



An Extended Guide · No. 1350

Sizing an Automatic Transfer Switch to Your Home

Matching the switch to
your service and generator

Tech Made Simple — Service Made Personal

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! Read this first — this is licensed electrician's work

An automatic transfer switch is wired straight into your home's main electrical panel and works hand in hand with a standby generator. That makes installing one a licensed electrician's job from start to finish — almost always with a permit and an inspection — and never a do-it-yourself project. A big part of what the switch does is keep your generator's power from ever backfeeding onto the utility lines, which protects the crews working to bring your power back. Getting that right is exactly why the work belongs to a licensed pro. My job is to help you understand it, choose it, and live with it — not to open your panel. Sizing in particular is the electrician's math to do — your job is simply to know what you want to keep running.

Getting the size right, without the math

'What size do I need?' is the question I hear most about backup power — and the good news is you don't have to answer it with numbers. This guide explains, in plain English, how a transfer switch is sized to your home, so you understand what you're buying and can bring the right information to your electrician.

I'm Bill, and I help folks in Portage County make sense of this without the jargon. Here's the reassuring truth: the actual sizing math belongs to a licensed electrician, who reads it right off your panel and your generator. Your part is knowing what you want running — the rest is theirs.

So we won't throw watt and amp numbers at you. Instead, we'll cover the handful of ideas that help you understand the size your electrician arrives at, and why.

★ Bring me your list, not a calculator

You don't need to do any figuring. Text me your must-run list at (330) 200-8042 and I'll help you get it ready for an electrician to size accurately.

The whole guide, on one page

If you remember only these things, you understand sizing.

- ❑ The switch is sized to match two things: your home's electrical service and your generator.
- ❑ Both your service and the switch have an amp rating — your electrician reads yours right off your panel.
- ❑ Motors — fridge, furnace, well pump — need a big jolt to start, far more than they use running. Sizing accounts for that surge.
- ❑ Whole-home sizing carries everything; managed sizing carries the essentials plus the biggest load, and lets a smaller generator do more.
- ❑ You bring the must-run list; the electrician does the math and picks the equipment.
- ❑ It's all part of a licensed, permitted install.

✓ The one idea to hold onto

Size for the surge, not just the steady running power. That's the mistake that leaves a system too small — and it's exactly what a good electrician accounts for.

The switch has to match two things

A transfer switch doesn't stand alone — it has to agree with what's on either side of it.

On one side is your home's electrical service — the main supply your panel is built around. On the other is your generator. The transfer switch has to be rated to suit your service and matched to your generator's capacity. Getting both right is what makes the system work safely and reliably.

This is why sizing is genuinely a professional's job: it's not one number, but a matching of several parts. Your electrician looks at your service, your loads, and your generator together, and chooses a switch that fits them all.

✓ Think 'matched,' not just 'big enough'

Sizing isn't about picking the biggest switch — it's about matching the switch to your service and generator. A mismatch, in either direction, is the thing to avoid.

Running power vs. the starting surge

The one idea that prevents an undersized system is understanding these two kinds of power demand.

Running power

This is the steady power something uses hour after hour — what keeps lights lit and a refrigerator humming once it's going. It's the easy part to picture.

The starting surge

Anything with a motor — a fridge, a furnace fan, a well pump, an air conditioner — needs a brief, much larger jolt of power to get spinning, often several times its running power, for just a second or two. That surge is what trips up a system sized only for steady running.

✓ Surge is brief but decisive

The starting jolt lasts only a moment, but it's the moment your system has to be ready for. Sizing for the biggest surge, on top of everything running, is the heart of getting it right.

Which things surge, and which don't

Knowing what surges helps you understand why your electrician sizes the way they do.

Anything with a motor surges when it starts: the refrigerator and freezer, the furnace blower, a well or sump pump, an air conditioner, power tools. The well pump is often the biggest surge in a home, which is why it looms so large in sizing for rural properties.

Things that just make heat or light — lamps, space heaters, a kettle, the toaster — don't surge; they simply draw their steady power. So a home full of motors needs more headroom than one running mostly lights and heat.

✓ The well pump often decides it

For homes on a well, the pump's big starting surge is frequently the single load that decides the size of the whole system. It's worth flagging to your electrician early.

Your service, and its rating

Your home's electrical service has a rating — and it's part of what a service-suited switch is matched to.

That rating is measured in amps, a measure of how much electricity your home can draw at once. Homes differ, and I won't guess yours — your electrician reads the number right off your main breaker or panel label. A switch meant to serve at your service entrance is chosen to suit that rating.

You don't need to know or memorize your service size. If you're curious, your electrician will happily point it out on your panel. The important thing is simply that the switch is matched to it — which, again, is their job, not yours.

✓ No need to hunt for a number

Please don't go poking around your panel looking for numbers — leave that to the electrician. If you want to understand your setup, I'm glad to look at it with you safely.

How coverage changes the size

How much you want to back up is the biggest single factor in the size you'll need.

Sizing for whole-home coverage means the generator must carry everything that could run at once — a bigger machine. Sizing for a managed, essentials setup means carrying your essentials plus the single biggest load, and trusting load management to keep the other giants from piling on — which lets a smaller generator cover the same home.

So the whole-home-versus-managed choice is really a sizing choice. Our guides on that comparison and on load management explain how the same house can need very different-sized systems depending on which you pick.

✓ **Managed can shrink the size a lot**

If a smaller, cheaper system appeals, ask your electrician to size it both ways — whole-home and managed. The difference can be striking, and it's money in your pocket.

How the electrician gathers what they need

To size accurately, an electrician needs two things — and you can help gather both.

First, your must-run list: what you want to keep running, which our choosing-your-circuits guide helps you build. Second, if you already own or have chosen a generator, its information — the nameplate and manual, which state its capacity. With those two, plus a look at your panel, an electrician can size the system properly.

If you're still shopping for the generator, sort out your must-run list first and let it guide the generator you buy. Either order works, as long as the list and the generator get compared before installation.

★ I'll help you gather it

Send me photos of your panel and any generator you're considering, plus your must-run list, and I'll help you put together exactly what an electrician needs to size things right. Call (330) 200-8042.

The best news: you don't do the math

If numbers make your eyes glaze, take heart — none of this is yours to calculate.

Adding up running power, accounting for surges, matching the switch to your service and generator — all of that is the licensed electrician's job, and they're trained and equipped to do it correctly for your specific home. Your role is to know what matters to you and to share it clearly.

That's a genuine relief for a lot of folks. You don't have to become an electrician to make a good decision — you just have to be honest about what you'd want running, and let the pros handle the figures.

✓ Your expertise is your own home

You know your home and your life better than any calculator. That knowledge — what you'd truly want running — is the valuable part. The math is the easy part for a pro.

Two kinds of homes, two sets of needs

Sizing looks different in town than in the country — mostly because of one demanding appliance many rural homes have and most town homes don't: the well pump.

If you live in town or the suburbs

In town or the suburbs, city water flows regardless, so there's no well pump to size around. Your essentials — fridge, furnace, lights — are lighter, which means a managed system with a smaller generator often covers your home comfortably.

- No well pump usually means a smaller starting surge to plan for.
- A managed, essentials setup often fits a town home nicely, keeping the generator small and quiet.
- Shorter outages make a modest system's limits rarely tested.
- Whole-home is still an option if you want everything covered and the budget allows.

If you are out in the country on a well

Out in the country on a well, the well pump's big starting surge is often the single load that sizes the whole system. When the power quits, the pump must be able to start — and undersized power makes a pump hum, heat, and struggle. So rural sizing centers on getting that surge right.

- The well pump's starting surge frequently decides the generator and switch size for a rural home.
- Load management helps a smaller generator handle the pump by keeping other giants from starting at the same instant.
- Longer rural outages reward a system sized with a sensible cushion, not squeezed to the bare minimum.
- Tell your electrician about the well early — it's the load that shapes everything else.

★ On a well? Let's size around the pump

The well pump is usually the load that matters most for sizing. Tell me about yours and your must-run list, and I'll help you get ready for an accurate quote. Call (330) 200-8042.

Right-sized beats too big or too small

There's a sweet spot, and it's worth aiming for it rather than erring wildly in either direction.

Too small, and the system can't carry your loads or start your motors — the very failure you bought it to prevent. Too big, and you've paid for a larger, thirstier generator than you need, one that isn't ideal running lightly loaded all the time. The right size carries your list, starts your biggest motor, and keeps a sensible cushion — no more.

A good electrician aims for that sweet spot honestly, rather than always steering you to the biggest, priciest option. If a quote seems oversized for your list, it's fair to ask why.

! Bigger isn't automatically better

An oversized system costs more up front, burns more fuel, and loafes along below its capacity, which isn't ideal for it. Match the system to your list, plus a cushion — not to your worries.

The generator is sized alongside the switch

The switch and generator are sized together — one doesn't make sense without the other.

There's no point in a switch rated for far more than your generator can deliver, or a generator whose power your switch and circuits can't use. So your electrician sizes them as a pair, to your must-run list. Our guide on pairing a switch with a standby generator covers how the two fit together.

This is another reason to settle your coverage and gather your list before shopping: it lets the whole pair be sized as one, rather than buying a generator and hoping a switch fits it later.

✓ Size the pair, not the parts

Whenever possible, let the generator and switch be chosen together, to your list. It avoids the classic mismatch of a fine generator and a switch that doesn't suit it.

How to get an accurate quote

A good size starts with good information. Here's how to give an electrician what they need.

- ❑ Have your must-run list ready — what you'd keep running in a long outage.
- ❑ Note whether you're on city water or a private well (the pump is a big sizing factor).
- ❑ Have any generator's nameplate and manual handy, if you already own or chose one.
- ❑ Let the electrician see your panel and meter in person.
- ❑ Mention any big plans — an addition, electric heat, a hot tub — so they size for tomorrow.

★ I'll help you prep for the visit

Getting these ready makes the quote faster and more accurate. Text me and I'll help you gather everything before the electrician comes. Call (330) 200-8042.

Sizing is part of a licensed install

The sizing and the installation go together, and both belong to a licensed electrician.

The electrician who sizes your system is the one who installs it, under a permit, with an inspection to confirm it meets code. That continuity matters: the person doing the math is accountable for the result. Our install-and-permit guide covers the whole process.

! Don't let a guess replace a professional's math

No online calculator or well-meaning neighbor can size your system as reliably as a licensed electrician who has seen your panel. Sizing wrong is exactly the failure you're trying to avoid — leave it to the pro.

Safety, briefly

Sizing is about capacity, but the usual safety truths still hold for the system it produces.

! The generator still makes carbon monoxide

A standby generator burns fuel, so its exhaust still contains carbon monoxide — an invisible, odorless gas that is dangerous to breathe. Yours lives permanently outdoors, and your installer sets it the manufacturer's required distance from windows, doors, and vents so the exhaust drifts safely away from the house. You never have to place it yourself, but do keep that area clear, never box the unit in or enclose it to quiet it down, and keep tested carbon-monoxide alarms inside the house all the same.

And remember the whole system is wired as licensed, permitted work that keeps your generator's power off the utility lines. A right-sized system that's poorly installed isn't safe, and a well-installed system that's undersized isn't reliable — you want both done right, by a pro.

! Undersizing has real consequences

An undersized system can leave a motor straining to start — which can damage the motor and disappoint you at the worst moment. Getting the size right is a safety and reliability matter, not just a comfort one.

Common sizing mistakes

A few avoidable missteps account for most sizing regret.

- **Sizing for steady power only**, forgetting the big starting surge of motors — and ending up too small.
- **Over-buying out of worry**, paying for a thirsty generator far bigger than the list needs.
- **Forgetting the well pump**, the load that most often decides a rural system's size.
- **Not planning for future loads**, then outgrowing the system sooner than expected.
- **Trusting an online guess** over a licensed electrician who has seen your actual panel.

! The two-sided mistake

Too small fails you in an outage; too big wastes your money and fuel. The goal is right-sized — and that's exactly what a good electrician aims for.

Questions to ask about sizing

These help you understand — and trust — the size you're quoted.

Q: What did you size this to run, and did you include the biggest surge?

You want confidence the system covers your list and can start your biggest motor, not just carry steady power.

Q: Could a managed system cover my list with a smaller generator?

Ask them to size it both ways so you can weigh the savings of a smaller, managed setup.

Q: How much cushion did you build in?

A sensible cushion is good; a huge one may mean you're over-buying. It's fair to ask them to explain.

Q: Did you account for my well pump and any future loads?

Make sure the pump — and anything big you're planning — is in the sizing, not discovered later.

✓ There's no silly question

A good electrician welcomes questions about sizing and will explain their reasoning plainly. If someone won't, get a second opinion.

Common Questions

The questions I hear most about sizing, answered plainly.

Q: What size transfer switch do I need?

The one matched to your electrical service and your generator, sized to your must-run list. Your electrician reads your service's rating off your panel and does the math — you bring the list.

Q: Why does the starting surge matter so much?

Motors — fridge, furnace, well pump — briefly need several times their running power to start. If the system is sized only for steady running, it may not start them. Sizing for the surge prevents that.

Q: Can a smaller generator really cover my home?

Often, yes — with load management, which lets the biggest appliances take turns. Ask your electrician to size it both ways; the savings can be real.

Q: Do I need to know my home's amp rating?

No — your electrician reads it right off your panel. You don't need to hunt for numbers; just bring your must-run list.

Q: Is bigger safer?

Not really — an oversized generator costs more, burns more fuel, and isn't ideal running lightly loaded. Right-sized, with a sensible cushion, is the goal.

★ Want help getting ready to size?

Call or text me at (330) 200-8042 with your must-run list, and I'll help you gather everything an electrician needs to size your system right.

What I do to help

Sizing is the electrician's math — but there's plenty I can do to help you get a good one.

- **What I help with:** building your must-run list, gathering your panel and generator info, and lining up a licensed electrician who sizes honestly.
- **What only a licensed electrician does:** read your service rating, do the sizing math, and install the matched system under a permit.
- **What I never do:** the sizing calculations or the wiring myself, or push you toward a bigger system than your list needs.

★ Call before you get quotes

A little prep makes for a faster, more accurate quote. Reach me at (330) 200-8042 and I'll help you get ready.

A simple prep checklist

Bring these to your electrician and sizing goes smoothly.

- ☐ My must-run list — what I'd keep running in a long outage.
- ☐ Whether I'm on city water or a private well.
- ☐ Any generator's nameplate and manual, if I already have one.
- ☐ Photos of my panel and meter (or access for an in-person look).
- ☐ Any big future plans — an addition, electric heat, a hot tub.
- ☐ Whether I'd prefer whole-home or a smaller, managed system.

✓ Preparation is your superpower

You can't do the math, but you can make it easy and accurate. A clear list and good photos are worth more than any calculator.

The bottom line on sizing

Let me sum it up in a few plain sentences.

A transfer switch is sized to match your electrical service and your generator, to carry your must-run list — including the big starting surge of your motors, especially a well pump. Whole-home needs a bigger system; a managed setup lets a smaller one cover the same home.

You don't do any of the math. You bring an honest list of what you'd keep running, note your well if you have one, and let a licensed electrician size and install the system. That's the whole job, and it's a very doable one.

★ Right-sized, done right

Get the size right once, with a trustworthy pro, and your system serves you well for years. I'm glad to help you get there. Call (330) 200-8042.

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 your transfer switch 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.

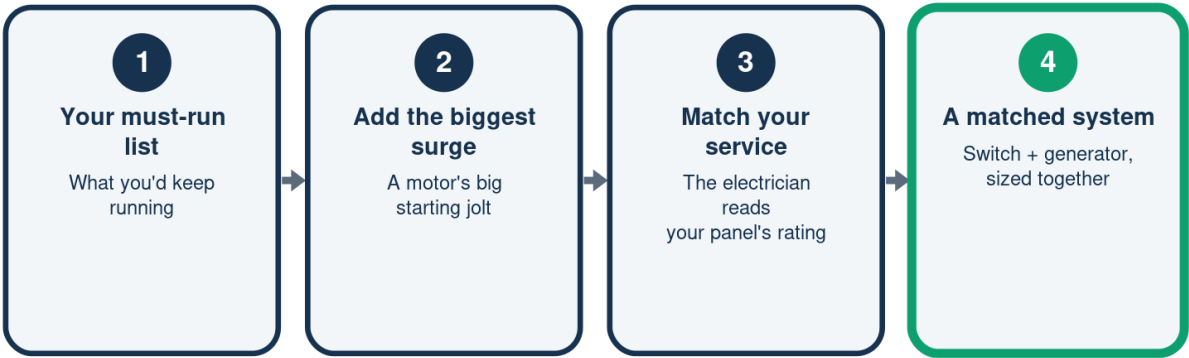
When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat \$99, and for the parts that don't need me on-site I can often help right on your screen for \$49. Every visit comes with a 30-day,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

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How Your System Gets Sized

You bring the list; the pro does the math



No numbers for you to crunch -- just an honest list to bring.

Too Small, Too Big, Just Right

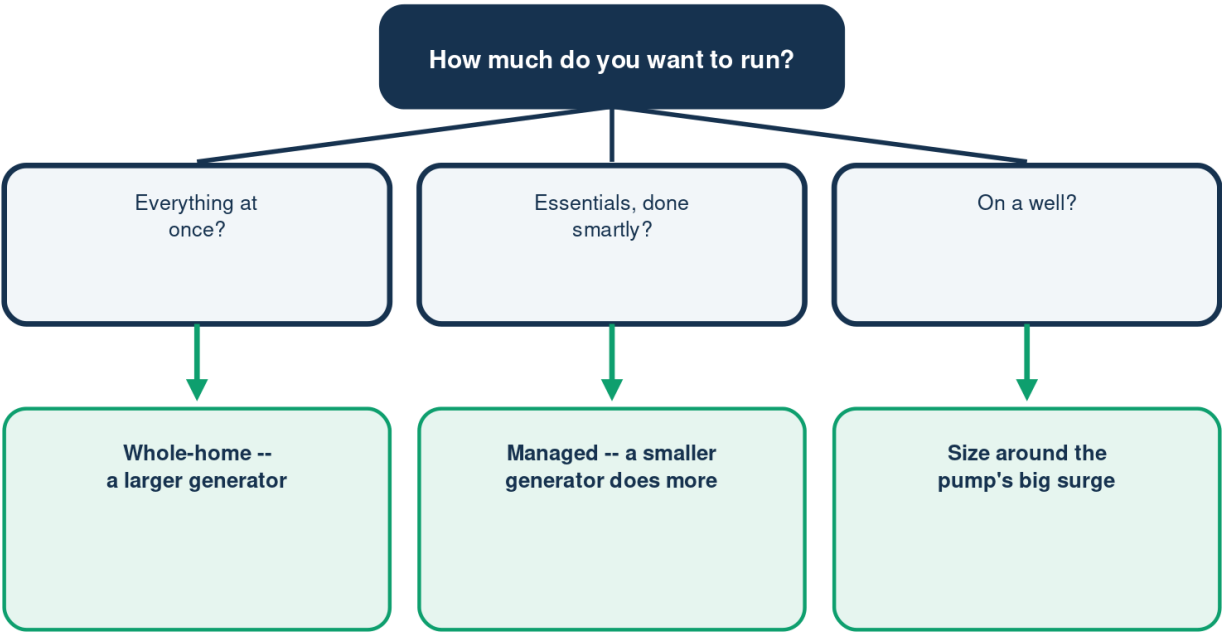
Aim for the sweet spot

	The size	What happens
Too small	Can't start motors	Fails in an outage
Too big	Costs & burns more	Loafs, not ideal
Right-sized	Carries your list	Plus a cushion

A good electrician aims for right-sized, not biggest.

How Coverage Changes the Size

How much you back up drives the size



Ask your electrician to size it both ways -- the savings can be real.

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

What to Bring Your Electrician

Good information makes an accurate size

	Bring	Why
Must-run list	What to run	Sets the size
Well or city water	The pump surge	Big factor
Generator info	Its capacity	Matches the switch
Panel photos	Your service	Sets the rating

You supply the list; the professional supplies the math.



Need a Real Person?

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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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