: How old is your A/C (if you have it)?



Its Age: _____



Energy Audits & Air Sealing

All homes have small (and sometimes not-so-small!) gaps and cracks in the roof, walls, windows, doors, and foundation where warm or cool air leaks in or out.

A leaky or drafty home doesn't just mean you'll have chilly toes in the winter—your heat pump will have to work much harder (which will increase your energy bills) to make up for the leaks. The heating system you have today also has to work overtime to overpower the drafts.

So, it's time to caulk and seal every leak, right? Surprisingly, no! A completely airtight home is impossible—it wouldn't have doors or windows—and it wouldn't let humidity escape. Your goal is to find the "just right" zone.

Too drafty/leaky → Your heat pump will have to work harder, or your supplementary heat source will keep turning on, which will cost you money.

Too airtight → You'd need to run a dehumidifier all the time.

Just right → Your heat pump purrs, and there is enough incoming and outgoing conditioned air to keep you comfy.



The bonus is that you can often skip expensive whole-house insulation upgrades by sealing drafts! *We feel cold and assume we need insulation, but often it's leaks making us shiver.* Sealing leaks is much cheaper and easier than installing new wall, basement and attic insulation.

Finding Your Home's "Just Right" Zone

Measurements beat guesswork every time—this is where we get to let you in on one of the best-kept secrets of the heating and cooling world: the  **blower door test**.

Good contractors and Retrofit Advisors can't recommend them highly enough—they are the only way to measure how airtight your home is scientifically.

They're not scary or expensive. They're included in an  **Energy Audit**, which usually costs around \$600. That's not nothing...but having a less leaky home means no cold drafts on the way to the bathroom in January—and you'll save that \$600 on your energy bills in no time!

While the blower door test is running, you get to see exactly where your home's drafts are and how to fix them. Every draft you seal is money that stays in your pocket.

With leaks and drafts covered, it's time to move on to ducts.



See a blower door test in action in this PBS video.
YouTube: How to Perform a Whole-House Energy Audit | Ask This Old House
[Watch the video here.](#)





Leaky, Dirty & Undersized Ducts

You can skip this section if your home doesn't have ducts.

Ducts are easy to ignore, but your new heat pump will rely on them to make you comfortable. Here are some common duct issues that could affect your heat pump:

Dirty ducts → bad indoor air quality; your heat pump needs to work harder

- Solution: duct cleaning. Getting your ducts cleaned is like curing your home of a chest cold—you'll both breathe easier!

Leaky ducts → rooms far away from the equipment won't warm up.

- Solution: leaky ducts can be fixed easily and relatively inexpensively with  **Aerosealing**.

Undersized ducts → air will get backed up and not reach where it needs to go.

- Solution: replace the grilles with less restrictive collars and/or install properly sized or additional ducts.

Like with measuring leaks, asking your contractor or Retrofit Advisor to measure your ducts is the fastest way to make sure that they're heat pump-ready.

With your ducts in order, we can get some tips on choosing the right contractor. The next section is a little longer, so grab a cappuccino and settle in!



Checklist: Ask your contractor or your Retrofit Advisor to measure the cleanliness, airtightness, and volume of your ducts.





Contractors

Contractors are the biggest make-or-break of your heat pump install. You want a contractor who shares your enthusiasm for heat pumps. If they don't encourage you to install one, keep looking.

You need to make sure your contractor:

- 1) Understands that heat pumps work in Canada (remember 1/3 of homes in New Brunswick and 2/3 in Norway and Sweden use them!)
- 2) Knows how to properly install them.

Most contractors we've talked to are warm towards heat pumps...until you ask them to remove the furnace.



Many contractors will assume you want a **hybrid system** (see pg. 11) and actively push you there, often to the point of recommending that you buy a new gas furnace to pair with your heat pump. A well-sealed home with a cold climate heat pump can keep you cozy all winter by itself.



A good shortcut to avoid wrangling with a contractor is to find one who will put your wants and needs first—we've written an article to help you find the right one. [Read the article here.](#)



Once you have your contractor shortlist, you'll contact them for quotes. Two questions will help you narrow the field (just make sure you don't leave off "cold climate" when talking to them).



Ask Your Contractor Before the Quote:

- I'm interested in a cold climate heat pump –what do I need to know to install one without a gas furnace backup?
- Can you share some referrals for previous cold climate heat pump installations?

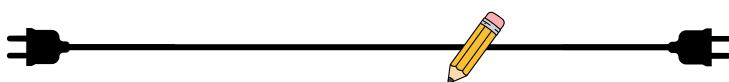
You want a contractor who is:

- Curious about your home and will do the work to find your heating needs (aka your heat load).
- Open and enthusiastic about sharing previous work.
- Recommended by their previous heat pump clients.

We know that asking these questions will make the people pleasers nervous, but it is essential to find someone who respects your needs and your home's unique features—these questions aren't rude!

Bedside manner is also crucial. If they sound distracted or annoyed with your questions, they're probably not your Contractor Charming.

If they pass the check, you can record their quotes on the next page.





Quotes

Use this section to record quotes—three is a good minimum, but a couple more won't hurt!

Confused by what's in your quote? A Retrofit Advisor can get you sorted, or you can post a photo of it in the Home Retrofit Forum Facebook group.



Record Quote #1:

Company Name: _____

Date: _____ Price: _____ Timeline: _____

Quoted Heat Pump Size, Make & Model:

Work Included (e.g. all equipment, installation etc.)

Work Excluded (e.g. duct updates, air sealing etc.)



Don't know who to call?

Toronto Hydro's Cleantech Services Directory connects you with qualified contractors who specialize in heat pumps and home electrification.

[Check out the Directory.](#)





Record Quote #2:

Company Name: _____

Date: _____ Price: _____ Timeline: _____

Quoted Heat Pump Size, Make & Model:

Work Included (e.g. all equipment, installation etc.)

Work Excluded (e.g. duct updates, air sealing etc.)



Record Quote #3:

Company Name: _____

Date: _____ Price: _____ Timeline: _____

Quoted Heat Pump Size, Make & Model:

Work Included (e.g. all equipment, installation etc.)

Work Excluded (e.g. duct updates, air sealing etc.)





Electrical Panel

Adding a heat pump in place of a gas furnace means your electrical panel (aka the box with all the breakers or fuses) will have a new, large appliance that needs to be fed.

Warning! We've come across many contractors who insist you need to upgrade your electric service from Toronto Hydro and buy a bigger electrical panel before putting in a heat pump.

If that sounds expensive and time-consuming, you'd be right. Fortunately, most Toronto homes (even century homes) already have a big enough panel.

The confusion happens because these contractors add up the electrical demand as if every single one of your appliances were running at full blast at the same time, and then add 25% on top of that...that's just not realistic.

Toronto Hydro recently released a tool to help you fact-check Panel Paranoid contractors. It's called the Peak Demand tool, and it tells you the actual highest amount of electricity your home drew at one time. The article below links to it, but you only need to bother with this if a contractor insists that you need a panel upgrade before they'll install your heat pump.



If you find a contractor that insists you need a new, larger, expensive electrical feed and panel before getting a heat pump, head to our article to avoid that fate.
[Read the article here.](#)





Contractor Visit Cheat Sheet

At this point, you've got a contractor in mind for the install. This checklist is full of important little details that need to be tackled regardless of the price of your heat pump. Please bring it out when a contractor arrives to give you a quote.

This section is not meant to scare you—these are lessons learned from other homeowners who hit speed bumps before and after their install.

Getting these figured out before you sign anything with your contractor puts you way ahead of homeowners who dive in unprepared.



Equipment. Your installer might have preferred brands. Ask them:

- Do you have any partnerships with manufacturers? (They might be able to offer an extended warranty if they do!)
- Are you certified to install by the manufacturer you are recommending?

Unit Placement. Where will the outside compressor unit go? It should be:

- Away from bedroom windows & outdoor sitting areas (though the units are much quieter than most air conditioners).
- Easy to clear of snow or under shelter.
- Clear of barriers for good airflow.
- Placed to anticipate that meltwater from the defrost cycle will refreeze on the ground below the unit without causing a slipping hazard.
- Easy to reach for future maintenance visits.





Thermostat. The thermostat is your heat pump's brain! Make sure:

- It's compatible with the unit they plan to install, especially if it's a hybrid system.
- If a new thermostat is needed that the cost is included in the quote.
- That you know what features it has.
- They are willing to help you set up your new thermostat.

Commissioning. This is when the installer returns to your home a few months after installation to make sure your heat pump is working at its peak efficiency. Before signing a contract, make sure that:

- There's a plan to return.
- The cost is included in the installation.
- They do performance measurements (not just a visual inspection).
- They do the first maintenance check, which includes:
 - A thorough inspection of the heat pump.
 - Refrigerant pressure tests.
 - High-voltage wiring checks.
 - Heat exchanger cleaning.
 - Full system inspection to get ready for summer or winter.

That's a lot of technobabble! The goal isn't for you to learn the intricacies of HVAC installation—that's your contractor's job. The goal of this checklist is to level the playing field.

With these questions in hand, you can make sure your contractor isn't taking shortcuts with your installation. Your comfort is key. Good contractors will welcome your interest in their work.





Tips for a Comfortable Install

Kudos—you've done the hard work! At this point, you've prepped your home and your trustworthy contractor is on the job. Your new heat pump is just around the corner.

If you've gone through the Guidebook, you're set up for success. But if something unexpected pops up, or you're bamboozled by your quote, here's how to get help:

- The Home Retrofit Forum Facebook group answers questions quickly. It's moderated and overflowing with firsthand heat pump experience. Posting your issue or searching past posts can get you unstuck.
- A Retrofit Advisor is ready to help. Even if you got started without one, they can be parachuted in to untangle a tricky situation.

It's time to get excited! You'll soon be cozy through polar vortexes and heat domes, all while dramatically reducing fossil fuel use in your home. Thank you for doing your part.



The Home Retrofit Forum is a carefully moderated Facebook group. You can get personalized advice on:

- Selecting the right heat pump
- Finding trustworthy contractors
- Navigating rebate programs...and lots more!



[Join the group.](#)





Your New Heat Pump

Your new heat pump should be installed! Every time it whirs to life, it keeps fossil fuels in the ground—you've improved your home comfort and helped the environment at the same time.

There are just a few things to keep in mind to make sure it keeps you comfortable all year.

- Don't turn the thermostat radically down overnight, then way back up again in the morning. Keeping it set at a more-or-less consistent temperature is the right way to go. Think of it like a crock pot—it operates low and slow. Just "set it and forget it!"
- Keep snow from piling up around your outdoor unit.
- Make sure nothing gets stored where it could block the outdoor unit's air intake.

Finally, we would *love* to snowball your success story by organizing a **heat pump party**. This is how we can get whole neighbourhoods excited about making the switch—thenetwork.to/guidebook has more info.



Record any differences in your home comfort. Are there any rooms you used to avoid in the winter that are suddenly cozy? We've found people are happily surprised with how evenly heated their homes are!





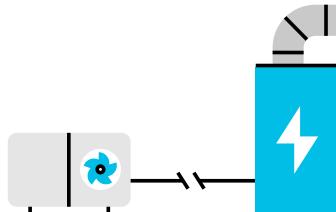
Phrasebook

Aerosealing — Aeroseal is a patented technology that seals duct leaks from the inside out. The process causes polymer particles to stick first to the edges of a leak, and then to each other until the leak is completely sealed. Holes up to the size of a nickel can be sealed by Aeroseal.

The sealant used is non-toxic and has been used in hospitals, surgery centres, and government institutions. The primary component is vinyl acetate polymer, used in water-based paints, hair spray, and chewing gum.

Air Source Heat Pump — A heat pump that obtains heat from the air. Cold climate air source heat pumps can gather heat even when the air is very cold. That can be confusing—how much heat is in the air at -30°C ? To understand this, we have to remember Kelvin temperatures from high school science class.

Although the difference between 27°C and -13°C feels large to us, in Kelvin it's the difference between 300 Kelvin and 260 Kelvin—only a 15% difference! So there is still plenty of heat for your heat pump to draw from.



Blower door test: A blower door test is a simple way to see how drafty your home is. A technician fits a big fan into your front door and gently pulls air out of the house, which makes it easier to find where outside air is sneaking in—like around windows, doors, or attic hatches. It usually takes about an hour and doesn't cause any damage



BTUs (British Thermal Units) – Like calories or kilowatts, BTUs are a scientific way to measure energy. Heat pumps are often rated in BTUs—the higher the number, the more powerful the heat pump. The right heat pump for you depends on your home's  **heat load**.

Commissioning – This is fine-tuning and maintenance that a heat pump installer can do on your heat pump after it's installed. The tuning can increase its efficiency, which may lower your utility bills.

Ground Source Heat Pump – A heat pump that uses underground pipes to draw and disperse heat, like a geothermal project. Given the amount of expensive drilling required to install this system, they are not practical for most Toronto homes.

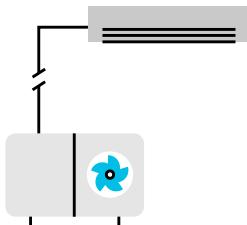
Heat Load – The amount of energy it takes to heat your home, measured in  **British Thermal Units (or BTUs)**.

So, the size of your home matters (bigger homes have higher heat loads), as does how well sealed your home is (leaky homes lose lots of heat, which needs to be replaced by your heating appliance).

Here's a shortcut for understanding heat load: imagine filling up a leaky bucket with a hose. Your goal is to keep the bucket nearly full without overfilling it—you need the water flowing in to match the water flowing out. Heat load is like that—you want the heat flowing into your home from your heat pump to match the heat flowing out through leaks. Old energy bills are a reliable way to find your home's heat load, but that takes technical training. Retrofit Advisors are trained to do those calculations for you.



Mini-Split – A heat pump that doesn't use ducts. Instead, it has multiple heads that can be controlled independently. This means you can adjust temperatures room by room.



Tons – Heat pumps are usually sized by the “ton”—this doesn't refer to the weight of the outdoor unit! This refers to how much cooling it has compared to a ton of ice...which is strange until it's put in historical context.

Like horsepower, sizing in tons came from a time when scientific measurements like calories and kilowatts were invented. Even though it's connected with ice, the size refers to both its heating and cooling potential.

Most Toronto homes need a 2, 2.5, or 3-ton heat pump.

If you look up heat pumps on Home Depot, you'll see something like “24,000 BTU, 21 SEER Ductless Unit.” That's a lot of abbreviations...let's unpack those:

BTUs = British Thermal Units, which we defined above. There are 12,000 BTUs per ton, so 24,000 BTUs would be a 2-ton heat pump. Now we'll define SEER.

SEER – stands for the Seasonal Energy Efficiency Ratio, and it's like the fuel efficiency of a car. A higher SEER rating indicates a more efficient unit that uses less energy and results in lower utility bills. Finding the right level for you depends on your budget and needs—working with a contractor or Retrofit Advisor is the best way to find the right unit for you.



Your Home Heating & Cooling Checklist



Heat Pumps Demystified

- ★ Cold climate heat pumps work down to -30°C
- ★ Most Torontonians can get money back on a heat pump through the Home Renovation Savings Program
- ★ $\frac{2}{3}$ of homes in Norway and Sweden have heat pumps



Prep

Existing heating: _____	Asked your contractor for references? <input type="checkbox"/>
Age of furnace: _____	Got 3 quotes? <input type="checkbox"/>
Ducts (yes/no)? _____	Sealed up drafts? <input type="checkbox"/>
If yes, have they been measured? _____	Your electrical panel is big enough? <input type="checkbox"/>
Your heat load: _____	



Contractor Visit Cheat Sheet

Flip to Pg. 25 when you have a contractor over for a quote!



Your New Heat Pump

- Set and forget the thermostat
- Keep it clear of snow and debris
- Have a Heat Pump Party!



Not a party planner?
We can help with that!



Email:
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