



An Extended Guide · No. 1218

What Size Generator Do You Need?

Watts made simple,
without the math headache

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 — carbon monoxide is the real danger

A running generator's exhaust contains carbon monoxide — an invisible, odorless gas that can kill in minutes. Never run a generator indoors, in a garage, in a shed, or on a porch, not even with the door open and a fan going. Run it outside only, well away from the house — the safety agencies say at least 20 feet — with the exhaust pointed away from every window, door, and vent. Put battery-backup carbon-monoxide alarms on each floor and outside the bedrooms. If an alarm sounds, or anyone feels dizzy, sick, or sleepy, get everyone into fresh air first and ask questions later. Getting the size right is part of that safety picture too — an undersized generator gets overloaded and pushed harder than it should be, so this whole guide is as much about safety as it is about comfort.

Let's make sizing simple

Watts, running watts, starting watts, surge — the words alone are enough to make anyone's eyes glaze over. This guide breaks sizing down into one plain method you can walk through at your own kitchen table, no math degree required.

I'm Bill, and sizing is the question I hear more than any other. Folks worry they'll buy too small and be stuck, or too big and waste money on a machine that's heavy, thirsty, and loud. The good news is there's a calm, reliable way to land on the right number, and it doesn't start with a number at all.

It starts with a list. Once you know what you want running, the math is just addition — and I'll walk you through exactly what to add. If you're also weighing features and fuel type, our guide on choosing a generator covers that side of things. This guide is the deep dive on the one part that trips people up: getting the size right.

★ Bring me your list too

If you'd rather skip the arithmetic altogether, jot down what you want to run and call or text me at (330) 200-8042 — I'll help you land on a comfortable size, free, with nothing to sell you.

The whole guide, on one page

If you remember only these things, you already have the method down.

- ❑ Running watts = steady power. Starting (surge) watts = a brief, much bigger jolt to get a motor spinning.
- ❑ Add up the running watts of everything you'd run at once.
- ❑ Add the single biggest surge on top — not every surge, just the largest one.
- ❑ Add a comfortable cushion on top of that total.
- ❑ Motors — fridges, pumps, air conditioners, furnace blowers — surge. Lights and heaters don't.
- ❑ Read the appliance nameplate for real numbers. Never guess.

✓ Add, don't stack, every surge

You add the single biggest starting surge once, not the starting surge of every motor in the house. Motors rarely all start at the exact same instant, and your generator only has to clear the highest jolt on top of everything already running.

Start with your list, not a number

Before a single watt gets added up, you need to know what you're actually trying to power. This is the step people skip, and it's the one that matters most.

Walk through your home the way you would during an outage and picture what you'd genuinely want running. Not everything — just what keeps you safe, fed, and comfortable. Write it down room by room, or just as a plain list on a notepad.

What tends to make the list

The fridge and freezer almost always make it. So do a few lights, phone chargers, the internet box, and anything medical. From there folks often add a furnace blower, a window air conditioner, a sump pump, or — out in the country — a well pump.

What can usually wait

The clothes dryer, the oven, a hot tub, a second air conditioner — big draws that are nice but not essential often get left off the must-run list, or added only if there's room to spare once the essentials are covered.

★ Once you have your list

Pairing your list with a machine's features — fuel type, start style, the safety features worth insisting on — is exactly what our guide on choosing a generator walks through. This guide focuses on the number itself.

Running watts — the steady number

This is the easier of the two numbers to picture: it's the power a generator can supply hour after hour, and the power most of your list needs most of the time.

Lights, a phone charger, a coffee maker, a television, a laptop — once they're on, they draw a fairly steady amount of power and keep drawing about that same amount the whole time they run. Add these up and you have the steady backbone of your total.

A fridge or a furnace blower also has a running number — the steady draw once the motor is already spinning. That's not the number that catches people off guard, though. The surge is.

✓ Running watts is the honest number

When you compare generators, the running (sometimes called 'rated') watts is the number to trust. A bigger number printed in bold on the box is very often the brief starting peak, not what the machine can deliver steadily — more on that next.

Starting watts — the surge that trips people up

Here's the idea that catches nearly everyone off guard the first time: for one or two seconds, a motor can ask for several times what it needs once it's up and running.

Think about why. A motor at rest has to overcome real resistance to start spinning — the compressor in a fridge, the fan in a furnace blower, the impeller in a pump. Getting it moving takes a much bigger shove than keeping it moving. That brief shove is the starting watts, or surge.

The surge lasts only a second or two, then the motor settles down to its ordinary running watts. But your generator has to be able to deliver that brief jolt the instant the motor calls for it, or the motor simply won't start.

! Undersize here and the symptoms are unmistakable

Ask a motor for a surge your generator can't deliver and you'll hear it — the generator bogs down, the lights dim, and the motor may hum, struggle, or refuse to start at all. If that happens, stop and lighten the load rather than trying again and again.

Which loads surge, and which don't

Once you can sort your list into these two buckets, sizing gets a lot less mysterious.

Type of load	Surges?	Examples
Motor-driven	Yes — often several times its running watts	Fridge, freezer, well pump, sump pump, furnace blower, air conditioner, power tools
Resistive / electronic	No real surge — draws about the same the whole time	Lights, space heaters, toasters, phone and laptop chargers, most TVs

The simple test: if it has a motor or a compressor, assume it surges. If it just makes heat or light, it doesn't.

✓ **When in doubt, assume it surges**

If you're not sure whether something has a motor tucked inside it, the safer assumption is yes. Treating a resistive load like it might surge costs you nothing; missing a real surge is what causes trouble.

Reading the nameplate

Every appliance has a small metal or plastic label — the nameplate — with the real numbers on it. This is where guessing ends and sizing begins.

Look on the back, the bottom, or inside the door. You're hunting for watts. If watts aren't listed, look for volts and amps instead — multiply them together and you get watts. That's the one bit of math this whole guide asks of you.

An illustrative example

Say a label lists a household voltage and a certain number of amps. Multiply the two and you have that appliance's running watts. A motor's nameplate may also list a locked-rotor or starting-amp figure — that's your clue to its surge, which can run several times higher than its running figure for that first second or two.

★ Photograph every label

Before you shop, walk around with your phone and snap a picture of the nameplate on the fridge, the furnace blower, the sump pump, and anything else on your list. Text them to me at (330) 200-8042 and I'll help you add it all up — free, no obligation.

The formula — putting it together

Five steps, done in order, and the arithmetic stays simple.

- ❑ Add up the running watts of everything on your must-run list.
- ❑ Find the single biggest starting surge among your motors — just the one, not all of them.
- ❑ Add that one surge on top of your running total.
- ❑ Add a comfortable cushion on top of everything.
- ❑ Compare that final number to a generator's starting-watt rating, not just its running rating.

✓ Why only the biggest surge

Motors essentially never all start in the exact same instant — you flip on one thing at a time. So your generator only has to clear your steady running total plus whichever single motor's surge is largest. That keeps the number from spiraling as you add more motors to the list.

A worked example, step by step

Numbers help less than a picture. Here's how the thinking goes, using a typical must-run list — fill in your own real figures from your own nameplates.

Say your list is a fridge, a few lights, phone chargers, and a furnace blower. Add the running watts of all four — that's your steady total. Now look at which of those four has a motor: the fridge and the furnace blower. Compare their two starting surges and keep only the larger of the pair.

Step	What you do
1. List	Fridge, lights, chargers, furnace blower
2. Add running watts	Steady total for all four
3. Find the biggest surge	Compare fridge vs. blower, keep the larger
4. Add it once	On top of the steady total
5. Add a cushion	Your shopping number

Notice what you did not do: you did not add both motors' surges together, and you did not need a single real number to follow the logic. Swap in your own nameplate figures and the same five steps get you to your actual number.

Headroom — why a little extra matters

Once you have your calculated number, resist the urge to shop for a generator that hits it exactly.

A generator working right at its ceiling runs hotter, works harder, and has nothing left in reserve the moment you plug in one more lamp or the fridge and the furnace happen to call for power at the same moment. Some cushion keeps ordinary daily life from becoming a balancing act.

That said, more isn't automatically better. A generator sized far beyond your real list costs more, weighs more, drinks more fuel, and — run lightly loaded all the time — isn't doing its engine any favors either. The goal is a sensible cushion above your real number, not the biggest unit on the lot.

! Don't size right to the edge

A generator run flat-out at its very limit, day after day, runs hot, strains, and wears faster — and leaves you nothing in reserve. A comfortable cushion above your calculated number is not overbuying; it's the buffer that makes the machine pleasant to live with.

Two kinds of homes, two sets of needs

How you size a generator changes with where you live and what's on your must-run list — especially whether a well pump belongs on it.

If you live in town or the suburbs

In town or a tighter suburban lot, the must-run list tends to be shorter and lighter. City water keeps flowing regardless of the power, so there's no pump surge to plan around, and the biggest motor on the list is often just the fridge or a window air conditioner.

- Your running total is usually modest — a fridge, lights, electronics, maybe a furnace blower.
- The single biggest surge is often the fridge or an air conditioner, not a huge figure.
- A comfortable cushion above that total, rather than a large reserve, is usually plenty.
- Our guide on choosing a generator covers matching this number to the right size class.

If you are out in the country on a well

Out on a well, the math changes the moment the pump joins the list. A 240-volt well pump is a serious motor with a serious surge, and it usually has to be on the must-run list — no power means no water at all, for drinking, cooking, flushing, or the animals.

- The well pump's starting surge is very likely the single biggest number on your whole list — size around it, not around the rest.
- Add the pump's running watts plus its surge, plus your other running loads, plus a generous cushion.
- A rural must-run list often also includes a sump pump or a chest freezer — read each nameplate rather than guessing.
- Getting the pump's real figures usually means reading its nameplate or asking your well company for its horsepower.

★ Not sure how the pump changes your number?

Well-pump sizing is one of the trickiest parts of this whole guide, because the surge is large and easy to underestimate. Tell me your pump's nameplate or horsepower and your other must-run loads, and I'll help you land on a comfortable number. Call (330) 200-8042.

The usual surge culprits

A handful of motors show up on almost every must-run list. Knowing them in advance means fewer surprises when you read the nameplates.

- **Refrigerators and freezers:** a compressor motor that cycles on and off all day, each time asking for a brief surge.
- **Well and sump pumps:** often the single largest surge in a rural home, especially a 240-volt well pump.
- **Furnace and boiler blowers:** the fan motor that pushes warm air through the house.
- **Window and central air conditioners:** a compressor much like the fridge's, just larger.
- **Power tools and shop equipment:** anything with a motor, from a table saw to an air compressor.

✓ Lights and heat almost never surge

If it makes light or heat and has no motor — a lamp, a space heater, a toaster, a phone charger — you can add its running watts and move on. The surge conversation is really a conversation about motors.

Taking turns — cycling loads so a smaller generator goes further

You don't have to run everything on your list at the exact same moment, and that fact can shrink the generator you actually need.

A fridge and a freezer both hold their cold for a good while with the door shut, so you can run one, then switch to the other, rather than powering both around the clock. The same goes for a microwave, a space heater, or a hair dryer — run it, then unplug it and move on to the next thing.

This kind of cycling is especially useful with a mid-sized generator asked to cover a bigger list than it could handle all at once. It takes a little more attention on your part, but it can mean the difference between a machine that fits your garage and budget and one that doesn't.

✓ Cycling isn't a compromise, it's a strategy

Plenty of experienced generator owners cycle loads on purpose, even with a generously sized machine, simply because it's gentler on the engine and the fuel tank. There's no shame in taking turns.

Build your own worksheet

Turn everything on these pages into your own real numbers using the appliances you actually own.

Item	Running watts	Has a motor?	Starting watts (if so)
Refrigerator	_____	_____	_____
Freezer	_____	_____	_____
Furnace / boiler blower	_____	_____	_____
Well or sump pump	_____	_____	_____
Lights (total)	_____	n/a	n/a
Phones, TV, internet box	_____	n/a	n/a

★ **Stuck filling it in?**

Photograph your filled-in worksheet, or just the nameplates themselves, and send them my way at (330) 200-8042. I'll help you do the adding and land on a number you feel good about.

Common sizing mistakes

A handful of avoidable slip-ups account for most sizing regret. Now you'll know them in advance.

- **Forgetting the surge entirely** and sizing only to the running watts, then wondering why the fridge won't start.
- **Adding every motor's surge together** instead of just the single largest one, and ending up with an inflated, overpriced number.
- **Guessing instead of reading the nameplate**, on the theory that 'it's probably fine.'
- **Leaving no headroom**, so the generator runs flat-out and struggles the moment anything extra gets plugged in.
- **Sizing for a want, not a must** — chasing a hot tub or a second air conditioner onto the list and buying far more generator than the essentials require.

! The costliest mistake is guessing low

An undersized generator doesn't just disappoint you — it can strain both the motor that won't start and the generator straining to start it. When your math sits close to a line between two sizes, it's almost always worth stepping up rather than down.

Signs you're asking too much of it

Even with careful math, real life sometimes asks more of a generator than planned. Here's how to recognize it and what to do.

- ❑ Lights dim or flicker when a motor tries to start.
- ❑ A motor hums, struggles, or won't start at all.
- ❑ The generator's engine bogs down or sounds strained under load.
- ❑ A breaker on the generator trips.

! Stop and lighten the load

If you see any of these signs, don't keep trying the same thing over and over — turn off or unplug something else first, then try again. Repeatedly forcing a stubborn start can be hard on both the motor and the generator. If it keeps happening, it's a sign to re-check your sizing math or call me at (330) 200-8042 for a second opinion.

When one generator isn't quite enough

Some smaller, inverter-style generators are built to link together — running two side by side as one combined power source.

If your list is just over what a single small unit covers, linking two can be a lighter, quieter path than jumping straight to one large machine.

This is a feature to look for when you shop, not a sizing rule of its own — the same running-plus-surge math still applies, just against the combined total of both machines. Our guide on choosing a generator covers which units offer this and what else to look for.

✓ Two small units, one plan

Pairing two linkable units can also mean a spare if one is ever in for service — a nice bonus for a household that leans on backup power often.

When your list says it's time for an electrician

If your must-run list includes anything wired into the house — a furnace, a well pump, central air — your sizing number is only half the plan.

Hardwired 240-volt loads can't simply be plugged into a cord. They call for a transfer switch or interlock kit installed at your panel by a licensed electrician, and a generator with a 240-volt outlet and enough surge headroom to start them. Sort out the hookup at the same time you size the generator, not after.

This guide stays focused on the number; our guide on connecting a generator walks through cords versus a transfer switch versus an interlock kit, and why a so-called 'suicide cord' is never the answer.

★ I'll help line up the electrician

Coordinating a licensed electrician for the panel work is part of what I do. Once you know your number and your must-run list, call or text me at (330) 200-8042 and I'll help you plan the whole hookup.

Questions to ask before you buy

Whether you're talking to a salesperson or to me, these are the questions that get you to the right number.

Q: Do I need to know exact wattage numbers before I shop?

You need your own appliances' numbers, from their nameplates — not a generic figure from an ad. Photograph a few labels and the shopping trip gets much easier.

Q: What if two things on my list might start at the exact same moment?

It's rare, but if you're worried about it — say a furnace blower and a fridge cycling on together — add both surges instead of just the larger one, for extra peace of mind.

Q: Should I size for today or for a bigger house someday?

Size for your real, current must-run list plus a comfortable cushion. If your needs grow later, that's a conversation for when it happens, not a reason to overbuy now.

Q: Is it worth paying more to size up one class?

Often, yes. The gap between 'just enough' and 'comfortable' is usually a modest step up, and it buys you quiet confidence instead of a machine straining at its ceiling.

✓ There's no silly question

If the math still feels murky after all this, that's completely normal — call or text me at (330) 200-8042 and we'll work through your list together.

Common Questions

The sizing questions I hear most often, answered plainly.

Q: Can I just add up every watt number on every box and call it done?

Not quite — boxes often print the brief starting peak in big bold letters. Look for the running (or 'rated') watts for your steady total, and treat any huge number with a little suspicion.

Q: Do I really need to add up starting watts for lights and electronics?

No — lights, chargers, and most electronics draw about the same power the whole time. The surge conversation is about motors only.

Q: What if I can't find a nameplate?

Check the manual, the manufacturer's website, or call the maker with the model number. As a last resort, a licensed electrician can measure it for you.

Q: Is it ever okay to just guess and see what happens?

Better to size carefully first. A motor that can't get its surge may just hum and refuse to start, which is a nuisance — but repeated attempts can strain the motor and the generator both.

★ Still adding it up?

Sizing is arithmetic, but it doesn't have to be arithmetic you do alone. Call or text me at (330) 200-8042 with your list and your nameplates, and let's land on your number together.

Bringing it all together

You now have the whole method: list what matters, add the running watts, add the single biggest surge, add a cushion. That's the entire calculation, no matter how big or small your home.

The number you land on is what carries into the rest of your shopping — it's the starting-watt figure a generator needs to clear comfortably. From there, our guide on choosing a generator covers matching that number to a size class, a fuel type, and the safety features worth insisting on.

And once you own it, our guide on connecting a generator picks up the story: cords for a few essentials, or a licensed electrician's transfer switch or interlock for anything wired into the house.

★ Let's do the math together

If you'd rather talk it through than do it on paper, that's what I'm here for. Call or text me at (330) 200-8042 with your must-run list, and we'll land on a comfortable, honest number — 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 sizing a generator 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

Running Watts vs. Starting Watts

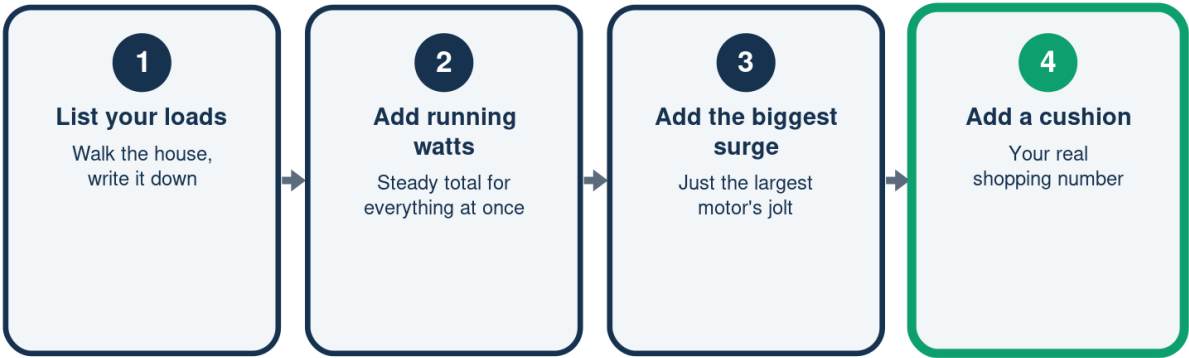
The one distinction that prevents most sizing mistakes

	What it means	Sizing tip
Running watts	Steady power draw	Add these all up
Starting watts	Brief motor surge	Add just the biggest
Motor-driven loads	Fridge, pump, AC	These are the ones that surge
Resistive loads	Lights, heaters	No surge to plan for

Add your running total plus the single biggest surge, then a cushion.

Sizing in Four Steps

The whole method, start to finish



Do these in order and the arithmetic stays simple.

Which Loads Surge?

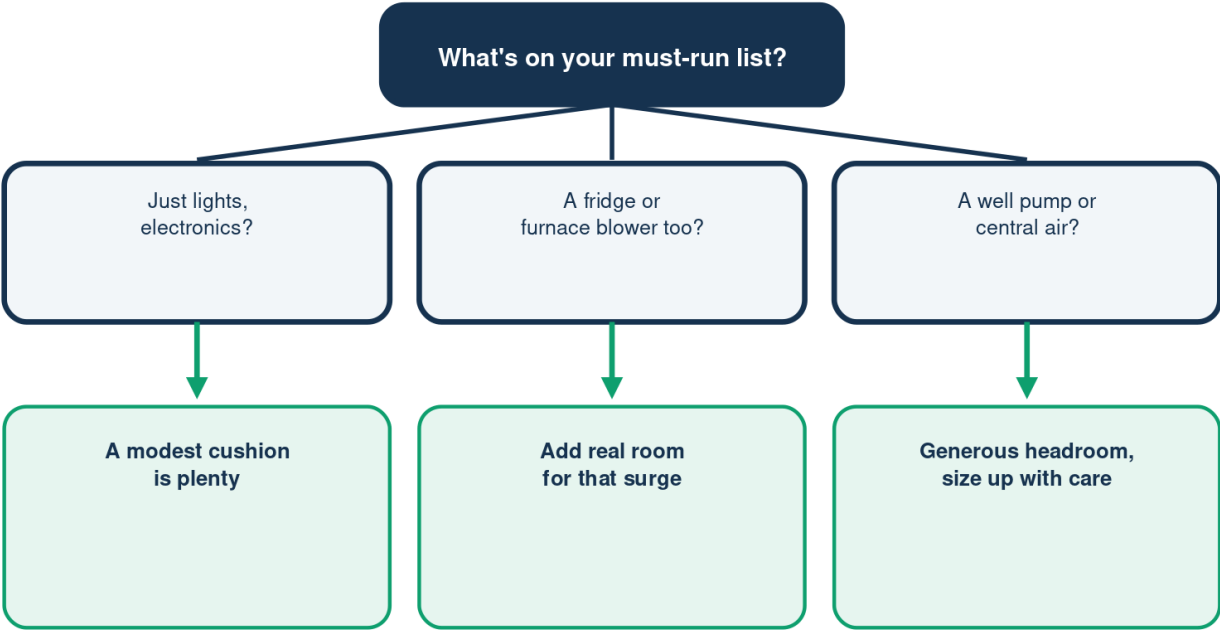
A quick reference for your must-run list

	Surges?	Watch for
Fridges & freezers	Yes	Compressor kicks on
Well & sump pumps	Yes, often large	Biggest surge on the list
Furnace / AC blowers	Yes	Fan motor starting
Lights & heaters	No	Steady draw only

If it has a motor, assume it surges. If it just makes heat or light, it doesn't.

How Much Headroom Do You Need?

Let your must-run list point the way



Guessing low is the most common sizing mistake -- when torn between two sizes, size up.

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