BILL'S HOME TECH

Home & Small Business Tech Solutions

An Extended Guide · No. 1274

Backing Up a Well Pump with a Dual-Fuel Generator

The surge, the 240 volts, the fix

Tech Made Simple — Service Made Personal

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! Before you begin — a quick safety note.
This guide covers work involving household electricity (240V) and engine exhaust, 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

If you're on a well, you already know something a lot of town folks never think about: no power means no water. Not low water pressure — no water at all, until the pump can run again.

That's exactly what this guide is for. It's a longer, more focused look at one job: getting a generator that can actually start and run your well pump, safely. Take your time with it.

What you'll get out of this guide

- Why a well pump is one of the trickiest things to back up with a generator
- The 240-volt catch, explained in plain words
- The starting surge, and typical ranges so you know what to expect
- How to size and connect a generator that can actually start your pump
- What the equivalent worry looks like if you're on town water instead

★ Water is worth getting right
Of everything I help with, well-pump backup is one job I never rush. If you'd like company working through it, call me at (330) 200-8042.

The Whole Idea in One Page

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

- ❑ Most well pumps run on 240 volts, not standard 120. A generator without a 240-volt outlet simply cannot power one.
- ❑ Well pumps take a big surge to start — often 3 to 5 times their steady running watts. Your generator has to clear that surge, not just the running number.
- ❑ Propane or natural gas make a bit less power than gasoline, so size against whichever fuel you'll actually use.
- ❑ A soft starter can shrink that surge considerably, which can make a smaller generator workable.
- ❑ Connect it through a transfer switch or interlock installed by a licensed electrician — never a wall outlet.

> **✔ Find your pump's label before you shop**
> Everything in this guide gets easier once you know your own pump's numbers. That's worth doing before you go looking at generators.

How a Well Pump Works, Briefly

You don't need to become a plumber, but a quick picture of what's happening underground makes the rest of this guide click into place.

- The pump itself sits down in the well, often well below the water line, and pushes water up to the house.
- It fills a **pressure tank**, which is what actually delivers steady water pressure to your taps between pump cycles.
- A pressure switch turns the pump on when tank pressure drops — say, when you run a faucet or shower — and off again once it's built back up.

> **✔ You may never notice it — until it stops**
> Most well systems run quietly in the background for years. A power outage is usually the first time most households really think about how the whole thing works.

The Big Catch: 240 Volts

This one detail causes more well-pump backup disappointments than anything else, so it gets its own page.

- Most household outlets and small appliances run on standard **120-volt** power.
- Most residential well pumps are wired for **240 volts** instead — look for a double-width breaker on your panel labeled for the pump.
- A generator with only regular 120-volt outlets **cannot** power a 240-volt pump, full stop.
- You need a generator that specifically offers a 240-volt outlet or twist-lock connector, connected the right way.

> **! Don't guess — check**
> If you're not sure whether your pump is 240-volt, a licensed electrician can confirm it quickly, often just by looking at your panel.

The Other Big Catch: The Starting Surge

Even with the right voltage sorted out, a well pump has one more trick up its sleeve: a big jolt of power the instant it starts.

A well pump motor sitting still needs considerably more power to start spinning than it needs once it's up and running. That's true of most motors, but a well pump's surge tends to be especially large.

- Most well pumps have a starting surge **often 3 to 5 times** their steady running watts.
- That surge lasts only a second or two — but the generator has to be able to supply it, or the pump simply won't start.
- Underestimating this surge is the single most common reason a well-pump backup plan fails when it's actually needed.

> **! The surge, not the running number, decides it**
> A generator that easily covers your pump's running watts can still fail to start it if it can't clear that surge.

Finding Your Pump's Real Numbers

Everything in this guide works better once you know your own pump's actual numbers, not a typical range.

- Look for a nameplate on the pump's control box, or near the pressure tank.
- Many pumps are labeled by **horsepower (HP)** rather than watts directly — that's normal, and a useful number on its own.
- If you can't find or read the label, a licensed electrician can often identify it from your breaker panel or well records.
- Never guess at your pump's size. An undersized generator simply won't start it, no matter how close the guess was.

> **✔ There's a general worksheet, too**
> This guide focuses on the well pump specifically. There's a separate guide in this series with a full household sizing worksheet, if you want to fold in the rest of your essentials.

Typical Ranges, So You Know What to Expect

These numbers are here to give you a feel for the scale involved — they are **not** a substitute for checking your own pump's label.

Pump size	Typical running watts	Typical starting watts
½-HP pump	≈800–1,000 watts	≈2,100–2,500 watts
1-HP pump	Check your own label	Up to ≈5,000 watts

Well depth, pump design, and age can all shift these numbers up or down. Two homes with the “same size” pump on paper can still have different real-world numbers.

> **! Ranges, not your pump**
> Please treat this table as a general sense of scale, not your shopping number. Always confirm against your own pump's nameplate.

Sizing the Generator for the Surge

With your pump's own numbers in hand, sizing follows the same basic method as any other generator purchase — just with a bigger surge to plan around.

- Start with the pump's own **running and starting watts**, straight from its label.
- Add the running watts of anything else you want powered at the same time — fridge, lights, furnace blower.
- The generator's running **and** starting ratings both need to comfortably clear that combined total.

> **✔ The full worksheet method**
> There's a dedicated guide in this series that walks through the complete household sizing worksheet, if the well pump is one part of a bigger picture for you.

Why the Fuel Derate Matters Even More Here

A well pump's surge is already a big ask. Losing power to a fuel derate on top of that can be the difference between starting the pump and not.

The generator's big headline wattage is almost always its **gasoline** rating. On propane you'll typically see somewhere around 5 to 15 percent fewer running watts (about 10 percent is common), and natural gas trims it further still.

- If propane or natural gas is your real plan for outages, size the generator against **that** fuel's rating, not the bigger gasoline number.
- Because the well pump's surge is already large, this derate deserves extra attention here, not less.

> **! Size generously on propane or gas**
> When a well pump is involved, err on the side of extra headroom if you're planning to run on propane or natural gas.

Soft Starters: Taming the Surge

If the surge math feels daunting, there's a device built specifically to shrink it.

- A **soft starter** installs at or near the pump's control box.
- It smooths out the motor's start, cutting the starting surge a generator has to supply by roughly 60 to 70 percent.
- That can make a smaller generator workable, or give a generator you already own a lot more comfortable margin.
- Installing one is a job for a professional familiar with well-pump controls.

> **★ Worth discussing before you buy**
> If a bigger generator isn't in the budget, a soft starter is often the more affordable fix. I'm glad to help you weigh the two options honestly.

Getting Connected Safely

Sizing the generator correctly only matters if it's connected to the pump the safe, proper way.

- A **transfer switch** or listed **interlock kit** lets the generator feed the well pump's own circuit without any risk of backfeeding the utility lines.
- An exterior **inlet box** — commonly a 30-amp or 50-amp twist-lock style — connects the generator to your home's wiring.
- This is licensed-electrician work, wired to code, every time.

> **! Never a wall outlet**
> Backfeeding a well pump — or anything else — through a regular wall outlet can electrocute a utility lineworker and is never worth the risk. There's a whole guide in this series on transfer switches and interlocks.

If You're in Town on City Water

Let's be honest about this one: most of this guide is written for private wells. If you're on municipal water, here's how it applies to you instead.

- On municipal (city) water, the utility handles pumping and pressure — often with its own backup power — so your home generator usually isn't doing that job.
- The equivalent worry for a town or suburban home is typically a **sump pump**, not a well pump. A flooded basement is the city-water version of “no water.”
- Some suburban and edge-of-town homes are on a private well even with other town conveniences nearby. If that's you, treat yourself as a rural/well reader for the rest of this guide — it doesn't care about your zip code, only your water source.
- A furnace blower and water heater are worth backing up here too — there's a dedicated guide on those systems.

> **✔ Not sure which camp you're in?**
> If you've never had to think about a well pump, you're almost certainly on municipal water. If in doubt, check your water bill or ask your local water department.

If You're Rural or on a Well: The Heart of This Guide

Everything above comes together here. If you're backing up a well, this page is the summary worth re-reading before you buy anything.

- Treat the well pump as the **anchor** of your whole generator plan — size around its surge first, then fit everything else in alongside it.
- A larger propane tank, kept fairly full, keeps performance steadier through a long rural outage than a small, nearly-empty one.
- Longer outages, plus more riding on one generator — freezer, furnace, maybe barn or outbuilding equipment — often push rural setups toward a bigger unit with real margin, not a bare-minimum one.
- Once the well pump is reliably covered, the rest of a rural household's list usually fits comfortably alongside it.

> **★ This is the job I take most seriously**
> Water is the thing rural customers miss first in an outage, and getting a generator sized and wired to actually start that pump is exactly the kind of work I love helping with. Let's make sure you never have to worry about it.

The One Rule That Matters Most

Everything else in this guide is about getting water flowing. This page is about coming home to your family safe — please don't skip it.

A running generator gives off **carbon monoxide**, or CO. 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.

> **! Rural homes, same rule**
> Extra space around a country home doesn't change this rule one bit — outdoors, 20+ feet away, exhaust pointed away, every single time.

Respecting 240 Volts

A 240-volt circuit carries a lot more punch than the standard outlets around your house — treat it with real respect.

- **Never** wire a well-pump circuit, transfer switch, or interlock yourself — this is licensed-electrician work, every time.
- Make sure the generator is off and fully disconnected before anyone works on the panel or wiring.
- A correctly sized double-pole breaker is what safely feeds a 240-volt inlet — installed and inspected to code.

> **! This isn't the place to save a few dollars**
> 240-volt mistakes can be lethal and can destroy expensive equipment. A licensed electrician is worth every penny here.

Fuel Safety for Longer Rural Outages

Rural outages tend to stretch on longer than in-town ones, so fuel supply and storage habits matter even more.

- Propane stores essentially indefinitely, which is exactly why it's the natural choice for longer rural outages.
- Keep cylinders or tanks **outdoors**, upright, away from heat and any ignition source.
- If you're keeping gasoline as a backup fuel, add stabilizer and rotate it — untreated gasoline can start degrading in as little as a few months.

> **★ There's more detail in this series**
> Propane tank sizing, cold-weather propane, and safe fuel storage each have their own dedicated guide if you'd like to go deeper.

What Else Can Share the Generator With the Pump

The well pump usually isn't the only thing you want running — here's how it fits alongside the rest.

- Fridge/freezer, furnace blower, and a few lights typically round out a rural household's list alongside the well pump.
- Take turns with anything big and separate — a microwave, power tools — rather than running it at the exact moment the pump's surge hits.
- There's a dedicated guide in this series on running your home's essentials and rotating big loads day to day.

> **✔ The pump comes first in the lineup**
> When in doubt, let the well pump start on its own before adding another big load — give it that moment of surge without competition.

The Mistakes I See Most Often

Well-pump backup goes wrong in a handful of predictable ways — good news is, they're all avoidable.

- Sizing only for the pump's running watts and forgetting the surge entirely.
- Buying a generator with no 240-volt outlet at all.
- DIY wiring instead of a licensed electrician's transfer switch or interlock.
- Sizing against the gasoline number when propane is the actual plan.
- Assuming a “whole house” generator automatically covers the well pump without actually checking its 240-volt starting watts.

! Test it before you need it

The worst time to discover a sizing or wiring mistake is during an actual outage. Test the full setup, pump included, when things are calm.

Cold Weather and Well Pumps

Ohio winters have a way of testing a well-pump backup plan right when it matters most.

- Propane has to vaporize to feed the engine, and that process slows down in deep cold — especially in a small or nearly empty tank.
- A well pump's big surge already asks a lot of a generator, right when cold weather is working against it too.
- A larger propane tank, kept fairly full, performs more reliably on a bitter night than a small, low one.

> **✔ Pair this with the cold-weather guide**
> There's a whole guide in this series on cold-weather propane if freezing outages are a regular concern for your home.

When to Give Me a Call

Well-pump backup has more moving parts than most generator projects, and I'm glad to help with any or all of it.

- Finding and reading your pump's actual nameplate numbers.
- Sizing a generator that clears the pump's surge, on the fuel you'll use.
- Deciding between a bigger generator and a soft starter.
- Coordinating the licensed-electrician work for a transfer switch or interlock.
- A yearly test-run of the whole setup, pump included, 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
Check my pump's needs	Find its nameplate; note horsepower, running watts, and starting watts.
Confirm the voltage	Most well pumps need 240 volts — check your panel's double-width breaker.
Size the generator	Clear the pump's starting surge (often 3-5x running watts), on your real fuel.
Shrink the surge	Ask about a soft starter — it can cut the jolt by roughly 60-70%.
Connect it safely	Transfer switch or interlock, installed by a licensed electrician. Never a wall outlet.
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 well-pump backup, in everyday language.

Q: Submersible pump
The pump itself, sitting down in the well below the water line.

Q: Pressure tank
The tank in the house that holds pressurized water and delivers steady flow between pump cycles.

Q: 240-volt
The stronger household circuit most well pumps need. A 120-volt generator can't run one.

Q: Starting (surge) watts
The extra burst of power a motor needs for a moment when it first turns on — often especially large for well pumps.

Q: Soft starter
A device that smooths a pump's starting jolt, cutting the surge a generator has to supply.

Q: Transfer switch / Interlock
The safe, electrician-installed way to feed a well pump's circuit from a generator without any danger of backfeeding the street.

Q: Derate
The dip in a generator's power output on propane or natural gas compared to its gasoline rating.

Q: Carbon monoxide (CO)
The invisible, odorless gas in engine exhaust that can kill. The reason a generator must always run far outdoors.

Sizing for the Well Pump

Four steps from the pump's label to a generator that starts it

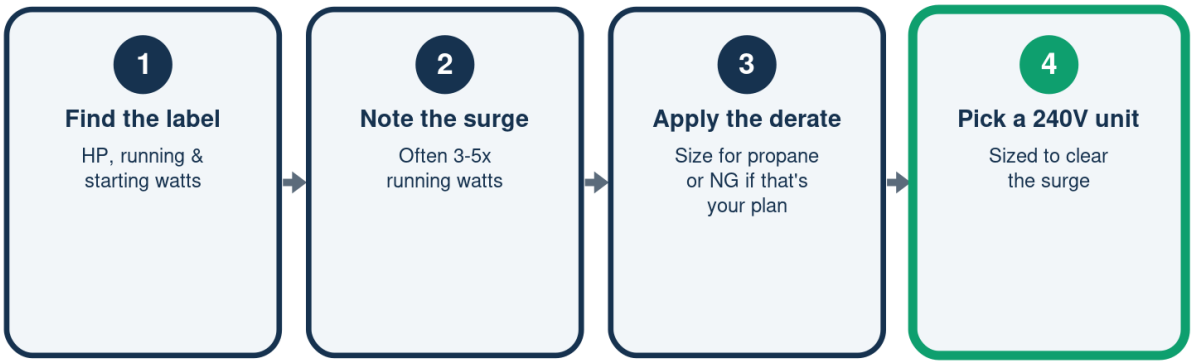


Illustration - a schematic, not to scale. Your setup may differ.

Typical Well Pump Ranges

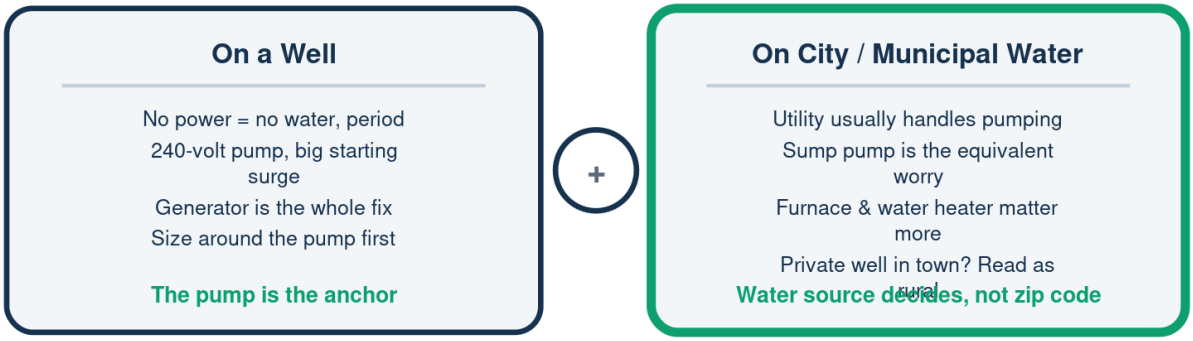
For a sense of scale only - always check your own pump's label

	½-HP Pump	1-HP Pump	Your Pump
Running watts	≈800–1,000	Check label	Check label
Starting watts	≈2,100–2,500	Up to ≈5,000	Check label

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

On a Well vs. On City Water

The same generator, a very different job to do

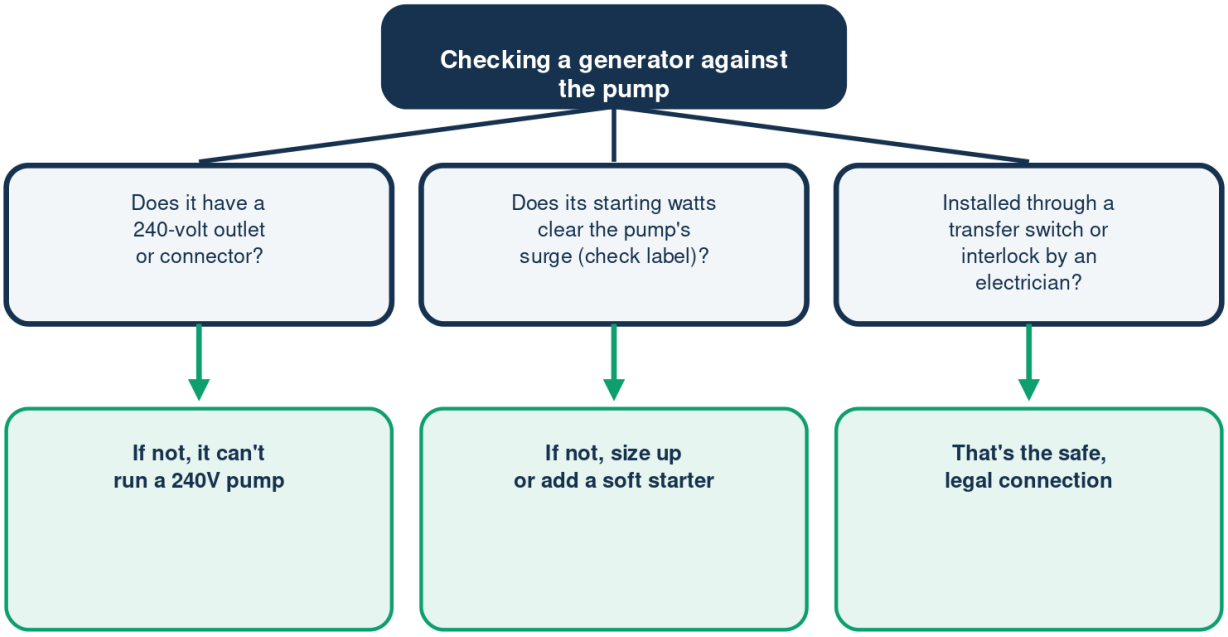


Know which one actually describes your home

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

Is Your Generator Ready for the Well Pump?

Three quick checks before you count on it



Never wire a well pump or panel yourself - 240V work is a licensed electrician's job.

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

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Need a Real Person?

You do not have to remember all of it.
You just have to remember you can call.
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— Bill

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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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