



An Extended Guide · No. 1408

Backing Up Your Furnace and HVAC

Heat and cooling on a
battery — what's realistic

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! Read this first — this is a licensed electrician's job

A whole-home battery ties into your home's main electrical panel, and that makes the installation real electrical work — a job for a licensed electrician, done with a permit, and often with your utility's approval before it is switched on. It is not a do-it-yourself project. The happy news, and one of a battery's real advantages, is that once it is installed it runs silently and gives off no exhaust and no carbon monoxide, so unlike a generator it is safe indoors or in the garage. But the battery still stores a great deal of energy, so leave the wiring, the mounting, and any service to the pros, and follow the installer's and maker's instructions. I help you plan it and line up a trustworthy licensed electrician — I do not do the wiring myself. For heating and cooling, that same panel tie-in is where the installer decides which HVAC circuits a battery can safely carry — a gentle furnace blower, yes; a hungry central air unit, only with careful sizing.

Heat and cooling on a battery — let's be honest about it

Everyone wants the heat to stay on when the power quits in the dead of an Ohio winter. The honest news is good and mixed: a battery can often keep a furnace's fan running beautifully, but the big central air and electric-heat loads are a much taller order. This guide sorts out which is which.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. I've spent 30+ years helping folks make sense of the gear in their homes. Heating and cooling is where a lot of battery excitement runs into physics, so I'd rather give you the straight story than a rosy one.

We won't chase numbers or push a brand. I don't sell batteries and earn no commission. We'll cover what a battery can realistically carry, what it can't, and how to plan so you're warm when it matters and never surprised.

★ The honest version, always

If a salesperson has told you a battery will run your whole heating and cooling system, call me first at (330) 200-8042. I'll help you sort the realistic from the wishful — free, and with no sales pitch.

The whole guide, on one page

If you remember only these things, you already understand what's realistic for heating and cooling on a battery.

- ❑ A gas or oil furnace makes its heat by burning fuel; electricity only runs the blower fan and controls — a modest load a battery can often carry.
- ❑ That means a battery can frequently keep your heat on in a winter outage, which for an Ohio cold snap is the thing that matters most.
- ❑ Central air conditioning, heat pumps, and electric heat are heavy loads with big starting surges — they can drain a battery fast or exceed what it can deliver.
- ❑ For air conditioning, a soft-starter can ease the startup surge, but big cooling and electric heat still need careful sizing or a plan to leave them off.
- ❑ Boilers and their circulator pumps vary; some are light, some less so, so they need a look case by case.
- ❑ None of this is guesswork you should do yourself — a licensed installer's load calculation is what sizes it right.

✓ The one-sentence version

A battery often keeps the heat on by running a furnace's fan, but big AC and electric heat are heavy loads to size carefully or leave off.

The big idea: not all heating and cooling is equal

The single most useful thing to understand is that your heating and cooling equipment lands all over the map for a battery.

Some of it is gentle. A furnace's blower fan is a modest motor, and the furnace's brain and igniter sip only a little power. A battery carries those without breaking a sweat, which is why keeping the heat on is so often achievable.

Some of it is heavy. Central air conditioning, a heat pump, and electric resistance heat all draw a great deal of power — and the motors among them hit the battery with a big jolt the instant they start. These are the loads that drain a battery quickly or ask for more than it can give at once.

✓ Sort your system into gentle and heavy

As we go, picture your own setup landing in one bucket or the other. That simple sorting is most of what a good plan comes down to, and it's exactly what an installer's load calculation makes precise.

The good news: a gas or oil furnace blower

If you heat with a gas or oil furnace, there's a real chance a battery can keep you warm. Here's why.

A gas or oil furnace makes its heat by burning fuel, not electricity. The electricity is only there to run the blower fan that pushes the warm air through your ducts, plus the controls, the thermostat, and the igniter. Those are modest loads — the kind a battery is well suited to carry.

So in a winter outage, a battery backing up the furnace's circuit can often keep the heat moving through the house. For a cold Ohio night, that can be the difference between comfortable and miserable, and it's one of the most worthwhile things to put on a backup panel.

✓ Confirm your furnace's fuel and blower

This good news applies to furnaces that burn gas or oil and use electricity mainly for the fan. Your installer will confirm your furnace's exact draw as part of the load calculation — but for most, the blower is a friendly load.

How a furnace actually uses electricity

It surprises folks that a fuel furnace needs electricity at all. Here's the plain picture.

The heat itself

In a gas or oil furnace, the flame does the heating. That part needs no electricity to speak of — the fuel provides the warmth. That's the key to why a battery can help so much: it isn't being asked to make the heat, only to move it.

The fan and the controls

Electricity runs the blower fan, the control board, the thermostat, and the ignition. The blower is the biggest of these, and it's still a modest motor. Together they're a load a well-sized battery can carry through a typical outage.

✓ A furnace with no power is a cold furnace

Even a full tank of fuel can't heat your home if the blower has no electricity to run. That's precisely the gap a battery fills — keeping the fan and controls alive so your fuel heat can actually reach you.

The heavy hitters: central AC, heat pumps, electric heat

Now the honest part. These are the loads that make a battery work hard, and pretending otherwise helps no one.

- **Central air conditioning:** a big compressor motor with a large starting surge. It draws heavily while running and can drain a battery quickly.
- **Heat pumps:** they both heat and cool, and they're heavy loads too, with the same big motor surge — and they lean on electricity even for heating.
- **Electric resistance heat** (baseboards, electric furnaces, backup heat strips): among the hungriest loads in any home, drawing large, steady power the whole time they run.

! Heavy HVAC can outrun a battery

A big air conditioner or electric heater can drain a battery fast, and its starting surge can exceed what a single battery and inverter deliver at once — so it may not even start. Never assume a battery will run heavy heating or cooling. Only a licensed installer's load calculation can tell you what's truly possible for your home.

Why big motors and heaters are hard

Two different things make heavy HVAC demanding: the jolt to start, and the appetite while running.

A big motor, like an air conditioner's compressor, draws a large surge the instant it starts — often several times its running power. A battery has a limit on how much it can deliver at once, and a big surge can bump right up against that ceiling, or over it, so the unit stumbles or won't start.

Electric heat is a different challenge. It doesn't surge like a motor, but it draws a large, steady stream of power for as long as it's on, which empties a battery's stored charge quickly. Between the two, heavy HVAC is simply a lot to ask of stored energy.

✓ Two questions, one answer: the load calculation

How much a load surges, and how much it drains, are exactly what a proper load calculation measures. Our sizing guide covers capacity versus runtime and why heavy motors set the output your system needs. Leave the numbers to the installer — never guess them.

A soft-starter can help an air conditioner

There's a clever piece of gear worth knowing about if cooling is high on your wish list.

A soft-starter is a small device an electrician can add to an air conditioner or heat pump. It eases the motor up to speed instead of letting it slam on all at once, which shrinks that big starting surge. That can make the difference in whether a battery is able to start the unit at all.

It's not magic, though. A soft-starter tames the startup jolt, but it does nothing about how much power the unit draws while it runs. A big air conditioner is still a heavy, thirsty load, so a soft-starter is one tool in the plan, not a way to make cooling free.

✓ Ask whether a soft-starter fits your plan

If running the AC on battery matters to you, ask your installer whether a soft-starter makes sense for your unit. It's the kind of practical detail that can turn a maybe into a yes — or clarify an honest no.

A word on heat pumps

Heat pumps are increasingly common, and they deserve their own note because they do double duty.

A heat pump both heats and cools, moving heat rather than burning fuel. That makes it efficient in normal times, but it also means it leans on electricity for heating as well as cooling — so unlike a gas furnace, you can't lean on fuel to carry the heat when the power's out.

As a load, a heat pump behaves like the heavy hitters: a sizeable motor with a real starting surge, drawing meaningfully while it runs, and working hardest in the very cold that comes with winter outages. Backing one up is possible, but it's firmly a size-it-carefully job.

✓ Heat pump homes need a careful plan

If a heat pump is your only heat source, backup planning deserves extra care, since there's no fuel furnace to fall back on. A soft-starter, more battery, and a realistic must-run list all come into the conversation with your installer.

Two kinds of homes, two sets of needs

What's realistic for heating and cooling looks different for a close-in home with short outages than for a rural home that can lose power for days — and a private well adds a heavy load all its own.

If you live in town or the suburbs

In town or the suburbs, outages tend to be shorter, so a battery carrying the furnace's fan through a winter blip is often exactly the win folks are after, with cooling a nice-to-have to weigh carefully.

- Keeping a gas or oil furnace's blower running is often achievable and is usually the top heating priority.
- Running central AC on battery is the demanding wish; a soft-starter and careful sizing may help, or you plan to leave it off.
- Fans and a few fridges are light loads that a battery carries easily for hot-weather comfort even when the AC stays off.
- Shorter outages mean the furnace fan may only need to be carried for a while, which is kinder on the battery.

If you are out in the country on a well

Out in the country, outages run longer, so heat that lasts matters more — and the well pump is a heavy 240-volt load competing for the same battery. That changes what you can realistically ask it to do.

- A gas or oil furnace is a gift here, because its fuel heat keeps working as long as the battery can run the blower.
- A 240-volt well pump draws a big starting surge and competes with the furnace for the battery — one for the installer to size together.
- When the power's out the well is out, so store drinking water; heat and water both belong on the rural must-run list.
- Longer outages can outlast a battery, so many country homes pair one with a generator to carry heavy loads and long stretches.

★ Heat pump, furnace, or boiler?

Tell me how your home heats and cools and how long your outages run, and I'll help you picture what a battery can realistically carry. Call (330) 200-8042.

Electric heat: the hungriest case

If your home heats with electricity, it's important to know where that lands, because it's the toughest heating case for a battery.

Electric resistance heat — baseboard heaters, an electric furnace, or the backup heat strips inside some systems — makes warmth by pushing electricity through elements that glow hot. That's a large, steady draw the whole time it runs, and it empties a battery's charge quickly.

There's no fuel flame doing the work here, so unlike a gas furnace there isn't a light-load version to fall back on. Backing up electric heat for any real stretch usually means a lot of battery, and often it makes more sense to plan alternate warmth and leave the electric heat off on battery.

! Plan warmth another way if heat is electric

If your only heat is electric, don't count on a battery to run it through a long outage. Talk with your installer about realistic options, and have a safe backup plan for warmth. Never run a fuel-burning heater indoors to make up the gap — that's a carbon-monoxide risk a battery was meant to avoid.

Boilers and circulator pumps vary

If you heat with hot water or steam, your situation sits somewhere in the middle, and it's worth a closer look.

A boiler heats water with gas or oil, then circulator pumps push that hot water through radiators or floor loops. Like a furnace, the heat comes from fuel, and the electricity mainly runs the pumps and controls. A single circulator pump is often a modest load.

But systems differ. Some homes have several pumps or zones, and the total can add up. So a boiler isn't automatically light or heavy — it depends on your particular setup, which is exactly the sort of thing a load calculation is for.

✓ Have the whole heating system looked at

Whatever your heat — furnace, boiler, heat pump, or electric — the right move is to have an installer measure the real loads rather than assume. The answer for your home is specific to your home.

A realistic plan most homes can live with

Put it all together and a sensible pattern emerges for a great many households.

For most homes, the realistic plan is to back up the heat you can carry gently — a gas or oil furnace's blower, the controls, a few lights, the fridge — and to treat heavy central AC or electric heat as something to run only if sizing truly allows, or to leave off while you're on battery.

That's not a disappointment; it's a smart use of a finite charge. Keeping warm and keeping the essentials alive through an outage is a genuine win, and it's often achievable without the enormous system that whole-home cooling would demand.

✓ Warmth first, cooling if it fits

In our Ohio climate, a winter outage is usually the greater danger, so heat is the priority worth protecting first. Cooling can be layered in where sizing and budget allow — name your priorities and let the installer build to them.

Load management and adding battery units

If you do want to reach for the heavier loads, two ideas make it more achievable.

The first is load management: a smart panel that staggers big loads so they don't all switch on at once, or sheds a heavy one for a moment when the battery is working hard. It's a way to be clever with a finite charge rather than simply throwing more battery at the problem.

The second is stacking — adding more battery units to raise both how much power the system can deliver at once and how long it lasts. More output can help start a big motor; more capacity helps it keep running. Both cost more, so they're weighed against what you truly need.

✓ Size and stacking go together

Whether load management, stacking, or a soft-starter is the right answer is part of the load calculation. Our sizing guide covers capacity versus runtime, and our stacking guide goes deeper on adding units for the heavy loads.

Staying warm safely in a winter outage

A battery keeping the furnace fan running is a wonderful thing. These simple habits help whether or not the heat holds.

- ❑ Close off unused rooms and gather the household into one warm space to make the most of the heat you have.
- ❑ Dress in layers and keep blankets handy; trapped body warmth does a lot of the work.
- ❑ Keep curtains closed at night to hold heat in, and open sunny ones by day for a little free warmth.
- ❑ Never use a gas stove, oven, or an outdoor fuel heater to warm the house — that's a serious carbon-monoxide danger indoors.
- ❑ Check on elderly neighbors and anyone who chills easily; cold is hardest on those who feel it least.

! Fuel heat belongs outside, never indoors

One of a battery's quiet virtues is that it makes no fumes, so you're never tempted to bring a dangerous fuel heater inside. Keep it that way — if the heat runs low, layer up and get to warmth, but never burn fuel for heat in an enclosed space.

Staying cool when the AC is off

If running central air on battery doesn't pencil out, you're far from helpless in a summer outage.

Fans are light loads a battery runs easily, and moving air makes a real difference to how warm a room feels. A battery keeping fans, the fridge, and the internet going carries most homes through a hot-weather outage in decent comfort, even with the big AC left off.

Simple habits help, too: close blinds against the afternoon sun, open up in the cool of evening, hydrate, and rest in the coolest part of the house. For those who struggle with heat, plan a cooler place to go if an outage runs long during a heat wave.

✓ Fans plus a battery go a long way

You don't need whole-house cooling to be comfortable. A couple of fans on a battery, plus shade and airflow, cover a lot of ground — and they sip only a fraction of what the air conditioner would.

Questions worth asking before you decide

Heating and cooling is where honest questions save you from an expensive surprise. These keep the conversation grounded.

Q: Can a battery keep my heat running in a winter outage?

For a gas or oil furnace, often yes — it runs the blower and controls. For a heat pump or electric heat, it's a heavy load to size carefully. Ask which yours is.

Q: Can it run my central air conditioning?

Maybe, with careful sizing and perhaps a soft-starter, but a big AC is a heavy, thirsty load. Ask for a straight answer tied to your unit, not a best case.

Q: Would a soft-starter help my situation?

For an air conditioner or heat pump, it can ease the startup surge and make starting on battery possible. Ask whether it fits your equipment and plan.

Q: What happens if I ask for too much at once?

A well-designed system uses load management to stagger or shed heavy loads so nothing overloads the battery. Ask how yours handles a heavy load switching on.

✓ There's no silly question

This touches your comfort, your safety, and real money. Ask until you're sure — a good installer, or I, should welcome every single one.

Setting honest expectations

Knowing what a battery won't do keeps you satisfied with what it does. Especially here, honesty up front prevents regret.

A battery is a finite reservoir of energy. It shines at carrying the gentle loads — the furnace fan, lights, the fridge — through the outages most folks face. It is not a replacement for the grid's endless supply when it comes to running heavy central air or electric heat for hours on end.

If keeping the whole home's heating and cooling running through a long outage is your real goal, a battery may be one piece of the plan rather than the whole of it — often paired with a generator for the heavy, long haul. Naming that goal honestly is how you land on the right mix.

! Don't buy on a promise that ignores physics

If someone assures you a modest battery will run your central air and electric heat all through a multi-day outage, be skeptical. Heavy loads drain a finite charge fast. A trustworthy installer will tell you that plainly and size to what's real.

A few myths, cleared up

Some common beliefs about heating, cooling, and batteries just aren't so. Let's clear the air.

- **'A battery can run my whole HVAC system.'** Rarely, and only with a large, carefully sized system. Heavy AC and electric heat drain a finite charge fast.
- **'A gas furnace doesn't need electricity.'** It does — for the blower, controls, and igniter. No power means a cold furnace, which is exactly the gap a battery fills.
- **'A soft-starter lets a battery run any air conditioner.'** It eases the startup surge but not the running draw. A big AC is still a heavy, thirsty load.
- **'If I lose heat, I can warm the house with the stove.'** Never — a gas stove or oven indoors is a carbon-monoxide danger. Layer up and stay safe instead.

✓ When a pitch sounds too good, ask the plain question

How long will it really run my AC or electric heat, under a real Ohio outage? A good installer welcomes that question. So do I.

A simple way to tell if it's for you

Backing up heating and cooling suits some homes more than others. See which pattern sounds like yours.

- **You heat with a gas or oil furnace:** a battery can often keep the blower and controls running — a strong reason to back it up.
- **You heat with a boiler:** often workable, depending on how many pumps and zones you have — worth a proper look.
- **You heat with a heat pump or electric heat:** possible but demanding; expect careful sizing, and consider a generator for the long haul.
- **Cooling is your main worry:** weigh a soft-starter and honest sizing, or plan to lean on fans and stay comfortable another way.
- **You want the essentials plus heat:** that's the sweet spot — gentle loads a battery carries well through the outages you actually face.

★ Let's figure out your fit together

Tell me how your home heats and cools and what you'd want running, and I'll help you see honestly what a battery can carry — with nothing to sell you. Call (330) 200-8042.

Common Questions

The questions I hear most from folks weighing heating and cooling backup, answered plainly.

Q: Will a battery keep my furnace running?

For a gas or oil furnace, often yes. The fuel makes the heat; the battery just runs the blower and controls, which are modest loads a battery is well suited to carry.

Q: Can a battery run my central air conditioning?

It's demanding. A big AC has a large starting surge and a heavy running draw. With careful sizing and perhaps a soft-starter it may be possible, but it's not a given.

Q: What about a heat pump or electric heat?

Both are heavy loads. A heat pump leans on electricity even for heating, and electric heat draws a large, steady stream. Expect careful sizing, and consider a generator for endurance.

Q: What is a soft-starter?

A small device an electrician adds to an air conditioner or heat pump to ease its startup surge. It can help a battery start the unit, though it doesn't reduce the running draw.

Q: Should I heat with the stove if the furnace stops?

No — never use a gas stove, oven, or an outdoor fuel heater to warm your home. It's a serious carbon-monoxide danger. Layer up, close off rooms, and get to warmth if needed.

★ Still have questions? That's what I'm here for

Getting the heating-and-cooling plan right before you spend is exactly what I love to help with. Call or text me at (330) 200-8042 and let's talk it through, no pressure.

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 backing up your furnace and HVAC 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 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 a Battery Can Carry

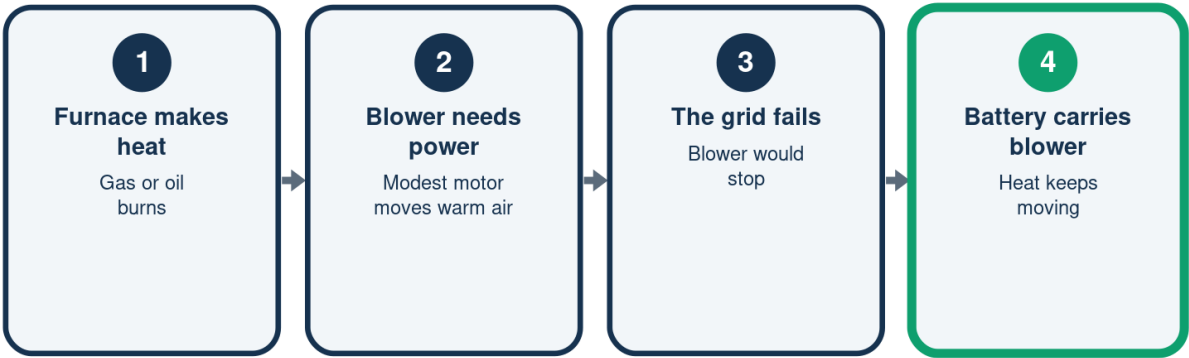
Gentle furnace fan vs a hungry AC

	Furnace blower	Central AC
Load size	Modest	Heavy
Starting surge	Small	Big jolt
On a battery	Often carries	Drains fast
May need	Little extra	Soft-start, more

Only a load calculation sizes heavy HVAC — never guess.

How a Battery Keeps the Heat On

Fuel makes the heat; the battery moves it



A cold furnace with fuel still needs power for its fan.

Heat vs Cool on a Battery

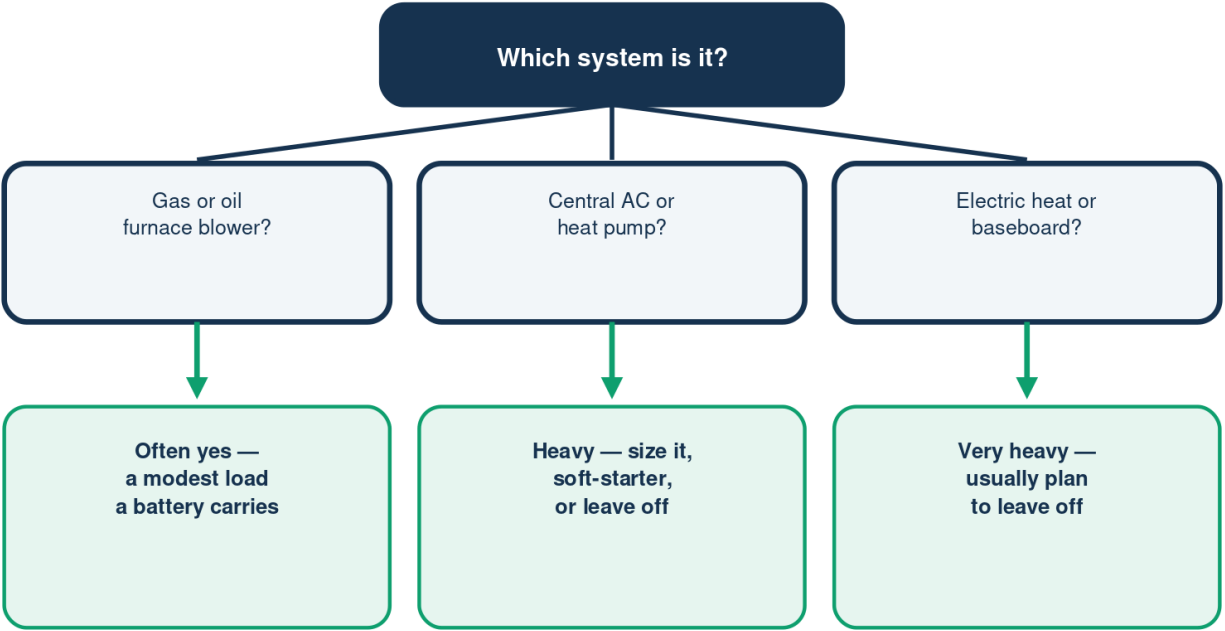
What's realistic to ask for

	Keeping heat	Whole-house AC
Typical load	Furnace blower	Compressor
Weight	Modest	Heavy
Realistic?	Often yes	Size carefully
Fallback	Usually fine	Fans, leave off

In an Ohio winter, protect the heat first.

Can a Battery Run My HVAC?

Which system are we talking about?



Only a licensed installer's load calculation can size heavy HVAC.

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



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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.

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