BILL'S HOME TECH

Home & Small Business Tech Solutions

An Extended Guide · No. 1495

Why Solar Goes Dark in an Outage

Anti-islanding explained — and how batteries change it

Tech Made Simple — Service Made Personal

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! Read this first — two honest truths about home solar

Two honest truths before we start, because they surprise a lot of good folks. First, home solar is a professional job — it takes a licensed installer, building permits, and your utility's approval to connect (called interconnection). This guide is here to help you understand, plan for, and live with solar; it is not a do-it-yourself project, and I never want you climbing on a roof or opening an electrical panel. Second, a plain grid-tied solar system — one without a battery — shuts itself off during a power outage, even in bright sunshine. That is a required safety feature, so the system cannot put electricity onto the lines while the crews are repairing them. If keeping the lights on during an outage matters to you, you will need a battery, and we will talk about that plainly. This whole guide is about that second truth — it's the most misunderstood thing about home solar, and the one I least want you to learn the hard way.

The sun is out, so why are the panels off?

It surprises almost everyone: the power goes out on a bright, sunny afternoon, and the brand-new solar panels on the roof sit there doing nothing. It's not a malfunction. It's exactly how a plain solar system is designed to behave — and there's a good reason.

I'm Bill, of Bill's Home Tech in Portage County. I'd rather you hear this from me now, calmly, than discover it during your first real outage. So let's walk through why it happens and, just as importantly, what you can do about it.

The short version: a solar system without a battery shuts off when the grid does, to keep utility workers safe. A battery is what changes that. This guide unpacks both halves in plain English.

★ If backup power matters, let's plan it

Whether it's a well pump, a medicine fridge, or just peace of mind, I can help you figure out what it takes to keep power in an outage. Call or text me at (330) 200-8042 — no sales pitch, just straight answers.

The whole idea, on one page

If you remember only this page, you'll never be caught off guard by how solar behaves in an outage.

- ❑ A grid-tied system with no battery shuts off in an outage — even in full sun.
- ❑ It does this on purpose, so it can't put power on lines a crew is repairing.
- ❑ This safety behavior is called anti-islanding, and it's required by law and safety standards.
- ❑ A battery, with the right setup, lets you keep chosen circuits running when the grid is down.
- ❑ A battery is usually sized for essentials — fridge, lights, well pump — not the whole house at once.
- ❑ Never try to rig your own backup or bypass the safety — that's dangerous and illegal.

> **✔ The one-sentence takeaway**
> Plain solar keeps your bills down; a battery keeps your lights on. If you want both, you want a battery — and this guide explains why.

The surprise nobody warns you about

Let's name the thing plainly, because too many folks find it out at the worst possible moment.

You'd think that if your roof is covered in panels making power, a blackout wouldn't touch you. It seems only logical. But a standard grid-tied system doesn't work that way. The instant the utility power drops, your inverter senses it and shuts the whole system down.

So there you are — sun blazing, panels idle, house dark, just like your neighbors without solar. The system stays off until the utility restores power, then it quietly starts up again on its own.

> **! Better to know now than during a storm**
> This isn't a reason to avoid solar — it's a reason to decide, up front, whether you want a battery. The folks who are unhappy are the ones who were never told. Now you know.

Why it shuts off: keeping crews safe

The reason is genuinely good, and once you hear it, the behavior makes perfect sense.

When the power goes out, utility crews go to work on the lines, often assuming those lines are dead. If your solar kept pushing electricity onto the grid during an outage, it could put dangerous voltage on wires a worker believes are safe to touch. That could seriously hurt or kill someone.

To prevent that, every grid-connected inverter is required to detect when the grid is down and disconnect itself within moments. It simply won't feed the lines when the utility is off. Engineers call this anti-islanding — the system refuses to become its own little 'island' of power.

> **! This is a feature, not a fault**
> The shut-off is protecting real people doing dangerous work in the storm. It's one of the reasons solar must be installed by professionals and approved by your utility — so it behaves safely, every time.

It's not optional — it's the standard

This behavior isn't up to your installer or your preference. It's baked into the codes and standards that make solar safe and legal.

Grid-connected inverters are built and tested to national safety standards — you may see references to UL and IEEE requirements — that mandate the anti-islanding shut-off. On top of that, your utility's interconnection agreement (the permission that lets your system connect) requires it. The National Electrical Code governs the safe wiring around it all.

You don't need to memorize those names. The point is simply that every properly installed grid-tied system, from every reputable installer, behaves this way. It's not a corner your installer cut — it's the law doing its job.

> **✔ Why this reassures rather than worries me**
> The same rules that turn your panels off in an outage are what keep your system from ever endangering a neighbor or a lineman. That's the kind of safety I'm always glad to see built right in.

'Islanding,' in plain words

It's a bit of jargon, but the picture behind it is simple and worth having.

Imagine the power grid as a great connected sea. Normally your home is part of that sea, giving and taking power. In an outage, the sea goes calm — no power moving. If your solar kept generating and pushing power out, your house would become a little 'island' of live electricity in that dead sea.

That island is exactly the danger: live wires where everyone expects dead ones. Anti-islanding is the rule that says your system must not do that. It has to notice the sea has gone calm and take itself offline.

> **✔ A battery makes a safe island**
> The clever part: a battery system creates its own little island on purpose, but it first disconnects your home from the grid so nothing flows back to the lines. Safe island, lights on. That's the next part of our story.

How a battery changes everything

Here's the good news you've been waiting for. A battery, set up the right way, gives you power in an outage — safely and automatically.

A hybrid system with a battery includes special equipment that, the moment the grid goes down, safely disconnects your home from the utility lines. With that connection broken, there's no danger to any crew — so your solar and battery are now free to power your home's backed-up circuits.

Even better, it usually happens automatically and almost instantly. Many folks barely notice the switch-over. Through the day, the sun refills the battery; through the night, the battery carries your essentials. That's the whole magic of a hybrid system.

> **✔ It's the disconnect that makes it safe**
> The reason a battery can keep your panels working when plain solar can't is that it isolates your home from the grid first. Same panels, same sun — but now no path back to the lines, so it's allowed to run.

Backing up essentials, not everything

Here's an honest expectation that keeps folks happy: a battery usually keeps the important things running, not the whole house at full blast.

When your system is designed, you and your installer choose which circuits the battery will protect — a 'backed-up' or 'essential loads' panel. Typical picks are the refrigerator, some lights, the internet, phones charging, a furnace fan, and (for well homes) the pump.

Leaving out the big power-hungry loads — central air, electric range, electric water heater — lets a sensibly sized battery last much longer. You can run the essentials for a good while instead of everything for a short while.

> **★ We'll build your must-run list together**
> Deciding what truly must stay on in an outage is exactly the kind of thing I help with. Bring me your worries and we'll make a sensible list before you ever talk sizing with an installer. Call (330) 200-8042.

What a battery can realistically run

Batteries are wonderful, but they aren't bottomless. Knowing what they handle easily — and what strains them — keeps expectations honest.

- **Easy:** lights, phones, internet, a fridge or freezer, a CPAP, a television.
- **Doable, with planning:** a furnace blower, a sump pump, a microwave — one at a time.
- **Demanding:** a well pump, which needs a big jolt to start and must be planned for.
- **Usually left off backup:** central air, electric range, electric water heater — big, steady draws.

None of this is a knock on batteries — it's just physics. A good installer sizes the battery to your must-run list. I won't guess numbers here; that's what a proper design is for. The well-pump guide digs into that demanding case.

Two kinds of homes, two sets of needs

How much the outage rule matters depends a great deal on where you live — and especially on where your water comes from.

If you live in town or the suburbs

In town or the suburbs, outages are usually short and city water keeps flowing regardless. Going dark for an hour or two is an inconvenience, not a crisis, so many folks accept plain grid-tied solar.

- Short outages make a battery more comfort than necessity.
- A battery still shines for medicine fridges or home medical gear.
- You can start without one and add it later if outages start to bother you.
- Even a small backup keeps the fridge and phones going through a blip.

If you are out in the country on a well

Out in the country, the outage rule bites harder. Outages last longer, and when the power stops, your well pump stops — no water for drinking, cooking, flushing, or the animals until it comes back.

- No power can mean no water, which turns backup from nice to necessary.
- A well pump is a demanding load, so the battery must be planned around it.
- Long rural outages may need a battery and a generator working together.
- Store some drinking water regardless — a simple, cheap safety net.

> **★ On a well? This is the guide that matters most**
> If your water depends on electricity, the outage rule is not academic. Let me help you plan real backup for your pump and your household. Call (330) 200-8042.

What about that 'backup outlet' I've heard of?

You may run across a feature on some inverters that offers a sliver of daytime power without a battery. It's real, but small — worth understanding so you're not oversold on it.

A few grid-tied inverters include a single, limited outlet that can provide a modest amount of power during an outage — but only while the sun is actually shining, and only a little. It's meant for charging a phone or running a small device, not powering your home.

It's a nice bonus if your system happens to have it, but it's no substitute for a battery. It gives you nothing at night or under heavy cloud, and it can't run a fridge, a furnace, or a well pump. Treat it as a convenience, not a backup plan.

> **! Don't mistake a trickle for true backup**
> If a salesperson leans hard on a 'built-in backup outlet' to avoid talking about batteries, be careful. For real outage protection, a battery is the honest answer, and I'll always tell you so.

Battery, generator, or both?

A battery isn't the only way to keep power in an outage. It's worth knowing how it stacks up against a generator, which you may already own.

A battery is quiet, automatic, needs no fuel, and kicks in instantly — but it holds a limited amount and can run down in a long outage unless the sun keeps refilling it. A generator can run as long as you have fuel, but it's noisy, needs starting and refueling, and (for the gas kinds) makes deadly exhaust that must stay outdoors.

For many homes, especially rural ones, the smartest plan is both: a battery for the frequent short outages and quiet nights, and a generator for the rare multi-day event. Our generator guides cover that side in depth.

> **✔ They solve different problems**
> Think of the battery as your everyday, effortless backup and the generator as your heavy-duty, long-haul insurance. Used together, each covers the other's weak spot.

Layering it all together

The most resilient homes don't rely on a single trick. They stack a few simple layers so no one failure leaves them stranded.

Picture the layers: solar makes power by day; a battery stores it for the evening and short outages; a generator stands ready for the rare long one; and a little stored water and a few flashlights cover the basics no matter what. Each layer is modest, but together they're sturdy.

You don't have to build all of it at once. Even solar plus a battery is a big step up from going dark. Add layers as your budget and worries guide you.

> **★ Let's design your layers**
> I love helping folks build a calm, layered outage plan that fits their home and budget — solar, battery, generator, and the simple stuff. Call (330) 200-8042 and we'll sketch it out together.

What to tell your installer up front

If keeping power in an outage matters to you, say so at the very first conversation. It changes the design from the ground up.

- Say clearly that outage backup is a goal, not an afterthought.
- List what must stay on — fridge, well pump, medical gear, a few lights.
- Ask whether they'd design a hybrid system or make it battery-ready now.
- Ask how the automatic switch-over works and how fast it happens.
- Ask, honestly, how long the battery would carry your list.

> **✔ The goal shapes the whole design**
> A system built for backup from the start is cleaner and often cheaper than one bolted on later. Naming your goal early is the single most useful thing you can do — our reading-a-quote guide helps you check they listened.

How long will the battery last?

This is the question everyone asks, and the honest answer is: it depends — but here's how to think about it sensibly.

A battery's runtime depends on how big it is and how much you're drawing from it. Run only the essentials and it stretches; try to run the whole house and it empties fast. That's why the must-run list matters so much.

The lovely part in a solar home is that the sun refills the battery each day. So in a daytime outage with decent sun, a battery can often carry you day after day on essentials — charging by afternoon, coasting through the night. In a dark stretch, it leans harder on its stored charge, which is where a generator earns its keep.

> **! Beware anyone quoting exact hours sight-unseen**
> Real runtime comes from your specific battery, your loads, and the weather. If someone promises a precise number of days without studying your home, take it with a grain of salt. A proper design gives an honest range.

Please never try to bypass the safety

Because the shut-off can feel frustrating, folks sometimes wonder about working around it. This is one place I have to be firm with you.

Do not ever try to rig your own backup, bypass the anti-islanding protection, or wire a generator or battery into your home in some homemade way. Doing so can send deadly voltage onto the utility lines, endanger the crews, start a fire, and it's illegal on top of all that.

Every safe form of backup — a battery system, a generator with a proper transfer switch — keeps your home from ever feeding the lines during an outage. That safety is the whole point, and it has to be done by a licensed professional. There's no safe shortcut.

> **! The same rule as a 'suicide cord'**
> You may have heard warnings about back-feeding a house through an outlet with a double-ended cord. Same danger here: never create a path that could energize the grid in an outage. Let the pros build it right.

When someone at home depends on power

If a person in your home relies on powered medical equipment, the outage rule stops being a convenience question and becomes a caring, careful plan. Let's treat it that way.

Oxygen concentrators, CPAP or BiPAP machines, medication refrigerators, powered wheelchairs — these need power you can count on. Solar with a battery can be one reassuring layer, but it should never be the whole plan by itself.

Keep the manufacturer's approved battery backups, register with your utility's medical-priority list, tell your equipment supplier your plan, and ask your doctor for guidance. Our guide on keeping the fridge and medical gear running covers this gently and in full.

> **! If equipment fails and backup runs low**
> If medical equipment stops and your backup is running down, or someone has trouble breathing, chest pain, confusion, or blue lips, call 911 right away and have a plan to get to a place with power. A battery is a layer, never a substitute for that plan.

Outage behavior at a glance

Here's the whole story in one small table. Keep it handy.

Your setup	In an outage	Powered by
Grid-tied, no battery	Shuts off	Nothing
Hybrid with battery	Backs up loads	Battery + sun
Daytime backup outlet	Tiny, sun only	A trickle
Battery + generator	Rides it out	Both, in turn
Off-grid	Carries on	Battery + sun

The pattern is clear: without stored power of some kind, an outage means darkness. With a battery — and, for the long haul, a generator — you stay comfortably lit.

A simple outage-resilience checklist

Whether or not you add a battery today, these steps make any outage easier to weather.

- ❑ Decide honestly whether outage backup is a goal for you.
- ❑ If yes, plan a hybrid system or make your solar battery-ready.
- ❑ Write your must-run list — fridge, pump, medical gear, a few lights.
- ❑ For a well home, store some drinking water as a cheap safety net.
- ❑ Keep flashlights, phone battery packs, and a plan for medical needs.
- ❑ For long rural outages, consider a generator alongside the battery.

> **✔ Resilience is built in layers**
> You don't need the perfect system to be far better prepared than most. Each small layer — even just stored water and a charged phone pack — adds real comfort when the lights flicker.

Questions to ask about outage backup

Bring these to any installer, and you'll quickly see who's being straight with you about backup.

Q: Will this system give me any power in an outage?
For plain grid-tied, the honest answer is no. Only a battery (or an off-grid setup) provides backup. If they dodge this question, keep asking until you get a clear yes or no.

Q: Exactly which circuits would the battery keep running, and for how long?
You want specifics — named circuits and an honest range, not vague 'whole-home backup.' The answer should reflect your actual must-run list.

Q: Does the switch-over to battery happen automatically?
In a good hybrid system it does, within moments, with no scrambling on your part. Confirm it, so you know what to expect when the lights go out.

> **★ I'll help you ask the right ones**
> If you'd like, I'll sit with you before an installer visit and help you prepare exactly the questions that matter for your home. Call (330) 200-8042.

Common Questions

The questions I hear most about solar and power outages, answered plainly.

Q: Why won't my solar work in a blackout if the sun is shining?
Because a grid-tied system must shut off in an outage so it can't energize lines a crew is repairing. It's a required safety feature called anti-islanding — not a fault, and not something to bypass.

Q: Do I have to have a battery to get any outage power?
For practical purposes, yes. A few inverters offer a tiny sun-only backup outlet, but for real backup — the fridge, the pump, the lights — you need a battery or a generator.

Q: Will a battery run my whole house during an outage?
Usually it's set up to run chosen essential circuits, which is smarter than trying to run everything. That way a sensibly sized battery lasts far longer when you need it most.

Q: Can I add battery backup to solar I already have?
Often yes, though it's simpler if the system was made battery-ready. Adding one to an older grid-tied system can take extra equipment — our adding-batteries guide walks through it.

> **★ Still have a worry about outages?**
> This is the topic folks most want to talk through, and I'm always glad to. Call or text me at (330) 200-8042 for a plain, honest answer about your home.

You don't have to do this alone

You just have to remember that a friendly, patient person is one call away.

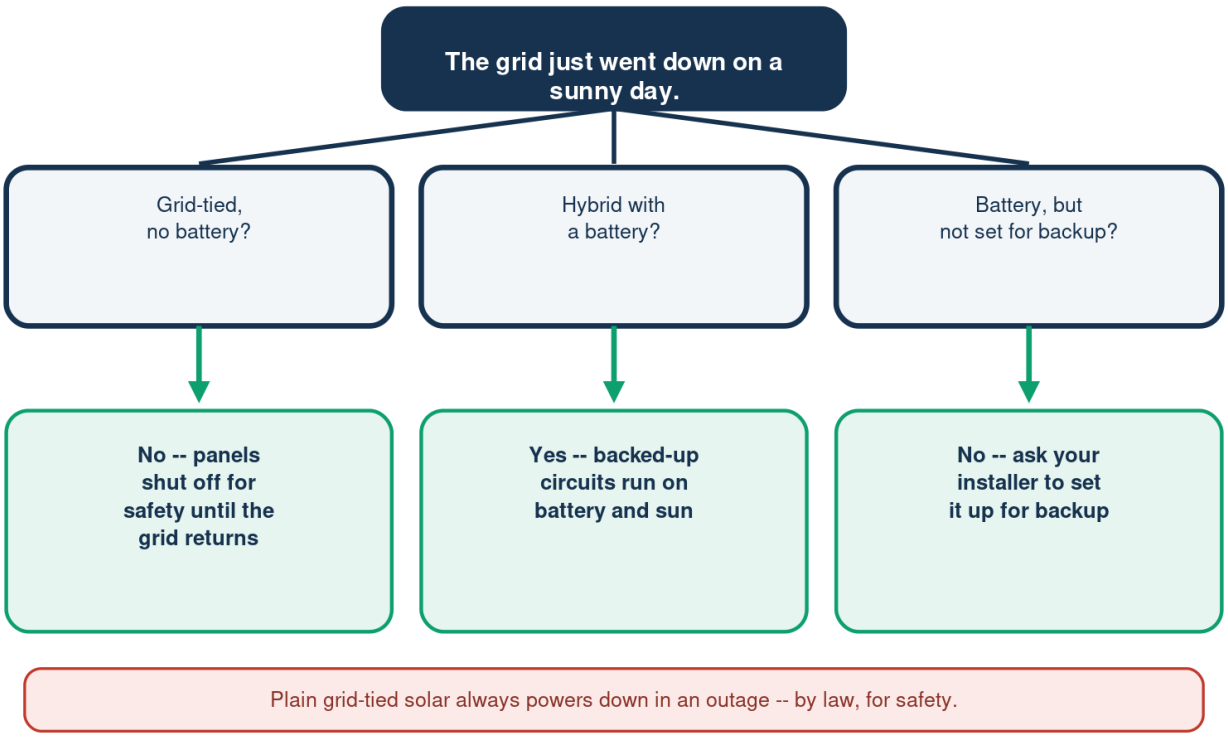
I hope this guide made solar and keeping power during an outage feel a little less daunting and a lot more doable. Keep it in a drawer with your other home papers, come back to a page whenever you need it, and don't worry about memorizing anything.

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 sell solar and I don't do the licensed electrical work or the rooftop install myself — I help you understand it all, ask the right questions, and line up a trustworthy local solar installer, so you never feel talked into anything.

> **★ 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

Sun's Out, Power's Off -- Will Solar Help?

The answer comes down to one thing: a battery

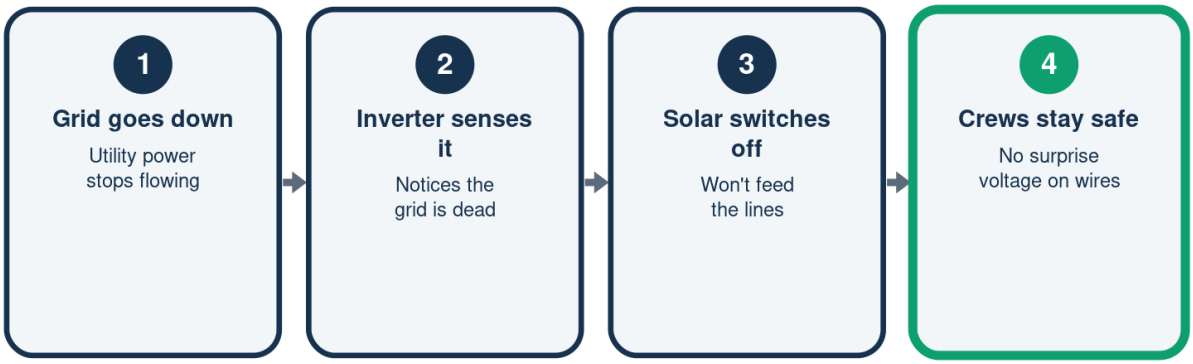


Plain grid-tied solar always powers down in an outage -- by law, for safety.

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

Why Solar Shuts Off in an Outage

Anti-islanding, step by step



A battery adds a safe disconnect so your panels can keep working.

What a Battery Can Back Up

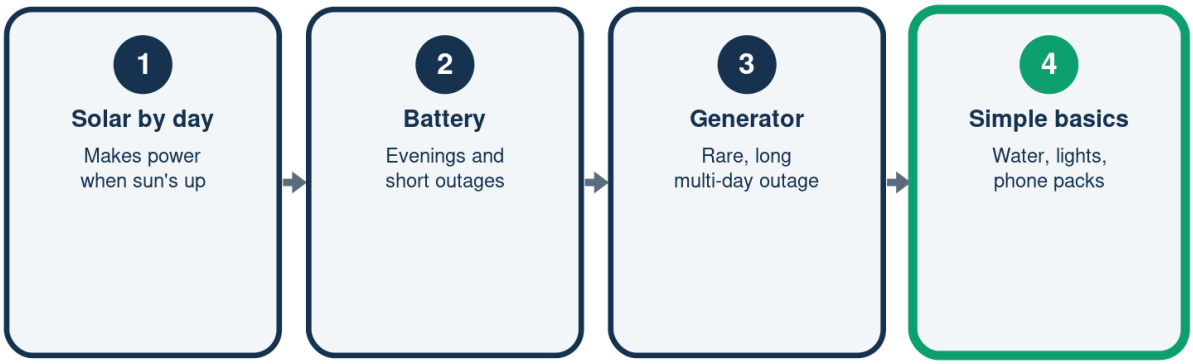
Sized for essentials, not the whole house at once

	Usually yes	Plan for / leave off
Fridge & lights	Easy	Keep on backup
Wifi & phones	Easy	Keep on backup
Furnace blower	Doable	One at a time
Well pump	Demanding	Must be planned
Central AC / range	Heavy	Usually left off

A shorter must-run list makes a sensible battery last much longer.

Layering Your Outage Backup

No single trick -- a few sturdy layers



Build the layers over time as your budget and worries guide you.

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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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