



An Extended Guide · No. 1693

How Your Well Pump Actually Works

A plain-English tour
of what's down the well

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! Read this first — on a well, no power means no water

On a home with a private well, a power outage isn't just dark — it's dry. The pump that lifts your water runs on your home's electricity, so when the power stops, every tap, toilet, and hose stops with it. Keep a few days of stored drinking water on hand as a backup you can count on — a common guideline is about a gallon per person per day. And know this from the start: a well pump is almost always a 240-volt appliance wired straight into your electrical panel, so any backup hookup for it is a licensed electrician's job. Never try to feed it with a cord or by backfeeding an outlet — that is unsafe, against code, and can put deadly voltage on the power lines outside. Here is the good news: you do not have to run anything to get value from this guide — just understanding how your well works makes every other choice in this category easier.

Let's take the mystery out of your well

Your well is one of the few things in your home that does its whole job out of sight. This guide is a plain-English tour of what is down there, what each part does, and how water travels from deep underground all the way to your kitchen tap.

I'm Bill, and I run Bill's Home Tech here in Portage County, Ohio. A great many of the homes I visit are out on their own well, and folks are often surprised how little they know about a system they lean on every single day. That is completely normal — a well is buried, sealed, and quiet, so there is nothing to see and nothing to fuss with until the day something changes.

This is a tour, not a repair manual. There is no sizing to do, nothing to shop for, and no generator to run — just a friendly walk through the parts, so the rest of this category makes sense when you get there. Along the way I'll point you, by name, to the guides that go deeper on each piece.

★ Rather have me point it all out in person?

If you'd like, I can come stand in your basement or well house and show you each part with my own finger. There is no silly question. Call or text me at (330) 200-8042.

Your whole well, in about a minute

If you remember only these few things, you already understand the heart of how your well works.

- ❑ Most home wells use a submersible pump — a motor that sits down in the well, below the water, and pushes water up.
- ❑ That pump is an electric appliance, usually running on 240 volts.
- ❑ There is no plug — it is wired straight into your electrical panel on its own circuit.
- ❑ A pressure tank in the house stores a reserve of water under pressure, so the pump can rest between uses.
- ❑ A pressure switch is the little brain that turns the pump on and off as you use water.
- ❑ Because it all runs on electricity, no power means no water — the whole system goes quiet at once.

✓ That is the whole system, really

Six ideas and you have got the shape of it. Every page that follows just fills one of them in, gently — so read as much or as little as you like.

The big picture — from the aquifer to your faucet

Before we look at any single part, here is the whole journey your water takes, start to finish.

Deep under your property sits an aquifer — a layer of water-bearing rock and gravel. The top of that underground water is called the water table. Your well is a hole drilled down past it, lined with a pipe called the casing that keeps the sides from caving in and keeps surface water out.

Down inside that casing, below the water line, sits the pump. When you open a tap, the pump lifts water up a pipe, out of the well, and into your house — where a pressure tank holds it ready for you. Every faucet, toilet, and hose in the home draws from that one journey.

✓ It is a lift, not a push from below

Nothing pushes your water up from the ground on its own. It is your pump, running on your electricity, that does the lifting — which is exactly why power and water are tied together out here.

The submersible pump — a motor that lives underwater

The heart of most modern wells is a pump you will never lay eyes on, because it spends its whole life underwater.

Submersible simply means it sits submerged — the whole motor and pump are sealed into one long, narrow unit that hangs down inside the well casing, below the water line. Water surrounds it completely, which actually helps keep it cool while it runs.

It pushes water up — it does not suck it up

Its job is to push water upward, not to draw it up from above. Sitting down in the water and pushing up is what lets a submersible pump serve a deep well, sometimes a very deep one, without losing its grip on the water. Because it is sealed and silent and out of sight, it is easy to forget it is there at all — right up until the power goes out.

✓ Out of sight, but still an appliance

It helps to think of your well pump the way you think of your water heater or furnace — a real electrical appliance doing a real job, just one that happens to live at the bottom of a well.

240 volts, wired in — not a plug

Here is a fact that surprises almost everyone the first time they hear it: there is no plug on a well pump.

A plug-in appliance, like your refrigerator, runs on ordinary 120-volt household power and has a cord you can pull from the wall. A submersible well pump is different. It almost always runs on 240 volts — the heavier power your electric range or dryer uses — and it is wired straight into your electrical panel on its own dedicated circuit.

That means there is no outlet to check and no cord to unplug. The pump is built into your home the same permanent way your central air or water heater is. It is a small difference to say out loud, but it changes everything about how you would ever back it up — which is a later page, and a whole guide of its own.

✓ Some shallow-well pumps are the exception

A few small shallow-well pumps run on 120 volts instead of 240. Even those, though, are usually still wired in rather than plugged in. Our jet-vs-submersible guide sorts out which kind you are likely to have.

The drop pipe and the wiring down the well

Two things travel down into your well alongside the pump — one carries water up, the other carries power down.

The pump hangs from a pipe called the drop pipe, which does double duty: it holds the weight of the pump and carries the water the pump lifts all the way up to the surface. Running down beside it is the electrical cable that feeds the motor its power. Both disappear into the top of the casing and are easy to overlook.

This is also why servicing a submersible pump is a bigger job than it sounds. To reach the pump, a crew has to physically pull it — drop pipe, cable, and all — up and out of the well. That takes proper equipment and know-how, and it is squarely a job for a well or pump professional, never a do-it-yourself afternoon.

★ Good to know before you ever need it

You do not need to touch any of this yourself. But knowing the pump hangs on a pipe deep in the well helps you understand why a well pro — not a handyman — is the right call when something down there needs attention.

The pressure tank — your household reservoir

If the pump is the heart of the system, the pressure tank is its steady, patient reservoir — and it is probably sitting in your basement right now.

A pressure tank stores a reserve of water and holds it under pressure, using a cushion of air sealed inside. When the pump runs, it fills the tank and squeezes that air; when you open a tap, the air pushes the water back out to you. That is why water comes out with force the instant you turn the handle, even though the pump is not running at that exact moment.

That stored, pressurized reserve is doing quiet, useful work every day — and it turns out to matter a great deal during an outage, too. This guide is just here to explain what the tank is and does. Our pressure-tank guide picks it up from there and covers how to lean on that reserve when the power is out.

✓ This is the part worth remembering

Of all the pieces, the pressure tank is the one that most directly helps you during an outage. Get to know where yours is and what it looks like — our pressure-tank guide explains how to make the most of it.

The pressure switch — the little brain that cycles the pump

Something has to decide when the pump turns on and off. That job belongs to a small, clever part called the pressure switch.

The pressure switch watches the water pressure in your system. When you use enough water that the pressure drops to a set low point — called the cut-in — it turns the pump on. When the pump has refilled the tank and pressure climbs back to a set high point — the cut-out — it switches the pump off again. On, then off, quietly, all day long.

Why your pump rests

This is why your pump does not run every second, or all the time. It runs in short spells to top up the tank, then rests while you draw on the reserve. That resting is healthy and normal — a pump that never got to rest, or that switched on and off very rapidly, would be a sign that something needs a look.

✓ On and off is exactly right

If you hear your pump kick on for a little while and then fall silent, that is the pressure switch doing its job perfectly. It is the rhythm of a healthy well.

The control box and the starting parts

Some wells have one more small piece worth knowing about — a box on the wall that helps the motor get going.

Certain pumps use a separate control box, usually mounted on a wall near the pressure tank. Inside are parts called capacitors, which store a quick burst of energy and hand it to the motor at the moment it starts — a little helping shove to get a heavy motor spinning. Not every well has a control box, but many do.

There is a happy bonus here for you: the control box, or a tag on the pump setup, is very often where the pump's information is printed. That little metal or paper label — the nameplate — is gold when it comes time to size any backup power, which is exactly what our sizing guide walks you through.

✓ Snap a photo while you are down there

If you spot a control box or a nameplate, take a clear phone photo of every label on it. You will be glad to have it later, and it saves a trip back to the basement.

Two kinds of homes, two sets of needs

This guide is a tour of a well system, so it is worth being plain about who has one to learn and who does not.

If you live in town or the suburbs

If your water comes from the city or a municipal system, there is usually no pump in your home to get to know — the water utility does the pumping for you, far away, and simply delivers water to your tap under pressure. This whole tour is interesting, but it is not really about your house.

- In most in-town homes there is no well pump, no pressure tank, and no pump nameplate to hunt for.
- One edge case: a home may have a small booster pump to lift water pressure — far simpler than a well pump.
- Your backup planning can center on the fridge, furnace, and lights — see our sizing guide for that.
- If you are not certain whether you are on city water, a quick look at a water bill settles it.

If you are out in the country on a well

If your water comes from a private well, this tour is very much about your house. The parts we are walking through are the ones humming away under your feet or out in your well house — and getting to know them by name makes every other guide in this category easier to follow.

- Learn the parts: the submersible pump, the drop pipe, the pressure tank, and the pressure switch.
- Find your pump's nameplate — on the control box or in your well paperwork — so its numbers are ready.
- Knowing your system makes sizing, hookup, and outage planning much less daunting later on.
- Some larger or older suburban lots have a private well too, so it is worth confirming which you have.

★ Not sure what you have? I can help you find out

If you'd like, I can come take a look and point out each part in your own home — or help you figure out whether you are even on a well in the first place. Call or text me at (330) 200-8042.

Shallow versus deep — a one-page note

You may hear wells described as shallow or deep. Here is just enough to know what that means, without getting lost in it.

The depth of a well, and how far down the water sits, shapes what kind of pump makes sense. Deeper wells almost always use the submersible pump we have been describing — down in the water, pushing up. Some shallow wells instead use a jet pump, which sits above ground, often near the pressure tank or in a well house, and draws water up from a shorter distance.

That difference matters more than it might seem, because the two kinds of pump can behave differently when it comes to voltage and backup power. But it is a big enough topic to have its own guide, so I will not try to sort it all out here.

✓ Which do I have?

Our jet-vs-submersible guide walks through how to tell which kind of pump you have and what each one means for backing it up. For this tour, it is enough to know both exist.

Where your equipment lives

The well itself is outside, capped at the ground. But several of the parts we have met live where you can actually see them.

The pressure tank, the pressure switch, and any control box are usually indoors or under cover, somewhere reasonably close to where the water line enters. Knowing where to look means you can find them calmly on an ordinary day, rather than hunting in the dark during an outage.

- **The basement** — the most common spot, often near where the water line comes in from the well.
- **A utility or mechanical room** — alongside the water heater, softener, or furnace.
- **A well house** — a small outbuilding over or near the wellhead, common on rural properties.
- **A pit or crawlspace** — in some older setups the tank sits in a below-grade pit, which needs care to enter.

! Be careful with pits and tight spaces

If your equipment sits in a below-grade pit or a cramped crawlspace, do not climb into it casually — these spaces can be genuinely hazardous. It is fine to simply know it is there and leave getting into it to a professional.

How to find your pump's information

When it comes time to size backup power, the single most useful thing you can have is your pump's own real numbers. Here is where they hide.

Every pump left the factory with a nameplate — a small label listing its details. The trick is simply knowing where to look, and you can gather this on a calm afternoon with nothing but a flashlight and your phone camera.

- ❑ On the control box, if you have one — often the easiest label to read.
- ❑ On a tag at the pressure tank or the wiring, where the system was put together.
- ❑ In the paperwork from when the well was drilled or the pump was last replaced.
- ❑ With the company that drilled or services your well — they usually have it on file.

Whatever you find, do not try to guess a number you cannot read. A photo of the nameplate, or a call to your well company, beats a guess every time. Our sizing guide explains which of these numbers matter and how to use them.

★ Bring me what you find

A clear photo of the nameplate, a line from your well paperwork, or just the name of your well company — any of those gives us a real starting point. Call or text me at (330) 200-8042 and we will make sense of it together.

What 'no power, no water' looks like, part by part

Now that you know the parts, here is exactly what happens to each one the moment the power goes out.

It helps to follow the electricity. When the power fails, your electrical panel goes dead, and with it the pump's dedicated circuit. Down in the well, the motor simply stops — no power reaching it means no lifting, so no new water comes up the pipe.

For a short while you still have water, because the pressure tank is holding its reserve under pressure. As you use taps and flush toilets, that reserve draws down. Once it is spent, there is nothing to refill it — the pressure switch may want to call for the pump, but the pump has no power to answer. That is the moment the taps go truly dry.

✓ One dead circuit stops the whole chain

It only takes the very first link — power to the pump — to go missing, and the entire chain stops. That is the plain reason an outage on a well means no water, not just weak water.

Why you cannot just run a cord to it

Now that you have seen the anatomy, one important rule follows naturally from it.

Because a well pump is wired straight into your panel at 240 volts, with no plug and no outlet, there is simply nothing to run a cord to. You cannot feed it with an extension cord the way you would a lamp or a fridge, and you must never try to power it by backfeeding an outlet or using a so-called 'suicide cord.'

The safe way to bring backup power to a hardwired pump is a transfer switch or an interlock at your panel, installed by a licensed electrician. That is its own subject with real safety weight, so I will not cover the how here — our guide on connecting backup power walks through it properly.

! Never a cord, never a backfeed

This is the one hard safety line that grows straight out of the anatomy. Backfeeding can put deadly voltage on the power lines outside and injure a lineman working to restore your power. It is unsafe, against code, and never worth it — powering a well pump is licensed-electrician territory, every time.

Signs of a healthy well — and signs to call a pro

Knowing the parts also helps you notice when something is off. Here is the honest difference between normal and worth-a-call.

A healthy sign	Worth a call to the well pro
The pump runs in short spells, then rests.	The pump clicks on and off very rapidly.
Water flows steadily at the tap.	Pressure fades or the flow keeps dropping.
Clear water, no sputtering.	The faucet spits and coughs air.
Quiet stretches between cycles.	The pump runs and runs without resting.

None of these warning signs are a do-it-yourself fix. They point to the pump, the pressure tank, or the pressure switch — and each of those is the province of a well or pump professional with the right tools and training.

! When in doubt, call the well pro

Short-cycling, sputtering air, or fading pressure are the system's way of asking for help. Do not tinker with the well yourself — a quick call to your well company is the safe, smart move, and often a small fix caught early.

What I help with — and what the pros handle

I want to be plain about my role here, because honesty is the whole point of these guides.

- **What I do:** help you understand your system in plain English, find your nameplate, make sense of your options, size things sensibly, and line up the right pros — all at your pace, with no rushing.
- **A licensed electrician does** the panel work — anything 240-volt, a transfer switch, or an interlock. That is their trade, and it usually needs a permit and inspection.
- **A well or pump professional does** the pump, the drop pipe, the pressure tank, and the pressure switch — and can tell you your pump's real numbers.

I am a tech helper with 30-plus years of patient experience — not a licensed electrician, plumber, or well contractor, and I will never pretend to be. What I am is the friendly person who helps you understand it all and coordinates the folks who do the licensed work.

★ One friendly point of contact

Think of me as the person in your corner who helps you ask the right questions and lines up the right pros. Call or text me at (330) 200-8042.

Common questions about the parts

The questions I hear most often once folks start getting to know their well.

Q: Where exactly is my well pump?

If you have a submersible pump, it is down inside the well itself, below the water line — not in your basement. What you see indoors is the pressure tank, the switch, and maybe a control box.

Q: Why does my pump turn on and off by itself?

That is the pressure switch doing its job — turning the pump on when pressure drops and off when the tank is full. On and off in short spells is exactly what a healthy well does.

Q: What is the tank in my basement for?

That is your pressure tank. It stores a reserve of water under pressure so the pump can rest between uses, and it is why water flows the instant you open a tap. Our pressure-tank guide goes deeper.

Q: Do all wells have a control box?

No — many do, but not all. If you have one, it is usually on the wall near the pressure tank, and it is often where the pump's nameplate information lives.

✓ No such thing as a silly question

If you have wondered about a part and it is not here, that is exactly the kind of thing I love to explain. Jot it down and give me a call.

Common Questions

And the questions that come up most once folks connect the parts to a power outage.

Q: If the power goes out, will I have any water at all?

For a short while, yes — your pressure tank holds a reserve. Once that is used up, the taps go dry until the pump can run again. Our pressure-tank guide covers stretching that reserve.

Q: Can I plug my well pump into a generator?

No. It is a 240-volt, hardwired appliance with no plug. Backup power reaches it through a transfer switch or interlock installed by a licensed electrician — see our guide on connecting backup power.

Q: How do I find out how big my pump is?

Look for its nameplate, on the control box or in your well paperwork, or call the company that services your well. Then our sizing guide explains how to use those numbers.

Q: Does the pressure tank mean I can skip a backup plan?

No — the tank holds only a modest reserve, not days of water. It buys a little time, which is a real help, but a full plan still means stored water and a safe way to power the pump.

★ Still piecing it together?

Understanding your well is the foundation for everything else in this category, and I am glad to walk through it with you. Call or text me at (330) 200-8042.

A gentle safety note — leave the well itself alone

Getting to know your well is a wonderful thing. Getting into it is not — and here is why, plainly.

A well is a sealed, engineered system, and three good reasons keep the hands-on work with the professionals: your drinking water, your safety, and the equipment itself.

- **The sanitary seal.** The cap and seal at the top of your well keep bugs, dirt, and surface water out of your drinking water. Opening things up carelessly can let contamination in.
- **Electricity and water together.** The pump runs on 240 volts, and 240 volts near water is no place for guesswork — that is a licensed electrician's world.
- **Torque and pressure.** Pulling a pump, or working on a pressurized tank, involves real weight and stored pressure that can hurt someone who does not do it for a living.

! Know your system, but call the pros to work on it

There is real value in understanding every part we have covered — it makes you a smarter, calmer homeowner. But knowing your well and working on your well are two different things. Leave the hands-on work to a licensed electrician and a well professional, every time.

Bringing it all together — you know your system now

Take a moment to notice how much you have picked up. The well that used to be a mystery has a shape now.

You know that a submersible pump lives down in the well and lifts your water up a drop pipe. You know it runs on 240 volts, wired in with no plug. You know the pressure tank stores a reserve under pressure, and the pressure switch cycles the pump on and off. And you know that because it all runs on electricity, no power means no water.

That understanding is the foundation the rest of this category is built on. When you move on to sizing, to connecting backup power, or to leaning on your pressure tank during an outage, none of it will feel like a foreign language — because you have already met the parts.

★ And whenever you would like a hand

That is exactly what I do — come to your home, work at your pace, and never make you feel rushed or silly for asking. Call or text me at (330) 200-8042, and we will take the next step together.

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 understanding your well pump 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.

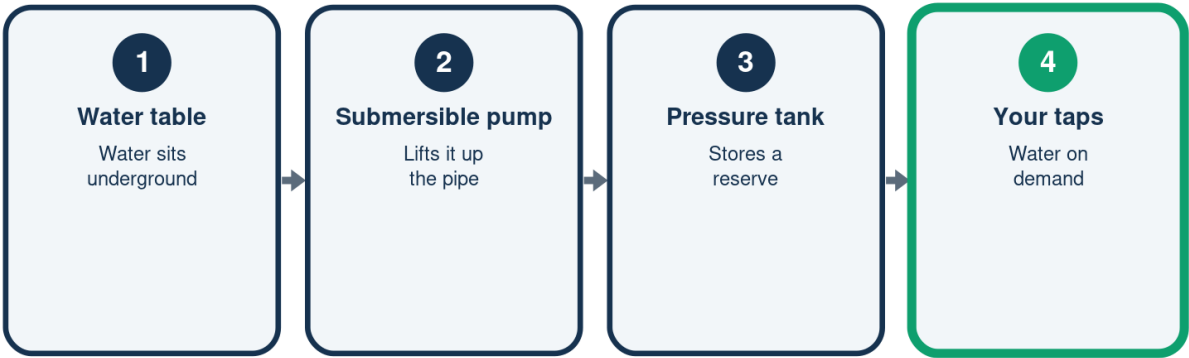
When you'd rather have a hand, that's exactly what I do. I come to your home, work at your pace, and never make you feel rushed or silly for asking. A first visit is a flat \$99, and for the parts that don't need me on-site I can often help right on your screen for \$49. Every visit comes with a 30-day,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

From the Aquifer to Your Faucet

How a well system moves water



Every step runs on your home's electricity.

The Parts of a Well System

What each piece does

Part		What it does
Submersible pump	Lifts water up	Lives in the well
Drop pipe	Carries water up	Holds the pump
Pressure tank	Stores a reserve	Under pressure
Pressure switch	Cycles the pump	On and off

Know these names and the rest of the category is easy.

Not Like a Plug-In Appliance

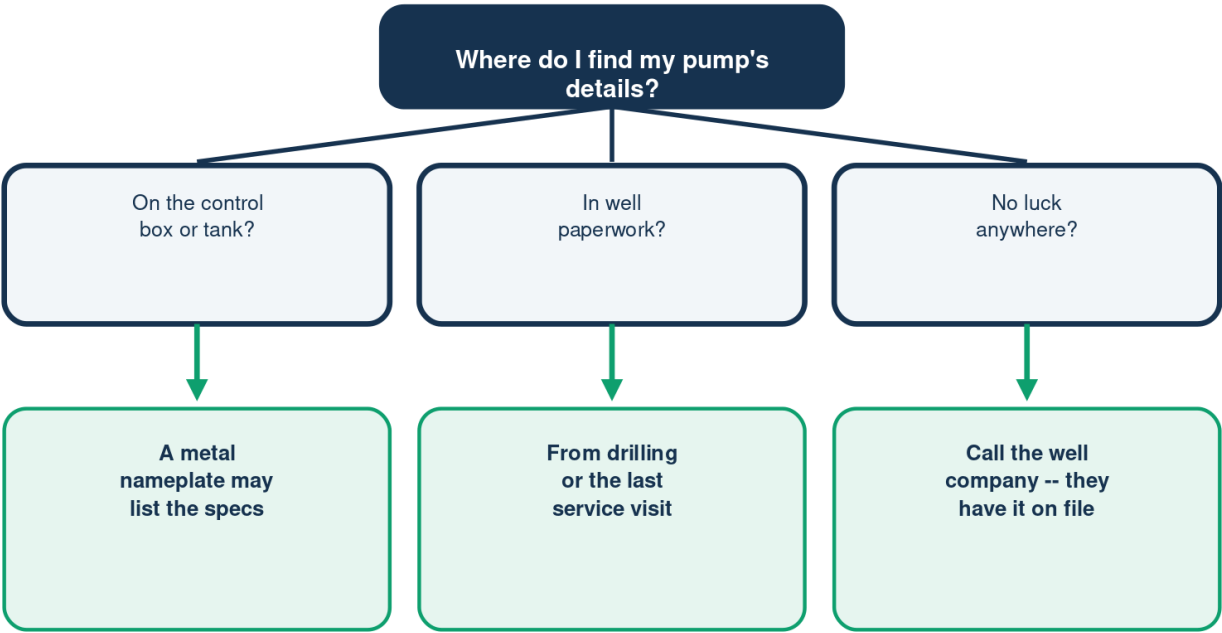
Why the pump is different

	A plug-in fridge	A well pump
Voltage	Around 120V	Usually 240V
Connection	Plug and cord	Hardwired
Can you unplug it?	Yes	No

No plug means no cord hookup -- it's a pro's job.

Where Is My Pump's Information?

Three places to look



Never guess a pump's numbers -- get them from the source.

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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