



An Extended Guide · No. 1284

Powering Your Whole House Safely: Transfer Switches & Interlocks

Backfeeding kills.
Here's what's safe.

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! Before you begin — a quick safety note.

This guide covers work involving household electricity and backfeed, which can cause serious injury, fire, or property damage if something goes wrong. It's here for general information only, not professional advice. If you're not completely comfortable — or if your local codes require a licensed pro — please stop and hire a qualified licensed electrician. Turn off the power at the breaker before any electrical step. Never work on gas lines yourself; if you smell gas, leave right away and call your gas company or 911. There's no shame in calling a pro — that's often the smart, safe choice. You follow this guide at your own risk. — Bill

A Note From Bill

Of everything I teach about generators, this is the page I most wish everyone read before their first outage. There's exactly one dangerous way to power your house with a generator, and two genuinely safe ones — and mixing them up has real consequences.

This guide walks through the danger clearly, then the two safe options in plain language, so you know exactly what to ask an electrician for.

What you'll get out of this guide

- What “backfeeding” actually is, and why it can kill a utility lineworker
- The two safe ways to power your home's circuits: transfer switches and interlock kits
- What an exterior inlet box does, and how it all connects
- The code that governs this work, and why it matters
- Notes for town homes and for homes leaning on a well pump

★ This isn't a DIY page, and that's okay

I'd rather you read this and hire it out right than save a little money and risk everything. I'm glad to help coordinate it — (330) 200-8042.

The Whole Idea in One Page

If you read only one page today, make it this one.

- ❑ Never plug a generator into a regular wall outlet to power the house — it can electrocute a utility lineworker and destroy your own equipment.
- ❑ A manual transfer switch is a dedicated switch box that lets you choose specific circuits to run on generator power.
- ❑ An interlock kit is a simple mechanical device on your existing panel that lets you use the panel's own breakers, safely, one power source at a time.
- ❑ Both connect through an exterior inlet box and must be installed by a licensed electrician, to code (NEC 702).
- ❑ For smaller needs, heavy-duty extension cords are a safe alternative — there's a whole guide on that.

✓ One phrase to remember

If anyone ever suggests plugging a generator into an outlet to power the house, the answer is always no. There's always a safe way instead.

The Danger: What “Backfeeding” Actually Is

Backfeeding means sending a generator's power backward into your home's wiring through a regular wall outlet, instead of forward to the things you plug into the generator directly.

Some people call this a “**suicide cord**” — a regular extension cord wired with a plug on both ends, so one end goes into the generator and the other into a wall outlet. It sounds like a clever shortcut. It's actually one of the most dangerous mistakes you can make with a generator.

! There is never a good reason to do this

Not in an emergency, not just this once, not because an electrician is a few days out. Never.

Why Backfeeding Can Kill a Lineworker

This is the part that surprises people most: the danger isn't just inside your own house.

When a generator backfeeds through a wall outlet, its power doesn't stay contained to your home. It travels **backward** through your wiring, out through your electric meter, and onto the same lines that run to your neighbors' homes and down your street — lines a utility crew may reasonably believe are dead while they're repairing an outage. A generator feeding power onto those lines can seriously injure or kill someone working on them, possibly blocks away.

! It's not just about your own safety

This is the rare home-electrical mistake that can hurt someone who has no idea you even own a generator.

The Other Danger: Fire and Equipment Damage

Even setting the lineworker risk aside, backfeeding is hard on your own home.

- Your generator's power and the utility's power can collide the moment utility service returns, which can seriously damage your generator, your appliances, and your home's wiring.
- Household wiring not designed for this use faces a real fire risk when overloaded this way.
- None of this is covered the way a proper, code-compliant installation would be.

✓ The safe way protects everything at once

A transfer switch or interlock kit avoids every one of these risks at once — that's exactly why it's worth doing right.

The Two Safe Ways, At a Glance

Here's the good news: the safe alternative to backfeeding isn't complicated. It's one of two devices, both installed by a licensed electrician.

	What it is
Manual transfer switch	A dedicated switch box, separate from your main panel, with its own switches for the circuits you've chosen ahead of time.
Interlock kit	A simple mechanical piece added to your existing panel that lets you safely use the panel's own breakers, one power source at a time.

Both do the same essential job: they make it physically impossible for generator power and utility power to be connected to your home's circuits at the same time.

✓ **More detail on each just ahead**

The next two pages walk through each option on its own, so you know what you're looking at either way.

Meet the Manual Transfer Switch

Think of this as a small, dedicated control panel just for your generator circuits.

- Installed near your main panel, wired to a handful of circuits you and your electrician choose ahead of time — furnace, fridge, some lights, maybe the well pump.
- During an outage, you plug the generator into the inlet box, then flip the transfer switch's own switches to move those circuits to generator power, one at a time.
- It's physically impossible for those circuits to draw from both the utility and the generator at once.

✓ You decide what's on the switch

Choosing which circuits land on the transfer switch is worth doing thoughtfully — there's a whole guide in this series on picking your household's essentials.

Meet the Interlock Kit

An interlock kit takes a different approach: instead of a separate switch box, it modifies your existing panel.

- A small mechanical piece is added to your main panel that physically blocks the main utility breaker and a dedicated generator breaker from both being switched on at the same time.
- During an outage, you switch off the main breaker, switch on the generator breaker, and then use your panel's own regular breakers to choose which circuits get power — just like normal, but running on the generator instead of the utility.
- This often means you can power more of the house circuit-by-circuit, on the fly, rather than being limited to a fixed handful wired to a separate switch.

✓ Often the more flexible everyday option

Because you're using your panel's own breakers, an interlock kit lets you choose differently each time, depending on what you actually need that day.

Choosing Between Them, in General Terms

Neither one is the “right” answer for every home — it's a genuine trade-off worth talking through with your electrician.

- A transfer switch is often simpler to operate under stress — just flip the switches for the circuits you already picked.
- An interlock kit is often less expensive to install and gives you the flexibility of your panel's full set of breakers, but asks you to think through which breakers to flip each time.
- Your home's specific panel, its age, and its layout can make one option more practical than the other — exactly the kind of thing an electrician should walk your panel and advise on.

★ I'm glad to help you think it through

I don't install these myself, but I'm glad to help you understand the trade-off for your specific home before your electrician gives you a quote.

The Exterior Inlet Box

This is the part you'll actually see and touch outside your home.

An **inlet box** is a weatherproof outlet mounted on the outside of your house, wired through to your transfer switch or interlock. Instead of running a cord through a cracked window or door — which you should never do — you run one heavy cord from the generator straight to this outdoor inlet. A common style is a 240-volt twist-lock connector, often called an **L14-30**, matched to a properly sized double-pole breaker feeding it from inside.

✓ One cord, one connection point

Once the inlet is installed, connecting the generator each time is as simple as running one cord from the generator to that single outdoor point.

The Double-Pole Breaker and the Wiring Behind It

You don't need to understand the wiring in detail — but a quick picture helps you follow along with your electrician.

- A correctly sized **double-pole breaker** feeds the inlet box from inside the panel — this is what a licensed electrician selects and installs to match your setup.
- That breaker, the inlet box, and the transfer switch or interlock all have to be sized and matched to each other, not picked separately.
- This is precisely why it's licensed-electrician work from end to end, rather than a mix of DIY pieces.

! Mismatched parts are a real risk

An inlet, breaker, and switch that don't match each other properly can be just as dangerous as no protection at all. Let one electrician spec and install the whole system.

NEC 702 and Why the Code Matters

There's a specific section of the National Electrical Code devoted to exactly this kind of setup — and it's not red tape for its own sake.

NEC 702 covers optional standby power systems like a portable generator connected through a transfer switch or interlock. Following it means your installation is inspected, documented, and built to a known safety standard — not just “probably fine.” A licensed electrician builds to this code as a matter of course, and a permit and inspection typically go along with the job.

✓ Ask if you're not sure

It's completely reasonable to ask your electrician how the installation meets code, and whether a permit and inspection are included.

For Town & Suburb Homes

Town and suburban homes usually connect the same two safe ways — a few details just look a little different.

- A modest transfer switch or interlock covering the fridge, furnace blower, a few lights, and a sump pump handles most in-town outages comfortably.
- Homes sitting close together make the outdoor inlet's placement worth some thought — somewhere convenient, but not right under a bedroom window.
- Your local building department typically handles the permit and inspection — your electrician usually manages this as part of the job.
- Shorter, more frequent outages mean you'll likely use this setup a handful of times a year, which makes getting comfortable with it worthwhile.

✓ Not every home needs the works

If your list of essentials is short, an interlock kit sized for a modest household is often plenty — no need to over-build it.

For Country & Well-Water Homes

Out in the country, this connection usually has one job that matters more than any other: getting the well pump onto the generator safely.

- Whichever you choose — transfer switch or interlock — make sure the well pump's 240-volt circuit is specifically included; there's a whole guide in this series on backing up a well pump and its starting surge.
- A transfer switch dedicated to your true essentials (well pump, furnace, freezer) is a popular rural choice, since it's simple to operate correctly even when you're tired or it's dark.
- An interlock kit can work just as well and often costs less, provided you're comfortable choosing the right breakers each time you use it.
- Longer rural outages mean you'll be relying on this connection for days at a stretch, not hours — worth confirming it's sized generously.

★ Water is worth doing right

Getting a well pump safely onto a transfer switch or interlock is one of the jobs I take most seriously. Let's make sure it's set up so it just works when you need it.

Deciding Which Circuits to Power

Whichever device you choose, at some point you — and your electrician — decide what actually lands on it.

This is really a sizing and priorities question more than an electrical one — there's a whole guide in this series on choosing your household's essentials, and another on sizing a generator to match them. Bring both to your electrician conversation; they'll help translate your priority list into the actual circuits that get wired to the switch or freed up on the interlock.

✓ Do this homework first

Walking into an electrician's quote with your essentials list already in hand makes the whole conversation faster and more accurate.

Hiring the Right Electrician for This Job

Most licensed electricians can do this work, but a little bit of vetting still helps.

- Ask whether they've installed generator transfer switches or interlock kits before, specifically.
- Confirm they'll pull the permit and schedule the inspection as part of the job.
- Ask them to explain, in their own words, how their proposed setup prevents backfeeding — a confident, clear answer is a good sign.
- Get the scope in writing: the switch or interlock, the inlet box, the breaker, and which circuits are included.

★ I keep a short list

I work with licensed electricians I trust around Portage County and I'm glad to make an introduction, rather than you picking a name at random.

What Installation Day Looks Like, in General Terms

Knowing roughly what to expect makes the day feel a lot less mysterious.

- Your electrician confirms the plan: which circuits, which device, and where the inlet box will go outside.
- The panel work happens with your home's power safely shut off during that portion of the job.
- The inlet box gets mounted outside, wired back to the new breaker and switch or interlock.
- Everything gets tested — often with the generator itself — before the electrician calls it done, followed by inspection.

✓ Ask for a live test before they leave

A quick real-world test, generator and all, while your electrician is still there, is worth asking for. It's much easier to fix a hiccup on the spot.

Using It Safely, Every Single Outage

Once it's installed, using it correctly is refreshingly simple — as long as you follow the order.

- Set the generator up in its safe outdoor spot and start it before connecting anything.
- Plug the cord into the generator, then into the exterior inlet box.
- Follow your specific device's order for switching over — a transfer switch's dedicated switches, or an interlock's main-off/generator-on breaker sequence.
- To switch back, reverse the order: return to utility power first, then shut the generator down.

! Keep the instructions where you'll find them

Tape a laminated, step-by-step reminder near the panel or inlet box. A calm afternoon is a much better time to memorize the order than a dark, stormy night.

While We're Talking Connections: The Rule That Matters Most

A safe electrical connection is only half the picture. Running the generator itself safely is what actually protects your family.

A running generator gives off **carbon monoxide**, or CO, no matter how it's connected to your house. It's **invisible**, has **no smell**, and can make you pass out or worse before you ever realize anything is wrong.

- Run the generator **outdoors only**, at least **20 feet** from the house, exhaust pointed away from doors and windows.
- **Never** in a garage, basement, shed, or carport — not even with the door open.
- Put **battery-backup CO alarms** on every floor, near the bedrooms, and test them.
- If an alarm sounds, or anyone feels dizzy, headachy, or sick, get everyone **outside into fresh air** right away and call 911.

! A safe switch doesn't replace a safe spot outside

Even the best transfer switch or interlock doesn't change where the generator itself needs to sit. Outdoors, far from the house, every time.

When to Give Me a Call

You can absolutely understand this whole subject on your own — that's what this guide is for. But this is exactly the kind of job worth having company for.

- Deciding between a transfer switch and an interlock kit for your specific home.
- Connecting you with a licensed electrician I trust for the installation.
- Working out which circuits belong on the switch, based on your household's essentials.
- Backing up a well pump's 240-volt circuit specifically.
- A yearly test-run of the whole setup so it's ready when you need it.

I come to you, here in Portage County and nearby, and explain everything in plain language at whatever pace suits you.

★ Bill's Home Tech

Call or text (330) 200-8042. Tech Made Simple, Service Made Personal. Every visit is \$99 flat and 30-day come-back-free — if you're not happy, I'll make it right.

Everyday Cheat Sheet

Dog-ear this page or copy it onto a card. It's the quick answer to the things that come up most.

I want to...	Remember this
Power the house safely	A transfer switch or interlock kit, installed by a licensed electrician.
Never do this	Plug a generator into a wall outlet — it can electrocute a lineworker.
Choose a device	Transfer switch: dedicated circuits, simple to flip. Interlock: uses your panel's own breakers.
Connect each time	One heavy cord, generator to the exterior inlet box.
Cover the well pump	Make sure its 240-volt circuit is specifically included.
Stay safe from CO	Outdoors only, 20+ feet away; CO alarms inside; call 911 if one sounds.
Get help	Call Bill: (330) 200-8042.

Words People Use

A few terms you may hear around this subject, in everyday language. No quiz at the end.

Q: Backfeeding

Plugging a generator into a wall outlet to power the house — it sends power backward onto utility lines and can electrocute a lineworker.

Q: Transfer switch

A dedicated switch box, installed by an electrician, that lets you move chosen circuits between utility and generator power.

Q: Interlock kit

A mechanical device added to your main panel that safely lets you use its own breakers with a generator, one power source at a time.

Q: Inlet box

The weatherproof outdoor outlet a generator cord plugs into, wired through to the transfer switch or interlock.

Q: Double-pole breaker

The correctly sized breaker inside the panel that feeds the inlet box, matched to the rest of the system.

Q: NEC 702

The section of the National Electrical Code covering generator systems like transfer switches and interlocks.

Q: 240-volt

A stronger household circuit needed for a well pump and some larger equipment.

Q: Carbon monoxide (CO)

The invisible, odorless gas in engine exhaust that can kill. The reason a generator must always run far outdoors.

Getting Connected, Start to Finish

Four steps a licensed electrician walks through

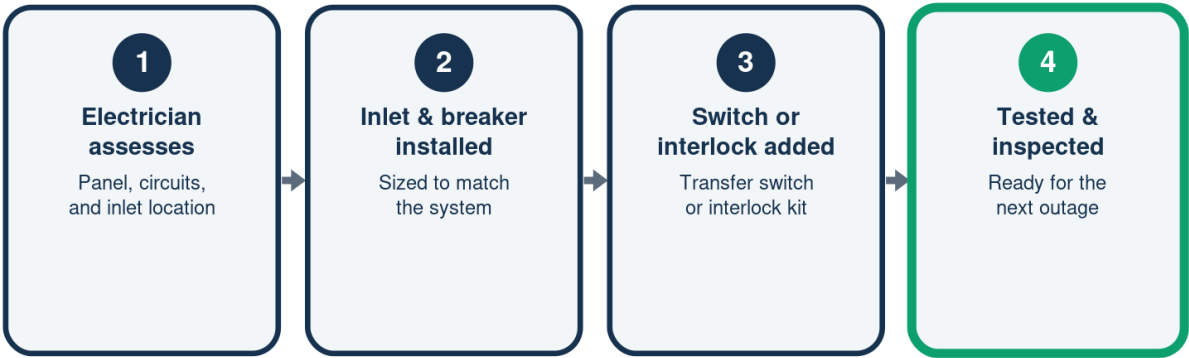
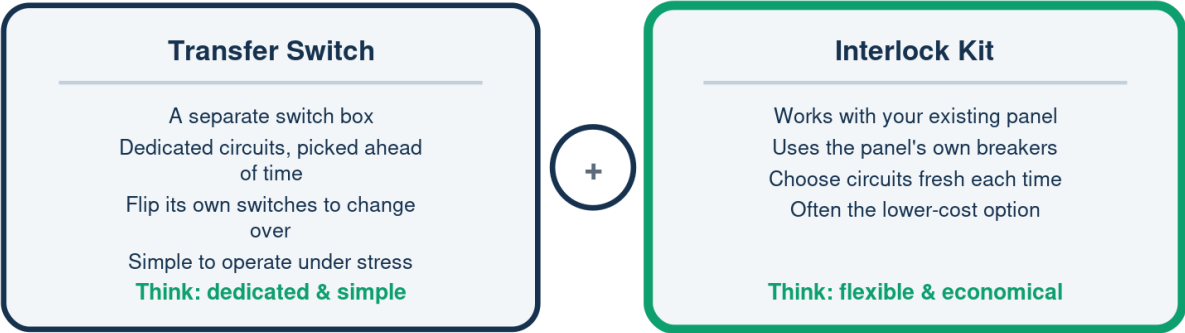


Illustration - a schematic, not to scale. Your setup may differ.

Transfer Switch vs. Interlock Kit

Two safe ways to do the same job



Both installed by a licensed electrician - both prevent backfeeding

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

Backfeeding vs. a Safe Connection

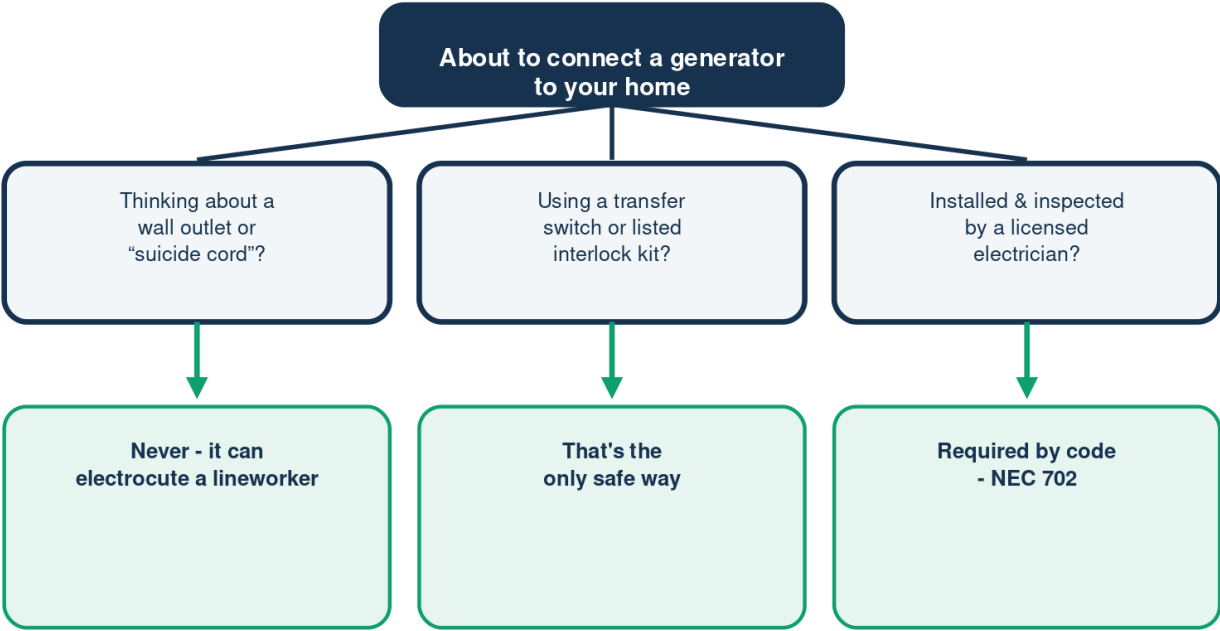
The choice that decides everything else

	Backfeeding (never do this)	Transfer Switch / Interlock
Risk to lineworkers	Can be deadly	None - isolated from the grid
Meets electrical code	Never compliant	Meets NEC 702
Risk to your equipment	Can destroy your panel & generator	Protected, dedicated circuit

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

Before You Power the House

Three quick checks - every time



Never backfeed a wall outlet - call an electrician for a transfer switch or interlock instead.
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.

— *Bill*



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