



An Extended Guide · No. 1600

Sizing for a Furnace Blower or Boiler

Keeping the heat on
through an Ohio winter

Tech Made Simple — Service Made Personal

BillsHomeTech.com · (330) 200-8042 · Atwater, Ohio

Free & printable — share it with someone who needs it



Book a visit —
billshometech.com/book

! Read this first — size for safety, not just comfort

Getting the size right is not only about comfort — it is about safety, too. An undersized unit gets overloaded and pushed harder than it should be: it runs hot, it strains, and a motor that can't get the surge it needs can hum, overheat, and be damaged. So take the size seriously and always leave yourself a margin — a little extra room — rather than sizing right to the edge. And one safety rule never changes: any fuel-burning generator gives off carbon monoxide, an invisible, deadly gas, so it runs **OUTDOORS ONLY**, well away from the house (the safety agencies say at least 20 feet), never in a garage or on a porch even with the door open. A battery or power station makes no exhaust and is safe to use indoors. In an Ohio winter, heat isn't just a comfort — it's a safety need, so keeping the furnace or boiler running is worth planning carefully.

Keeping the heat on through an Ohio winter

When the power goes out on a cold night, heat jumps to the top of the list. The surprise for many folks is that even 'gas heat' needs electricity to run — and this guide shows you exactly what part needs power, and how to size for it.

I'm Bill. Here in Portage County, a winter outage is a heat problem first. The good news is that for most gas and oil systems, the electric part you need to back up is modest — usually a single motor. The trick is knowing which motor, reading its numbers, and planning the hookup.

We'll sort out the three main kinds of heat, find the motor that matters in each, read its nameplate, and cover why heat almost always means a licensed electrician joins the plan. I'm a tech helper, not an electrician, so I coordinate that pro for you.

★ Worried about heat in an outage?

Tell me what kind of heat you have and call or text me at (330) 200-8042. I'll help you figure out what needs power and how to size for it — free, with nothing to sell you.

The whole idea, on one page

If you remember only this page, you already know how to think about backing up your heat.

- ❑ A gas or oil furnace still needs electricity — mainly the blower fan motor, plus ignition and controls.
- ❑ The blower is a motor, so it surges when it starts — size for that jolt, not just the steady draw.
- ❑ A boiler needs its circulator pump (or pumps) and controls — smaller motors, but still electric.
- ❑ All-electric furnaces and heat pumps with electric backup heat are a much bigger ask — often beyond a portable.
- ❑ Heat is usually hardwired, so it needs a transfer switch or interlock and a licensed electrician.
- ❑ Read the blower or circulator nameplate for the real numbers; never guess.

✓ Find the motor, and you've found the load

For most homes, backing up the heat comes down to powering one motor — the blower or the circulator. Find it, read it, and the sizing follows.

Even 'gas heat' needs electricity

This catches almost everyone: your gas or oil furnace burns fuel for heat, but it can't run at all without electricity.

The fuel makes the heat, but electricity does everything else — it spins the blower fan that pushes warm air through the house, fires the ignition, and runs the controls and the thermostat. Cut the power and a gas furnace sits silent, full of fuel it can't use. That's why heat belongs on your backup-power list even if you 'have gas.'

The reassuring part is that the electric load is usually small compared to the heat it delivers. You're not powering the warmth itself — the fuel does that — just the fan and controls that move it around. Size for those, and a cold house becomes a warm one.

✓ You power the fan, not the flame

With gas or oil heat, the generator or battery only has to run the electric parts — mainly the blower. The fuel still provides the actual heat, which keeps the electric ask modest.

The three kinds of heat, and what draws power

Which parts need backup power depends on what kind of heat you have. Here are the three you'll most likely meet.

- **Gas or oil furnace (forced air):** the big electric load is the blower fan motor, plus ignition and controls. A modest, motor-sized ask.
- **Boiler (hot water or steam):** the electric load is the circulator pump or pumps that move hot water, plus controls. Usually smaller motors.
- **All-electric furnace or heat pump with electric backup heat:** here electricity makes the heat itself, which is a much bigger ask — often more than a portable can give.

The first two are about powering a motor. The third is about powering the heat, which is a different league entirely. We'll take each in turn — and if you're not sure which you have, there's a page ahead on figuring that out.

✓ Motor or heat — that's the fork in the road

Fuel systems ask you to power a motor; all-electric heat asks you to power the warmth itself. Knowing which fork you're on shapes the whole plan.

The furnace blower — the motor that matters

For a forced-air furnace, the blower fan is the heart of your sizing question.

The blower is the motor that pushes warm air through your ducts and into the rooms. Like any motor, it needs a brief starting surge — several times its running watts — to get spinning, then settles to a steadier draw. Your unit has to deliver that jolt the moment the blower kicks on, or it won't start. Our running-watts-versus-starting-watts guide explains that two-number idea in full.

Some newer furnaces use a variable-speed or 'ECM' blower that ramps up gently and can draw differently than an older single-speed fan. You don't need to master the engineering — just read the nameplate for the real numbers and, if they're unclear, ask the installer or a pro.

✓ The blower is a motor — so it surges

Treat the blower like the fridge or the pump: it has a running number and a bigger starting number, and you size for both. That surge is the part folks forget.

Ignition and controls — small but essential

Beyond the blower, a furnace has a few small electric parts that have to work for it to run at all.

There's the ignition that lights the burner, and the control board and thermostat that decide when to call for heat. These draw very little power compared to the blower — they don't surge the way a motor does — but they're essential. A furnace with a powered blower but a dead control board still won't run.

The happy news is that when you power the blower properly, these small loads come along for the ride easily. They add only a little to your total. Just don't forget the thermostat, which we'll come back to — it's small, but nothing happens without it.

✓ The small stuff rides along

Ignition and controls sip power. Size for the blower's surge and steady draw, and these little essentials fit comfortably underneath.

The boiler — circulator pumps

If your heat comes from hot-water radiators or baseboards, you have a boiler, and its electric load looks a little different.

A boiler heats water, and one or more circulator pumps push that hot water out to the radiators or loops around the house. Those pumps are the main electric load — motors, so they surge to start, but usually smaller ones than a big forced-air blower. A home with several heating zones may have several circulators, so count them.

As with a furnace, the boiler's controls and thermostat draw little but are essential. Read each circulator's nameplate for its numbers, and if you have more than one that might run at once, plan for that on your worksheet.

✓ Count your circulators

One zone, one circulator; several zones, several pumps. Note how many might run at the same time so your sizing reflects the real load, not just one pump.

All-electric heat — a much bigger ask

If electricity makes your heat, not just moves it, the sizing conversation changes completely.

An all-electric furnace, or a heat pump leaning on its electric strip or 'auxiliary' heat on a cold night, uses electricity to create warmth — and that runs into the thousands of watts, far more than a fan or a pump. This is often more than a portable generator can comfortably supply, so backing up all-electric heat usually points toward a whole-home or standby setup rather than a cord and a portable.

Our essentials-versus-whole-home guide covers that scope decision, and our guide on sizing a standby generator covers the bigger installed systems. When the heat load is this large, it's also a prime case for our guide on getting a professional load calculation.

! All-electric heat can outrun a portable

Don't assume a portable generator will carry electric strip heat or a heat pump's backup heat — it often can't. Size this one with a licensed electrician and a proper load calculation before you count on it.

Reading the blower or circulator nameplate

Whatever your heat, the real numbers live on the nameplate of the motor you need to run.

On a furnace, look for the blower motor's label inside the blower compartment; on a boiler, look on the circulator pump itself. You're after watts, or volts and amps you can multiply. A motor's plate may also show a starting or locked-rotor figure — your clue to the surge. Our guide on reading a nameplate walks through every marking.

If a variable-speed blower's plate is hard to interpret, or you can't find the circulator's numbers, don't guess — ask the installer, the maker, or a licensed heating pro. Heat is too important to size on a hunch, and a wrong guess here leaves you cold.

★ Photograph the heating labels

The blower and circulator labels can hide in awkward spots. Snap what you can and text it to me at (330) 200-8042 — I'll help you read the running and starting numbers, free.

Heat is usually hardwired — so it needs an electrician

Here's the part that surprises folks hoping to just run an extension cord: your furnace or boiler is almost certainly wired straight into the panel.

A furnace blower and a boiler are typically on their own dedicated circuits, hardwired — there's no plug to pull. To power them from a generator, you need a transfer switch or an interlock installed at your panel by a licensed electrician, so the circuit can be fed safely from your unit instead of the grid. Our guide on transfer-switch circuits explains how the choice of backed-up circuits shapes your sizing.

This is exactly where I come in as your coordinator. I'm a tech helper, not a licensed electrician, so I help you size and plan, then line up a trustworthy licensed pro for the panel work — and make sure the size and the hookup are planned together, not one after the other.

★ I'll line up the electrician

Once we know which heating circuits you want backed up, call or text me at (330) 200-8042. I'll help plan the hookup and bring in the licensed electrician for the wiring.

Two kinds of homes, two sets of needs

Backing up the heat looks different in town than out in the country — and on a well, the furnace blower has to share the unit with the hungriest motor in the house, the well pump.

If you live in town or the suburbs

In town or the suburbs, heat is often a single gas furnace, and the job is tidy: back up the blower and its controls. With city water flowing regardless, the blower is frequently the biggest motor you're starting.

- Size for the blower's surge plus its steady draw, and the small ignition and controls ride along.
- The blower is likely your biggest single surge, so a modest unit with room for that jolt often does it.
- It's hardwired, so plan a transfer switch or interlock with a licensed electrician from the start.
- Add the fridge and a few lights, and a town heat-and-essentials plan comes together nicely.

If you are out in the country on a well

Out in the country, heat is often propane or oil forced air, or a boiler — and the 240-volt well pump is on the list too. Now you have two motors, and the pump's surge usually outweighs the blower's, so you plan the order in which they run.

- The well pump's surge is likely your single biggest jolt — size around it, with the blower next in line.
- Don't start both big motors at the same instant; run the pump to build water, then let the blower carry heat.
- A boiler's circulators are smaller motors, but count them all if several zones run at once.
- Read the pump's nameplate or ask your well company; see our well-pump sizing guide for its surge.

★ Two motors? Let's plan the order

When the well pump and the furnace blower share one unit, the plan is about taking turns so their surges don't collide. Tell me both, and I'll help you sequence them. Call (330) 200-8042.

When two motors compete for the surge slot

On many rural lists, the blower and the well pump both want to start — and how you handle that keeps your unit sized sensibly.

You add only the single biggest surge to your running total, and between a well pump and a furnace blower, the pump's jolt usually wins. That's the number to size around. The risk is both motors trying to start at the very same instant, which briefly stacks their surges and can stumble a unit sized for just one.

The fix is simple: don't let them start together. Run the pump to build up water and pressure, then let it rest while the blower carries the heat. Taking turns keeps the two surges apart. Our guide on managing loads during a run covers this sequencing, and our running-watts-versus-starting-watts guide explains why only the biggest surge counts.

✓ Stagger the starts

Two big motors are fine on a modest unit as long as they don't jump to life together. Start one, let it settle, then start the next — never both at once.

Not sure what kind of heat you have?

Before you can size for heat, you need to know which of the three kinds you've got. Here's how to tell.

- **Warm air from vents or registers?** That's forced air — a furnace with a blower fan.
- **Hot-water radiators or baseboard heaters that get warm?** That's a boiler with circulator pumps.
- **A gas or oil supply, a fuel tank, or a propane tank outside?** You're on fuel heat — you power a motor.
- **No fuel line, just breakers, or a heat pump outside?** Likely all-electric heat — the bigger ask.

Still unsure? The label on the equipment, an old service sticker, or a quick call to whoever services it will tell you. Knowing the type is the first real step, so it's worth pinning down before you shop.

★ I'll help you identify it

If you're not certain what's heating your home, send me a photo of the equipment and its label at (330) 200-8042 and I'll help you figure out exactly what needs power.

Turning it into a sizing number

Here's how heat fits into your overall sizing, with no invented figures.

For a furnace, add the blower's running watts to your steady total, and carry its starting surge as a candidate for your single biggest jolt. For a boiler, add each circulator that might run at once. Then add your other must-run loads — the fridge, some lights — pick the one biggest surge on the whole list, and add a comfortable margin.

Our worksheet guide gives you a page to lay this out line by line, and our running-watts-versus-starting-watts guide explains why you add only the largest surge. For all-electric heat, remember the load is far bigger and belongs with a pro and a proper load calculation.

★ Let's add up your heat load

Send me the blower or circulator nameplates at (330) 200-8042 along with your other loads, and we'll land on the number your heat adds up to — and plan the hookup to match.

Don't forget the thermostat and zone controls

The smallest part of your heating system is also the one nothing works without.

The thermostat tells the furnace or boiler when to run, and in a zoned home, zone controls or dampers route the heat. These draw very little power, but if they're not powered, the heat won't come on no matter how well you've sized the blower. When you plan which circuits to back up, make sure the heating controls are part of the picture.

Because a furnace or boiler is usually backed up as a whole circuit through a transfer switch or interlock, the controls typically come along with it. Just confirm it when you and the electrician plan the hookup, so there are no cold surprises.

✓ Small load, big job

The thermostat sips power but holds veto power over your heat. Make sure it's on the powered side of the plan.

Staying warm safely while you plan

Until your heat is safely backed up, how you keep warm in an outage matters — because some tempting shortcuts are deadly.

Bundle up, layer clothing and blankets, close off unused rooms to concentrate warmth, and gather the household into one room. A battery or a safely-connected generator can run the furnace blower. These are the safe ways through a cold night.

! Never heat indoors with an oven, a grill, or a generator

Never use a gas oven or range, a charcoal or gas grill, or a running generator to heat your home — each gives off carbon monoxide, an invisible, odorless, deadly gas that can kill in minutes. Generators run **OUTDOORS ONLY**, well away from the house. Keep battery-backup carbon monoxide alarms on every level, and if an alarm sounds, get everyone outside and call for help.

When it's clearly a pro's job

Some heating setups are firmly in licensed-professional territory, and it's good to know them up front.

All-electric heat and heat pumps with electric backup are big enough that they usually need a standby generator sized by a licensed electrician's load calculation. And because nearly all heating equipment is hardwired, the transfer switch or interlock is an electrician's install no matter what kind of heat you have. Any gas or fuel work is likewise for a licensed pro, never a tech helper.

What I do is stand alongside you for all of it: help you identify the system, gather the nameplates, understand the numbers, and then coordinate the licensed electrician and heating pro so the size and the hookup come together as one plan.

★ You don't have to juggle the pros alone

Coordinating the licensed electrician for the panel work is part of what I do. Once you know your heat type and your numbers, call or text me at (330) 200-8042 and we'll plan the whole thing.

A simple plan for backing up your heat

Here's the whole thing as a short checklist you can act on.

- ❑ Identify your heat: gas or oil furnace, boiler, or all-electric.
- ❑ Find the motor that matters — the blower, or the circulator pump(s).
- ❑ Read its nameplate for the running and starting numbers; never guess.
- ❑ Plan a transfer switch or interlock with a licensed electrician, since heat is hardwired.
- ❑ If two big motors share the unit, stagger their starts so the surges don't collide.

✓ Five steps to a warm outage

Identify, find the motor, read the plate, plan the hookup, stagger the starts. Do those and a winter outage stops being a cold one.

Questions worth asking

Whether you're talking to a heating pro, an electrician, or me, these get you to the right heat number.

Q: Which part of my heat actually needs the generator?

For gas or oil forced air, mainly the blower motor plus small controls. For a boiler, the circulator pump(s). For all-electric heat, the heating itself — a much bigger load.

Q: Can I just run an extension cord to my furnace?

Almost never — furnaces and boilers are hardwired, with no plug. They need a transfer switch or interlock installed by a licensed electrician to be powered from a generator safely.

Q: Will a portable generator run my heat?

For a gas or oil blower or a boiler's circulators, usually yes with room for the surge. For all-electric heat or a heat pump's backup heat, often no — that points to a standby unit and a pro.

Q: My furnace blower is variable-speed — does that change things?

It can draw differently than an older single-speed fan, so read the nameplate and, if it's unclear, ask the installer. The sizing method is the same: running watts plus the starting surge.

✓ There's no silly question

If your heating setup still feels confusing, that's completely normal — call or text me at (330) 200-8042 and we'll work through it together.

Common Questions

The heat-sizing questions I hear most, answered plainly.

Q: Why does my gas furnace need electricity at all?

The gas makes the heat, but electricity runs the blower fan that moves it, plus the ignition and controls. No power means the blower can't run, so no warm air reaches your rooms.

Q: Is the furnace blower's surge really worth planning for?

Yes — it's a motor, so it needs a brief jolt several times its running watts to start. Size only to the steady draw and the blower may hum without catching.

Q: I have a boiler, not a furnace — what do I size for?

The circulator pump or pumps that push hot water to your radiators, plus the controls. They're smaller motors than a forced-air blower, but count every circulator that might run at once.

Q: Can I use a kerosene or propane space heater instead?

Only ones rated and approved for indoor use, exactly per their instructions and with ventilation and a carbon monoxide alarm. Never an oven, a grill, or a generator indoors — those give off deadly carbon monoxide.

★ Still sorting out your heat?

Send me a photo of your furnace or boiler and its nameplate at (330) 200-8042 and we'll figure out what needs power and how to size for it, together.

Bringing it all together

You now know how to keep the heat on: find the motor your system runs on, size for its surge, and plan the hookup with a licensed electrician.

For gas or oil heat, that's the blower or the circulators — a modest, motor-sized load. For all-electric heat or a heat pump, it's a much bigger ask that points to a standby unit and a professional load calculation. Either way, heat is hardwired, so an electrician joins the plan.

From here, our worksheet guide helps you add the numbers up, our guide on transfer-switch circuits covers the hookup, and our guide on managing loads during a run covers staggering the blower and the well pump so their surges don't collide.

★ Let's keep you warm together

If you'd rather talk it through than sort it out alone, that's exactly what I'm here for. Call or text me at (330) 200-8042 and we'll plan backup heat that carries you through the coldest night — free, with nothing to sell you.

You don't have to do this alone

You just have to remember that a friendly, patient person is one call away.

I hope this guide made keeping your furnace or boiler running feel a little less daunting and a lot more doable. Keep it in a drawer with your other home papers, come back to a page whenever you need it, and don't worry about memorizing anything.

When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat \$99, and for the parts that don't need me on-site I can often help right on your screen for \$49. Every visit comes with a 30-day, come-back-free guarantee. I don't do the licensed electrical or gas work myself — for that I'll help you line up a trustworthy local pro.

★ Bill's Home Tech — real help, close to home

Call or text me at (330) 200-8042, or visit BillsHomeTech.com. Serving Atwater and all of Portage County. 30+ years of patient, plain-English tech help — and if you're ever not 100% happy with a visit, I'll make it right or refund it. That's a promise. — Bill

What Draws Power in Your Heat

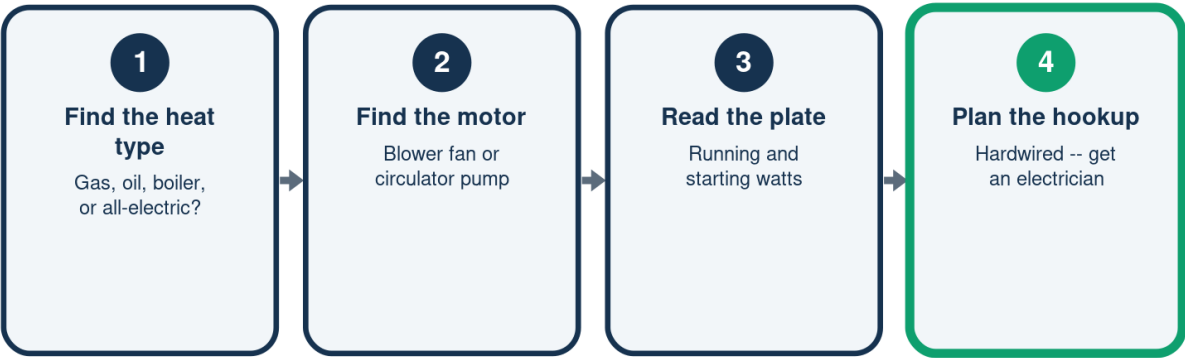
The electric part depends on the kind of heat

	What draws power	How big an ask
Gas/oil furnace	Blower motor	Modest
Boiler	Circulator pump	Modest
All-electric heat	The heat itself	Big -- often a pro

Fuel heat runs on a small motor; electric heat is the big ask.

Sizing for Heat, Step by Step

From the kind of heat to the hookup



Heat is usually hardwired, so an electrician joins the plan.

Fuel Blower vs. All-Electric Heat

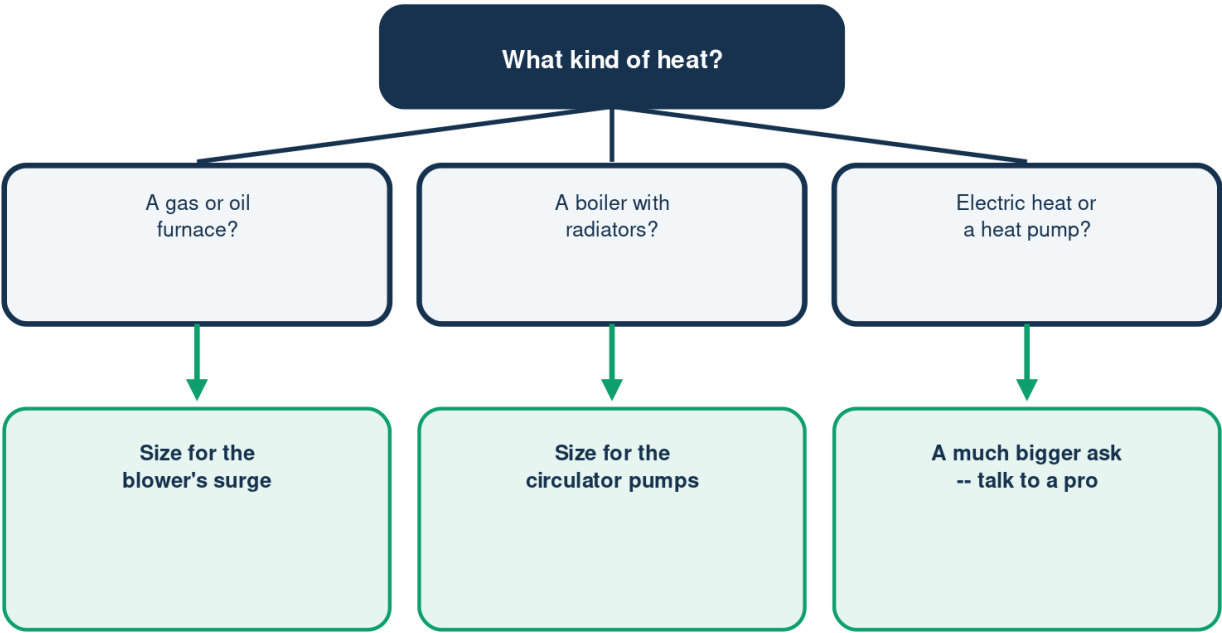
Two very different sizing asks

	Gas/oil blower	All-electric heat
The load	A fan motor	Heating elements
Power needed	Modest	In the thousands
A portable?	Often enough	Often too small
Likely fit	A portable unit	Standby or a pro

A gas or oil blower is a modest ask; all-electric heat is a big one.

What Kind of Heat Do You Have?

The type points to what you size for



All-electric heat and heat pumps often need more than a portable can give.

Illustration - a schematic, not to scale. Your setup may differ.



Need a Real Person?

You do not have to remember all of it.
You just have to remember you can call.
Friendly, in-home tech help -- I come to you.

BILL'S PROMISE

If you are not 100% happy with a visit, I will make it right -- or refund it. No awkwardness, no fine print. That is how I would want to be treated.

(330) 200-8042 · BillsHomeTech.com

Bill@BillsHomeTech.com · Mon–Sat 9:00 AM – 7:30 PM

— Bill

Prefer help without a visit?

Bill can screen-share and fix many things remotely — a flat \$49, free for Support Plan members.



A Note From Bill

A quick note from Bill.

I write these guides to make home tech a little less frustrating, and I do my best to keep every step accurate and up to date. Still, every home, device, and setup is a bit different, so I can't promise a guide will match yours exactly or fix your particular problem. These guides are for general information only — they're not professional, legal, or financial advice, and they don't replace your device's own manual or the manufacturer's instructions. Please go slow, use your own good judgment, and use everything here at your own risk. If a step involves electrical wiring, a gas appliance, a water heater, plumbing, or climbing a ladder — or if anything just doesn't feel safe — please stop and call a licensed professional (or give me a call at 330-200-8042). Bill's Home Tech and Bill Davis can't be responsible for any damage, data loss, or injury that comes from using these guides. Thanks for reading, and stay safe out there.

— *Bill*



Book a visit —
billshometech.com/book

Use of these guides is subject to our Terms of Use (billshometech.com/terms-of-use).

(330) 200-8042 · BillsHomeTech.com

Bill@BillsHomeTech.com · Mon–Sat 9:00 AM – 7:30 PM

For general information only — not professional advice. Use at your own risk. For electrical, gas, water, or ladder work, please call a licensed professional. — Bill's Home Tech