



An Extended Guide · No. 1223

Inverter vs. Conventional Generators

Clean, quiet power vs. raw wattage

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! 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. Whichever type you choose in the pages ahead, that rule never changes — inverter or conventional, the exhaust is just as dangerous.

Inverter or conventional — let's sort out which is you

Both kinds of portable generator keep your home running in an outage. They just go about it differently — and knowing how helps you pick the one that actually fits your life.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. This is one of the questions I get asked most often, usually somewhere between 'which one is quieter' and 'which one is cheaper' — and the honest answer is that both matter, along with a few things people don't think to ask.

There's no wrong answer here, only a better fit. We'll walk through how each type makes its power, why that difference matters for delicate electronics, and which one tends to suit which household.

★ Bring me your must-run list

If you tell me what you're hoping to power — especially anything with a computer chip in it, like a CPAP or a laptop — I can help you weigh inverter against conventional for your exact situation. Call or text (330) 200-8042, free, no sales pitch.

The whole guide, on one page

If you remember only these things, you're most of the way to the right choice.

- ❑ Conventional generators spin at a constant speed and produce power the old-fashioned way — simple, rugged, and generally more affordable per watt.
- ❑ Inverter generators convert their power electronically, producing cleaner, more stable electricity — and they can throttle down, which makes them quieter and more fuel-efficient.
- ❑ Clean power (low harmonic distortion) matters most for computers, TVs, and medical equipment — an inverter is usually the safer bet for those.
- ❑ Inverters are typically lighter and more portable; conventional units reach larger sizes for less money.
- ❑ Many inverter models can be linked together to combine their output when you need more power.
- ❑ Either type carries the same carbon-monoxide risk — outdoors only, always, regardless of type.

✓ One question narrows it fast

Ask yourself: 'Am I mostly powering delicate electronics and want quiet, or am I mostly powering raw, heavy loads like a well pump?' That single question does a lot of the deciding.

How a conventional generator makes power

The engineering here is decades old, well-proven, and refreshingly straightforward.

A conventional generator's engine runs at one constant speed, spinning an alternator that produces electricity directly. It's the same basic idea that's powered portable generators for generations — simple, rugged, and well understood by nearly any small-engine shop.

Running at a constant speed regardless of how much you're actually using means the engine works about as hard at a light load as a heavy one. That simplicity is also where its trade-offs come from, which we'll get into over the next few pages.

✓ Simple isn't a knock

Constant-speed engines are simple to service, widely understood, and tend to be the more affordable way to get real power. Simple has real virtues.

How an inverter generator makes power

A newer approach that trades a little simplicity for noticeably cleaner power.

An inverter generator's engine doesn't have to hold one constant speed. It produces power, then runs it through electronics that convert — or 'invert' — it into smooth, stable household current, regardless of how fast the engine happens to be spinning at that moment.

Because the engine speed can vary with the load, it can throttle down when you're only drawing a little power, and rev up when you ask more of it. That flexibility is the source of nearly every advantage an inverter offers — quieter running, better fuel economy, and cleaner electricity.

✓ Think of it like a hybrid car's engine

The engine doesn't have to run flat-out all the time to deliver smooth results — it adjusts to what's actually being asked of it, then some electronics clean up the output.

'Clean power' and why it's worth understanding

You'll see the term 'low THD' on inverter generators. Here's what it actually means, in plain English.

THD stands for total harmonic distortion — a technical way of describing how smooth or rough a generator's electrical output actually is. Think of it like the difference between a pure, steady musical note and one with a rattle underneath it. Both are the 'same note,' but one is cleaner.

A conventional generator's output tends to have more of that rattle — higher THD — because of how directly the alternator produces the current. An inverter's electronics smooth that out, producing power much closer to what comes out of a wall outlet at home.

✓ Why you'd care at all

Most things in your house — lights, a space heater, a basic tool — couldn't care less about a little roughness in the power. A few things do care, and that's the subject of the next page.

Sensitive electronics and medical devices

This is where the difference between the two types can matter most.

Computers, many TVs, and devices with delicate electronic controls generally prefer the cleaner power an inverter provides. Rougher power over time can be harder on sensitive circuitry, though a well-made conventional unit paired with a good surge protector or UPS (a battery backup device) can bridge that gap for many households.

The same is true, often more importantly, for powered medical equipment — an oxygen concentrator, a CPAP or BiPAP, a nebulizer, or a powered wheelchair charger. Clean power is one part of a bigger plan for anyone who depends on this kind of equipment.

! A generator is one layer, not the whole plan

If someone in your home depends on powered medical equipment, keep manufacturer-approved battery backups charged, register with your utility's medical priority list, and talk to your equipment supplier about your plan. Our medical-equipment guide covers this fully — and if anyone has trouble breathing or the equipment fails with no backup, call 911. I help set up and test the safe hookup; I don't give medical advice.

Noise: purring vs. roaring

The difference you'll notice fastest in real life is how loud the thing is.

A conventional generator runs at its one constant speed no matter the load, which means a steady, fairly loud roar the entire time it's running. An inverter, throttling down under a light load, can be genuinely quiet — easy to talk over, and far kinder to sleeping neighbors.

That quiet doesn't just feel nicer — it's a direct result of using less fuel and less engine effort when you don't need full output, which is the same reason inverters tend to be more fuel-efficient.

✓ Worth weighing if neighbors are close

In a tight-lot neighborhood or a place with quiet hours, an inverter's lower noise can be the deciding factor all on its own. Our guide on running quietly goes deeper on placement and noise, whichever type you choose.

Fuel efficiency, in plain terms

Efficiency follows directly from how each type handles a light load.

Because a conventional generator's engine runs at the same speed regardless of demand, it burns roughly the same fuel whether you're powering a single lamp or pushing closer to its limit. An inverter, throttling down when demand is light, sips fuel during the quiet stretches and only works harder when you actually ask more of it.

In practice, that means an inverter often stretches a tank of fuel noticeably further during typical, lighter household use — lights, a fridge, some charging — though runtime always depends on your actual load, not the fuel type or generator style alone.

✓ Lighter loads amplify the difference

If your must-run list is mostly modest — fridge, lights, phones, a CPAP — you'll likely see the biggest efficiency advantage from an inverter, since it spends more of its time throttled down.

Weight and size — a real consideration as we get older

The best generator is no help if you dread wheeling it out.

Inverter generators are generally lighter and more compact than a conventional unit of similar capability, which makes them easier to carry, store, and move — a genuine kindness if a sore back or a set of stairs is part of your reality.

Conventional generators, especially the larger ones, are heavier machines. Sturdy wheels and a fold-down handle matter even more here — picture the trip from storage to running spot, in the rain, in the dark, before you commit to a heavier unit.

★ Let's think through the real trip

On a visit, I can help you picture exactly how a given generator would actually get from storage to where it runs at your house — weight and all. Call (330) 200-8042.

Linking two inverters together

One of the more clever tricks in the inverter world.

Many inverter generators are designed to be linked together with a proper parallel cable or kit, combining their output to power more than either one could alone — then run solo, quiet and efficient, the rest of the time when you don't need that much.

It's a genuinely flexible approach: a smaller, quieter, more portable pair of machines that can either run separately for everyday essentials or team up for a heavier day. Conventional generators generally aren't designed to be linked this way — they reach bigger sizes by simply being one larger machine.

✓ Worth asking about when you shop

If you like the idea of starting small and adding capacity later, ask specifically whether a model is 'parallel-capable' and what kit it needs — not every inverter supports it.

The honest trade-off: cost per watt

Without naming numbers, here's the trade-off in plain terms.

The electronics that give an inverter its clean, quiet, efficient power add cost — so for a given amount of capability, an inverter typically costs more than a conventional generator would. That's not a flaw, it's the price of the electronics doing their job.

A conventional generator, in turn, tends to deliver more raw power for the money, because you're paying mostly for the engine and alternator rather than a layer of power-smoothing electronics on top.

✓ Think value, not just price

The right question isn't 'which costs less,' it's 'which gives me what I actually need for what I'm willing to spend.' Quiet and clean power is worth real money to some households, and simply unnecessary to others.

How big each type gets

Size is where the two paths diverge the most.

Conventional generators scale up to the larger sizes that can cover a well pump, central air, or a good-sized chunk of a home's panel, wired in through a transfer switch installed by a licensed electrician. That reach is where conventional technology still has a clear edge.

Inverter generators have traditionally topped out at smaller-to-mid sizes on their own, though parallel-linking two of them narrows that gap considerably for households willing to run a pair rather than one large machine.

✓ Big loads still start with your list

Whichever type you're leaning toward, our choosing and sizing guides walk through building your must-run list first — that list, more than the generator type, is what determines how big you actually need to go.

Two kinds of homes, two sets of needs

Which type tends to fit better often comes down to where you live and what you're powering.

If you live in town or the suburbs

In town or a close-in suburb, neighbors are close, lots are smaller, and you're usually powering the essentials — the fridge, lights, phones, maybe a computer — rather than a well pump.

- A quiet inverter is often genuinely appreciated here, by you and by the neighbors.
- Clean power matters more when a computer, a smart TV, or a CPAP is on your must-run list.
- Lighter weight is a real plus if storage or mobility is tight.
- You rarely need the larger sizes that only conventional units reach.

If you are out in the country on a well

Out in the country, a well pump changes the math — that 240-volt motor needs a serious surge to start, and a conventional generator often gets you there more affordably.

- A well pump and other big 240-volt loads often point toward a larger conventional unit and a proper transfer switch.
- If quiet and clean power still matter to you, linking two inverters is worth pricing out against one large conventional.
- Longer rural outages mean fuel efficiency adds up — worth weighing even on a bigger machine.
- Sensitive electronics and any medical equipment on the property still benefit from clean power, whichever size you land on.

★ Tell me your must-run list

Whether you're in a tight in-town lot or out on a well, tell me what's actually on your list and I'll help you weigh inverter against conventional — and whether linking two is worth considering. Call (330) 200-8042.

If sensitive electronics are your main concern

A closer look at the households where clean power matters most.

If your must-run list includes a computer, a smart TV, a modern furnace control board, or medical equipment, lean toward an inverter's clean power. It's the simplest way to avoid worrying about it altogether.

If budget or raw power needs point you toward a conventional unit instead, a quality surge protector or UPS (uninterruptible power supply, a small battery backup box) between the generator and the sensitive device adds a real layer of protection — not a perfect substitute for clean power, but a meaningful one.

✓ When in doubt, ask the device maker

Some electronics list their own power-quality tolerance in the manual. When you're not sure, a quick look there — or a call to the manufacturer — beats guessing.

If raw power for big loads is your main concern

A closer look at the households leaning toward conventional.

A well pump, central air, an electric water heater, or a shop full of tools favor a conventional generator's ability to reach larger sizes affordably. These are exactly the loads where the bigger surge and higher ceiling of a conventional unit earn their keep.

None of that changes how you size it, though — you still need to account for the true starting surge of the biggest motor on your list, not just its steady running draw. Our sizing guide walks through that calculation in full.

! Don't let 'bigger' replace 'sized correctly'

A large conventional generator that's still undersized for a well pump's starting surge will struggle exactly the same way a small one would. Size for the surge first, then pick the type.

Why not both?

Plenty of households end up owning more than one generator, and it's not overkill — it's strategy.

A common, sensible setup: a small, quiet inverter for the everyday essentials — the fridge, lights, a CPAP, charging — paired with a larger conventional unit kept in reserve for the rare event that calls for real power, like a well pump or central air during a long summer outage.

It's also worth comparing that combination against two linked inverters, which can cover both roles — quiet solo use and combined higher output — from a single style of machine.

✓ There's no rule that says pick just one

If your household's needs genuinely span both worlds, owning two smaller, purpose-suited machines is often more practical than one generator trying to do everything.

Common mistakes people make

A handful of avoidable assumptions account for most of the regret I hear about.

- **Assuming 'quiet' means 'underpowered.'** A quiet inverter can still cover real essentials, and two can be linked for more.
- **Assuming any generator protects electronics equally.** If a computer or medical device is on your list, clean power deserves real weight in the decision.
- **Buying a loud, heavy conventional unit for a tight in-town lot** because it seemed like more generator for the money, then dreading using it.
- **Skipping the surge protector** when running sensitive gear off a conventional generator.
- **Overlooking parallel-linking** as an alternative to one large, heavy machine.

! The one that actually matters most

Whichever type you choose, the carbon-monoxide rules don't change. An inverter's quieter hum doesn't mean it's making any less of the invisible gas — outdoors only, always.

Maintenance: more alike than different

Good news — caring for either type follows the same basic rhythm.

Both inverter and conventional generators need the same fundamentals: periodic oil changes, a clean air filter, a healthy spark plug, and fresh, properly stored fuel. Our maintenance guide covers the full routine, and it applies to either type without much variation.

The inverter's extra electronics rarely need attention beyond keeping the unit clean and dry — there's no separate 'inverter maintenance' most owners need to think about day to day.

✓ The habit matters more than the type

A conventional unit that's well maintained will outlast a neglected inverter, and vice versa. Whichever you choose, the maintenance guide is where the real payoff lives.

A simple deciding checklist

Work through these before you commit to a type.

- ☐ I know whether sensitive electronics or medical equipment are on my must-run list.
- ☐ I've weighed how much noise matters to me and my neighbors.
- ☐ I've considered how heavy a unit I can realistically move and store.
- ☐ I've compared one large conventional unit against two linked inverters, if my needs are big.
- ☐ I understand that either type still needs the same outdoor carbon-monoxide precautions.
- ☐ I've checked both have the safety features that matter — CO shutoff and low-oil shutoff.

✓ Bring this list with you

A salesperson can steer you toward the right shelf faster once you can answer these — and so can I, if you'd rather call first.

Questions to ask before you decide

Whether you're talking to a dealer or to me, these get you a confident answer.

Q: Is this model parallel-capable, and what kit does linking need?

Not every inverter supports it, and the linking kit is sometimes sold separately. Ask specifically, and ask to see it if you can.

Q: What's the actual noise level like under a real load, not just at idle?

A quiet spec sheet number can be measured under ideal conditions. Ask to hear it running, or look for independent reviews under real load.

Q: Will this safely run my CPAP or other medical equipment?

Ask about clean power / low THD specifically, and talk to your equipment supplier too — see our medical-equipment guide for the full plan around this.

Q: If I need more power later, what are my options?

For an inverter, ask about linking a second unit. For a conventional, ask about the largest size that still fits your storage and moving ability.

✓ There's no silly question

This decision touches noise, safety, and money all at once. Ask until you're sure — that's exactly what a good salesperson, or I, should welcome.

Common Questions

The questions I hear most often when this choice comes up, answered plainly.

Q: Is an inverter generator always the 'better' choice?

Better for some things — quiet, clean power, efficiency, portability — not universally better. If you need serious raw power for a well pump or a large chunk of your panel, a conventional unit often serves you better for the money.

Q: Can I run my whole house on an inverter generator?

Some larger or linked-together inverter setups can cover a great deal, but for whole-panel power with big 240-volt loads, a conventional generator more commonly reaches those sizes.

Q: Do I need a UPS if I buy an inverter?

Less critical than with a conventional unit, since the power is already clean, but a UPS is still a reasonable extra layer of protection for anything truly critical, like medical equipment.

Q: Is a conventional generator less safe?

No — 'rougher' power isn't unsafe for most things in your home, just less ideal for delicate electronics. The carbon-monoxide and general safety rules are identical for both types.

★ Still torn between the two?

This is genuinely one of the more personal choices in the whole process. Tell me what's on your must-run list and how much quiet matters to you, and I'll help you land on the right one. Call or text (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 choosing between generator types 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

Inverter vs. Conventional

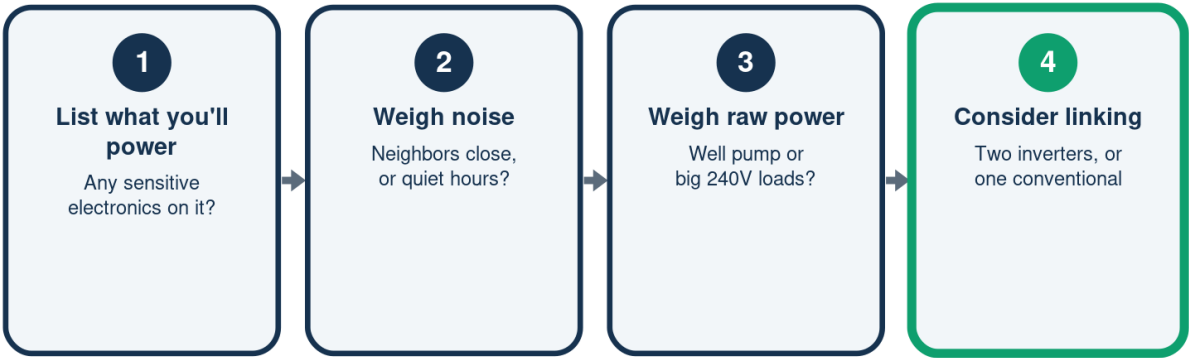
How the two types stack up

	Inverter	Conventional
How it runs	Speed varies	Constant speed
Power quality	Clean, low THD	Rougher, higher THD
Noise	Throttles down, quiet	Steady roar
Weight	Lighter	Heavier
Biggest sizes	Smaller to mid	Reaches larger

Neither type is 'better' -- they suit different needs.

Choosing Between Them in Four Steps

The calm way to land on the right type



Do these in order and the right type almost picks itself.

Clean Power and Sensitive Electronics

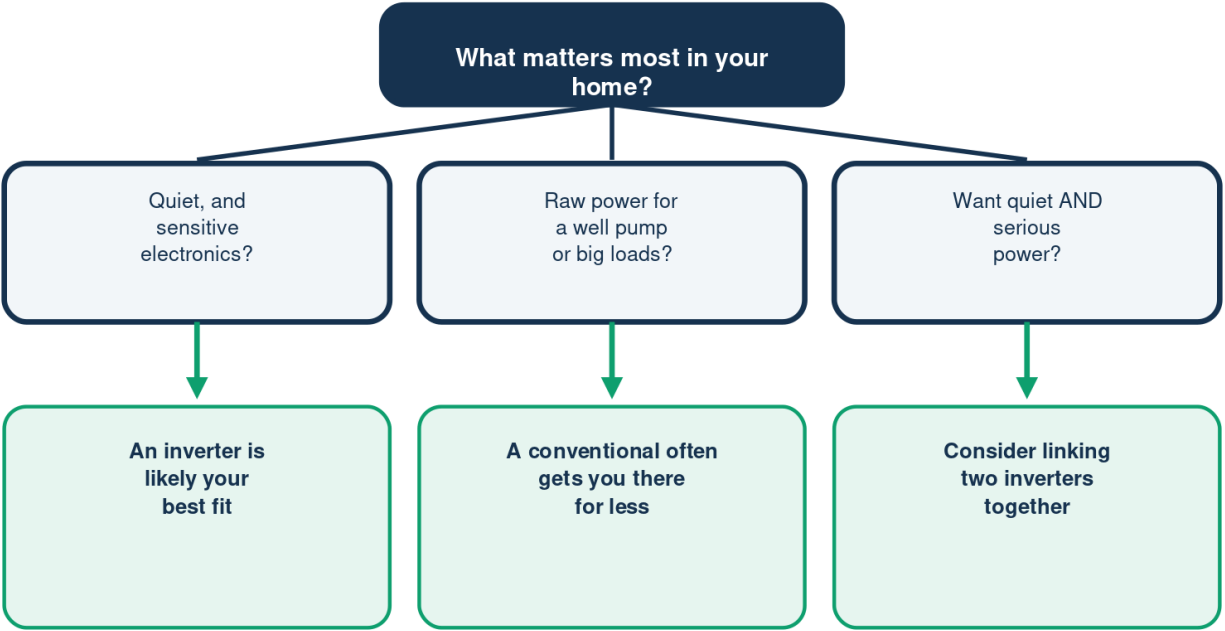
Why the type of power matters for delicate devices

	Inverter (clean)	Conventional (rougher)
Computers & TVs	Generally safe	Consider a UPS
CPAP & medical gear	Often preferred	Protect with a UPS
Basic tools & lights	Fine either way	Fine either way

For medical equipment, see our medical-equipment guide too.

Which Type Fits You?

Let what you're powering point the way



Either type still needs the same carbon-monoxide precautions -- outdoors only.

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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