



An Extended Guide · No. 1795

Sizing a UPS and Why Runtime Depends on the Load

How to get enough minutes
for what you actually need

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! Read this first — what a UPS can and can't do

First, the honest picture, so a UPS never disappoints you. A UPS — an uninterruptible power supply — is a battery backup box. When the power blinks or goes out, it keeps small electronics like your computer, your modem and router, or a medical monitor running without a flicker. But it is a short bridge, not a whole-home generator: it buys you minutes, not hours — time to save your work and shut down gently, keep the internet up through a brief blip, or ride you over until a generator or a portable power station takes over. Plug only small electronics into the battery side. Never plug in a laser printer, a space heater, a hair dryer, a microwave, a sump pump, or anything that makes heat or has a big motor — they draw far too much and can overload or damage the unit. A UPS has a sealed battery inside, so set it where a little warmth can escape, not sealed in a cabinet, and keep it dry. That battery wears out every few years and gets swapped and recycled at a battery drop-off — never put it in the household trash. This guide is the 'how long will it last' half of sizing — our VA-vs-watts guide covers the 'how much can it run' half.

How long will a UPS really last?

The honest answer is: it depends — and it depends on something you control. The more you plug in, the fewer minutes you get. This guide makes that trade-off easy to picture.

I'm Bill, from Bill's Home Tech in Portage County, Ohio. Folks often ask me, 'How many minutes will this UPS give me?' It's a great question, and the surprising part of the answer is that the same UPS gives very different times depending on what's plugged into it.

I won't quote you minutes, because your time depends on your gear and your unit. Instead I'll show you how to think about it, so you buy a UPS that lasts long enough for what you actually want it to do.

★ Start with the goal, not the minutes

The right question isn't 'how many minutes?' but 'long enough to do what?' Nail the goal and the size falls right out. Call (330) 200-8042 if you'd like help thinking it through.

The whole idea, on one page

If you read nothing else, here's how runtime really works.

- ❑ Runtime is minutes on battery, and it shrinks as you plug in more.
- ❑ A light load (modem, router) lasts a good while; a heavy load (desktop, big monitor) drains fast.
- ❑ Decide your goal first: ride a blink, save and shut down, or bridge to a generator.
- ❑ Match the UPS — watts to carry the load, battery size for the minutes you want.
- ❑ The runtime on the box is a best case; real life is usually a bit less, and less still as the battery ages.
- ❑ Need lots of time? That's a power station's job, not a UPS's.

✓ Runtime is a dial you turn

Plug in less and the minutes grow; plug in more and they shrink. You have more control over runtime than you'd think.

Sizing is really two questions

Getting the right UPS means answering both, not just one.

The first question is 'how much can it run at once?' — that's the watts number from our VA-vs-watts guide. The second is 'how long will it run?' — that's runtime, and it's what this guide is about. A UPS can have plenty of watts to carry your gear yet only hold it for a short while, or carry a light load for a good long stretch.

✓ Both questions, or you'll be surprised

Answer only the watts question and you might buy a UPS that powers your gear but dies faster than you hoped. Answer both and there are no surprises.

The key idea: runtime depends on the load

This one sentence explains most of what confuses people about UPS runtime.

A UPS holds a fixed amount of energy in its battery. How fast you use it up depends on how much you've plugged in. A big load empties the battery quickly; a small load sips slowly and lasts far longer. So the very same UPS might carry your modem for a comfortable while but your whole desk for only a short window.

★ Same box, different minutes

This is why no honest person can tell you a single runtime for a UPS without knowing what you'll plug in. The load is half the answer.

Light loads sip, heavy loads gulp

A quick feel for which of your gear is thirsty and which is thrifty.

- **Thrifty (long runtime)** — a modem and router, a small network switch, a phone base. These sip power.
- **Middling** — a laptop, a small monitor, a security base recorder. Steady but modest.
- **Thirsty (short runtime)** — a desktop computer with a big monitor, especially a powerful one. These gulp.

That's why a UPS dedicated to just the internet gear can keep you online a good while, but the same battery on a full desktop is meant for a quick save-and-shutdown, not a long wait.

What 'enough runtime' means for you

Enough is defined by your goal — so let's name the goals.

- **Ride the blink** — you just want short blinks and brownouts to vanish. Even a little runtime does this.
- **Save and shut down** — you want time to save your work and turn the computer off properly. A few minutes covers it.
- **Stay online** — you want the internet up through an outage. A small load stretches this out nicely.
- **Bridge to backup** — you want to cover the gap until a generator or power station takes over. You need enough to span the start-up.

✓ Pick your goal before you shop

Write down which of these you want. It's the single most useful thing you can bring to the store or to a chat with me.

Each goal, and what it asks of the UPS

Here's how the four goals line up with what to look for.

Your goal	What to look for
Ride the blink	Modest battery; almost any UPS does it
Save and shut down	A few minutes at your desk's full load
Stay online a while	Light load (internet only) + roomy battery
Bridge to a generator	Enough runtime to span the start-up

Notice that 'stay online' is easiest to stretch, because the load is so light — and that's why keeping the internet up is one of the best jobs a UPS can do.

Sizing for your internet gear

The friendliest sizing job there is, because the load is so small.

Your modem, router, and any little network box draw very little power, so even a modest UPS can keep them going for a comfortable stretch — long enough to stay reachable through most outages in town, and long enough in the country to make a call before you switch on other backup. Put only the internet gear on that UPS and the minutes stretch further still.

★ A dedicated internet UPS is a gem

One small UPS just for the modem and router is one of my favorite recommendations — inexpensive, long-lasting on such a light load, and it keeps you connected when it matters. See our 'keep your internet up' guide.

Sizing for a desktop computer

Here the goal is usually a calm save-and-shutdown, not a long wait.

A desktop and a monitor draw a good deal more than a modem, so the runtime is naturally shorter. That's fine — the point isn't to keep working through the outage, it's to give you a calm window to save your files and shut down properly, or to let safe-shutdown software do it for you. Size for a comfortable few minutes at your desk's real load.

✓ Let software use the minutes wisely

Pair a desktop UPS with safe-shutdown software and even a short runtime is plenty — the computer saves and powers down on its own before the battery runs out. Our safe-shutdown guide shows how.

The battery's size matters, too

Two UPS units with the same watts can hold very different amounts of time.

Runtime comes from the battery inside. A UPS with a bigger battery (or room to add extra battery packs) holds more minutes at the same load. So when runtime matters to you, look not just at the watts but at the battery's size and whether the unit can take add-on packs for more time later.

✓ Ask about expansion

Some UPS units accept extra battery packs to stretch runtime well beyond the built-in battery. If you think you'll want more time down the road, that's worth looking for — see our 'extending runtime' guide.

Two kinds of homes, two sets of needs

How much runtime you should size for leans heavily on how long your outages tend to last.

If you live in town or the suburbs

In town or the suburbs, outages are usually short. Your goal is mostly to ride the blinks and get a calm shutdown — so you can size modestly.

- For a computer, a few minutes of save-and-shutdown runtime is plenty for the typical short outage.
- For the internet gear, even a modest UPS stretches a long way on that light load.
- You rarely need to size for a marathon, which keeps the cost down.
- If a longer outage does hit, safe-shutdown software protects your work automatically.

If you are out in the country on a well

Out in the country on a private well, outages run longer, so your goal often shifts to 'stay online and bridge to a generator' — which changes how you size.

- Size the internet UPS with roomy runtime so you stay reachable well into a longer outage.
- Size the desktop UPS to comfortably span the minutes until you start a generator or power station.
- Consider a unit that accepts extra battery packs, since you may want more time than a town home would.
- Remember: for the long haul and big loads like the well pump, the UPS hands off to a generator — it never carries them itself.

★ Want help matching runtime to your outages?

Tell me how long your power usually stays out and what you want to keep alive, and I'll help you size the minutes. Call or text (330) 200-8042.

Why the number on the box is a best case

Makers publish runtime figures — read them with a friendly grain of salt.

A runtime printed on the box or in the chart is measured under ideal conditions, often with a light load and a brand-new battery. Your real runtime — with your actual gear, and a battery that's been working a while — will usually come in somewhat under that. That's not the maker being dishonest; it's just how best-case numbers work.

! Don't size right to the published minute

If a figure says a UPS lasts a certain time and you need exactly that, you'll likely fall short in practice. Give yourself a cushion so real life still meets your goal.

Runtime shrinks as the battery ages

A brand-new UPS holds more minutes than the same UPS a few years on — and that's normal.

Every battery slowly loses some of its capacity as it ages. So the generous runtime you enjoy at first will gently taper over the years. When the minutes drop off noticeably, it's usually the battery telling you it's near replacement — an easy, inexpensive swap that brings the runtime right back.

✓ Build in room for aging

Sizing with a little extra runtime up front means that even as the battery ages, you still comfortably meet your goal until it's time for a fresh one.

Ways to stretch the minutes

If you want more runtime, you have real options — covered fully in our 'extending runtime' guide.

- **Trim the load** — move the printer and chargers off the battery side so only essentials draw power.
- **Turn off the monitor** during an outage; the computer can keep working while you save.
- **Add battery packs** if your UPS accepts them, for more minutes at the same load.
- **Split the job** — a dedicated little UPS on the internet gear outlasts one shared with a hungry desktop.

✓ Less load, more time — every time

The quickest way to more runtime costs nothing: unplug what you don't truly need on the battery. The remaining gear then lasts longer.

Reading the maker's runtime chart

Most makers publish a little chart — here's how to use it without getting lost.

A runtime chart shows how the minutes fall as the load rises: light loads on one end with long times, heavy loads on the other with short times. Find the spot closest to your gear's total and read across. Then shade your expectation down a bit for real-world conditions and battery age, and you'll have a fair, honest picture.

★ I can read the chart with you

These charts are simple once someone points out the two axes. Send me the chart for a unit you're eyeing and I'll tell you what to really expect for your gear.

A sizing walk-through, by goal

Here's how I'd size at your table — with your goal and your gear, not made-up numbers.

First we'd name your goal — say, 'keep the internet up and give the computer time to shut down.' Next we'd total the watts of just that gear. Then we'd choose a UPS whose watts carry the load with headroom, and whose battery holds enough minutes for the goal — checking the maker's runtime chart and shading it for real life. Last, we'd make sure it can grow if your needs do. Simple, and no guessing.

✓ Goal, load, battery, headroom

Those four words are the whole method. Bring them to any UPS box and you'll size it right.

Common sizing mistakes

The runtime regrets I help folks avoid.

- **Expecting hours** from a UPS — it's a bridge of minutes, not a generator.
- **Sizing to the box's best-case number** with no cushion for real life or battery age.
- **Overloading a small UPS** with a desktop it can only hold briefly.
- **Sharing one UPS** between the internet and a hungry PC, so the internet dies as fast as the computer.

! The fix is to name the goal

Almost every runtime disappointment comes from not deciding, up front, how long you needed and for what. Name that, and the sizing behaves.

When you really need a power station instead

Sometimes the honest answer is 'a UPS is the wrong size of tool.'

If your goal is to keep working for a long time, run something big, or ride out a multi-hour outage, no reasonable UPS will do it — you want a portable power station or a generator. A UPS is unbeatable for the instant catch and a short bridge; it was never meant for the long haul.

★ Right tool, right job

Our 'UPS vs power station' guide lays out exactly where each shines. If you find yourself wishing for hours of runtime, that guide is your next read — or give me a call and we'll sort it out.

Common Questions

The runtime questions I hear most often.

Q: How many minutes will my UPS last?

It depends entirely on how much you plug in and the battery's size. A light load like a modem lasts a good while; a full desktop is meant for a quick save-and-shutdown. I can't give one number without knowing your gear.

Q: Can a UPS run my computer through a long outage?

No — that's not its job. It gives you minutes to save and shut down, or to keep the internet up briefly. For hours, look at a power station or generator.

Q: Why did my runtime get shorter over the years?

The battery has aged and lost some capacity — that's normal. A fresh battery brings the runtime right back; it's an easy, inexpensive swap.

Q: How do I get more runtime?

Plug in less, turn off the monitor during an outage, add battery packs if your unit accepts them, or give the internet gear its own small UPS. Our 'extending runtime' guide covers it all.

Q: Should I trust the runtime on the box?

Treat it as a best case measured under ideal conditions. Your real time will usually be a bit less, especially as the battery ages, so size with a cushion.

★ Want a straight answer for your setup?

Tell me your gear and your goal and I'll give you an honest, plain estimate — no sales pitch. Call or text (330) 200-8042.

A simple sizing checklist

Five steps to a UPS that lasts long enough.

- ☐ Name your goal: ride the blink, save and shut down, stay online, or bridge to backup.
- ☐ Add up the watts of only the gear that goal needs.
- ☐ Pick a UPS whose watts carry that load with headroom.
- ☐ Check its battery holds enough minutes for the goal — then shade the figure down for real life.
- ☐ Prefer a unit that can take extra battery packs if you may want more time later.

✓ Keep it with the receipts

When you add gear or replace the unit, this page saves you from relearning the whole thing.

Where to go next

You've got runtime down — here's what pairs with this guide.

- Need the 'how much' half? See our 'VA vs watts' guide.
- Want more minutes? See 'extending your runtime.'
- Weighing a bigger battery box? See 'UPS vs power station.'
- Ready to shop? The 'buying checklist' turns this into a one-page list.

Follow whichever question is on your mind. Each guide stands on its own, and none asks you to memorize the last.

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 sizing a UPS and understanding its runtime 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. Setting up a plug-in UPS is friendly, everyday work I'm glad to do with you; I don't do licensed electrical work myself, so for a hardwired unit or any panel or wiring work I'll help you line up a trustworthy local pro.

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How Much Runtime Do You Need?

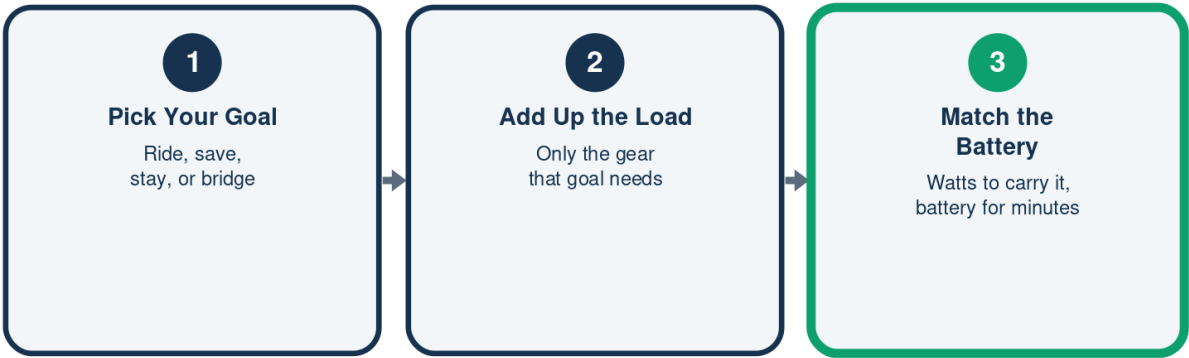
Match the minutes to your goal

Runtime you need	
Ride the blink	Just seconds
Save & shut down	A few minutes
Stay online a while	Longer — light load
Bridge to a generator	Enough to span start-up

Naming the goal is the first and biggest sizing decision.

Sizing for Runtime, in Three Steps

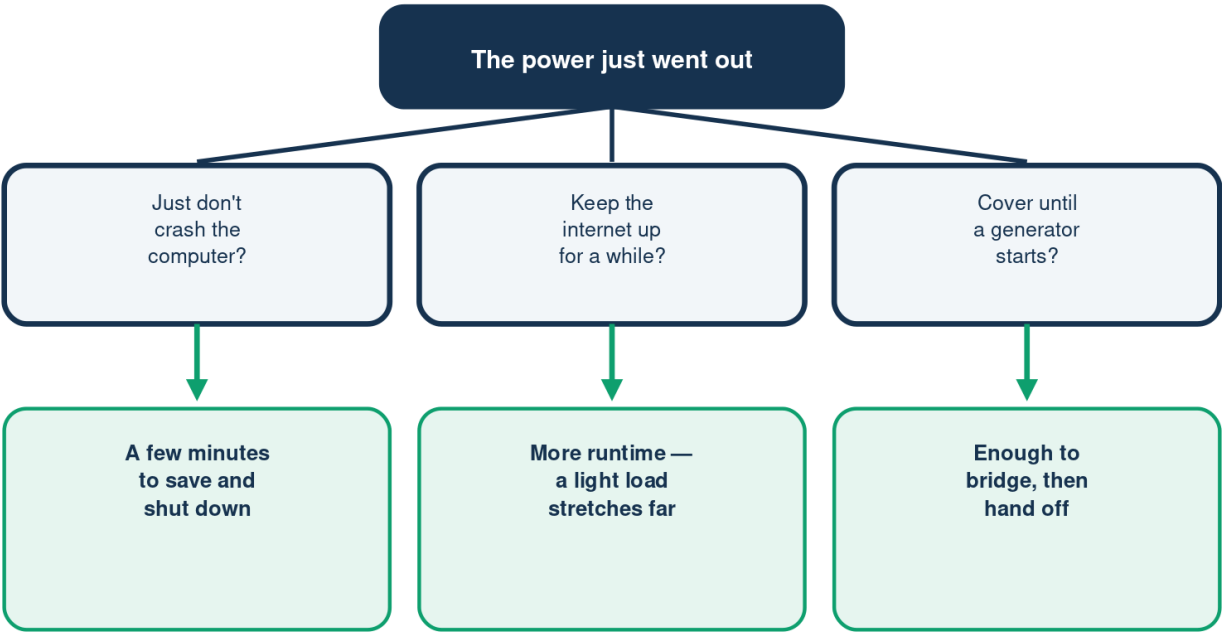
Goal, load, battery



Then shade the maker's runtime down a bit for real life.

How Long Do You Need It?

A starting point, not the final word



Need hours? That's a power station's job, not a UPS's.

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

Light Load vs Heavy Load

The same battery, very different minutes

	Light load	Heavy load
Example	Modem, router	PC + monitor
Battery lasts	A good while	Not long
Best goal	Stay online	Save & shutdown

Plug in less and the minutes grow; plug in more and they shrink.



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A Note From Bill

A quick note from Bill.

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