FREE HOMEOWNER GUIDE

Generator transfer switch vs interlock: the safe way to connect

One job: stopping backfeed

A generator connected to house wiring the wrong way can backfeed: push power out through your service line into the utility grid. That can electrocute a lineworker restoring your neighborhood, and it can destroy your generator the moment grid power returns. Every legitimate connection method, manual transfer switch, interlock kit, or automatic transfer switch, exists to make backfeed physically impossible, and every one of them is permitted, inspected electrical work in Oregon.

The infamous shortcut, a double-male cord from the generator into a dryer outlet, sometimes called a suicide cord, has none of that protection. It is illegal, it is lethal, and no licensed electrician will touch it.

The inlet: where the generator plugs in

Every portable-generator setup starts with a power inlet: a weatherproof box mounted outside, wired to the panel, so the generator connects with a single rated cord while it runs outdoors away from the house. The inlet and cord have to match the generator's output, commonly 30 or 50 amps, and the wiring from inlet to panel is sized to carry it. No cords through windows, and the generator itself always stays outside, never in a garage, because of carbon monoxide.

Manual transfer switch: fixed circuits, simple operation

A manual transfer switch is a small panel mounted beside your main one. During the install, the circuits you care about, furnace fan, refrigerator, well pump, some lights, get moved over to it. In an outage you plug the generator into the inlet, start it, and flip those labeled switches from utility to generator. It is the simplest system to operate, and because the circuits were chosen in advance, it is hard to overload.

Interlock kit: the whole panel, managed by you

An interlock is a sliding plate fitted to your existing panel that mechanically prevents the main breaker and a new generator breaker from being on at the same time. With the main off, the generator breaker energizes the whole panel from the inlet, and you choose which circuits to run as long as you stay within the generator's output. It is usually the cheaper and more flexible option. The catches: you manage the load yourself, and the kit must be listed for your exact panel make and model, which not every older panel has.

Automatic transfer switches

Standby generator systems use an automatic transfer switch, which senses the outage, starts the generator, moves the load over without you touching anything, then transfers back when utility power returns. That is the right answer for medical equipment, frequent outages, or anyone who does not want to be part of the switching process. Generator connections of every type fall under Article 702 of the National Electrical Code, which governs how optional standby systems are wired, labeled, and kept accessible. Still deciding which generator type fits your house? Our portable vs standby generator guide covers that decision.

What a safe install involves, and why it is not DIY

Whichever method fits, the install is the same category of work: inside a live panel. A code-legal generator connection includes a load calculation for the circuits you intend to carry, a correctly sized breaker and conductors, proper grounding and bonding, labeling at the panel, and an inlet rated for the generator, all under an Oregon electrical permit with a passed inspection. Panel interiors stay energized even with the main breaker off, which is why this is not a Saturday project.

As part of a generator installation we confirm what your panel accepts, since an interlock needs a listed kit and a tired panel sometimes makes a panel upgrade the smarter first move. The electrical work for an inlet plus a transfer switch or interlock typically runs $800 to $2,500, and the generator installation cost guide breaks down what moves the number. We are licensed, bonded, and insured, Oregon CCB #227116, and we give a free ballpark by phone or photo.

Frequently asked questions

What is the difference between a transfer switch and an interlock?

A transfer switch is a separate small panel that powers a fixed set of circuits chosen at install, and it is the simplest to operate. An interlock is a plate on your existing panel that lets you run any circuits through a generator breaker while mechanically preventing the generator and utility from being connected at once. The interlock is usually cheaper and more flexible, but it requires a kit listed for your exact panel.

Is an interlock kit legal in Oregon?

Yes, when the kit is listed for your specific panel model and installed under a permit with an inspection. What is illegal is any connection with no interlock or transfer switch at all, such as a double-male cord into a dryer outlet, because nothing prevents the generator from backfeeding the utility line.

Can I install a generator transfer switch myself?

We do not recommend it. The work happens inside a live panel, where the incoming lugs stay energized even with the main breaker off, and it requires a permit, an inspection, correct wire and breaker sizing, and proper grounding. A mistake can start a fire, injure you, or endanger utility workers. Have a licensed electrician do it.

How much does it cost to connect a portable generator to my panel?

The electrical work for an inlet plus a transfer switch or interlock typically runs $800 to $2,500, depending on which method fits your panel, the number of circuits, and how far the inlet sits from the panel. We give a free ballpark by phone or from a photo of your panel, and confirm the price before any work.

Sources

1. Backup Generators, Portland General Electric. https://portlandgeneral.com/outages-safety/be-prepared/backup-generators
2. Generator Safety, Electrical Safety Foundation International (ESFI). https://www.esfi.org/generator-safety/
3. CPSC Safety Alert: Portable Generator Hazards, U.S. Consumer Product Safety Commission. https://www.cpsc.gov/s3fs-public/5123_SafetyAlert_PortableGenerators_102021.pdf
4. Contractor License Search, Oregon Construction Contractors Board. https://search.ccb.state.or.us/search/

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> Call Smiley Electric at (503) 484-7556 (Mon–Sat, 7am–5pm) or visit smileyelectric.net/contact. For sparks, smoke, a burning smell or a hot panel, turn off the power if it is safe and call right away.

Reviewed by Joshua Smiley, owner & master electrician, Smiley Electric. Last reviewed November 13, 2026. Online version: smileyelectric.net/help/generator-transfer-switch-vs-interlock/. General information, not a substitute for an on-site inspection.

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