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# EMP Preparedness Brief

A short, practical field guide to surviving a high-altitude electromagnetic pulse. What it does, what it kills, and the specific steps that matter.

THREAT CLASS: **Low probability / severe impact**

WARNING TIME: **None**

EXPECTED DURATION: **Months to years**

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This brief is one of three in the grid-down series: EMP, Cyberattack, and Solar Storm. Each covers a distinct threat with a distinct response. Read all three, because the failure modes differ but the foundation they share is what actually keeps you alive.

# What an EMP actually is

A high-altitude electromagnetic pulse is a burst of energy from a nuclear detonation above the atmosphere. It does not level buildings. It destroys the electronics that run modern life, instantly, across a continental area, with no warning.

Unlike the other two threats in this series, an EMP requires a hostile actor and a nuclear weapon. That makes it the least probable of the three. But it also has the harshest failure mode, because it is the only one that directly destroys small electronics rather than just cutting their power.

## THE MECHANISM THAT MATTERS

A nuclear EMP produces a very fast initial pulse, known as the E1 component. It turns every wire and circuit board into an antenna that catches a surge far beyond what it can handle, frying the delicate components inside. This happens in a fraction of a second, across hundreds or thousands of miles, depending on detonation altitude and yield.

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Seconds of warning before impact

**E1/E2/E3**

Three pulse components, E1 is the device killer

**Cont.**

Continental scale from a single high-altitude burst

### THE KEY DISTINCTION

An EMP is the one grid-down scenario where your electronics themselves are destroyed, not merely unpowered. A generator, a radio, or a vehicle with modern engine electronics can be rendered permanently dead. This is why physical shielding, useless against a cyberattack, is a rational response here.

## The first hours and what breaks

There is no alert, no countdown. The first sign is that everything electronic stops at once, and stays stopped. Recovery is not measured in hours. Plan for months at minimum.

### WHAT FAILS IMMEDIATELY

- **The power grid.** High-voltage transformers and control systems are damaged. Replacements take 12 to 24 months to build under normal conditions, and conditions will not be normal.
- **Unprotected electronics.** Phones, computers, most modern vehicles, appliances, and generator control boards can be permanently destroyed.
- **Everything downstream.** Water treatment, fuel pumps, refrigeration, banking, and communications all depend on the grid and the electronics that run it.

### WHAT TENDS TO SURVIVE

Mechanical and non-electric tools are unaffected. Older vehicles with simple point-and-plug ignition systems are far more resistant than modern ones. Anything stored in proper shielding at the moment of the pulse survives. Devices that are off and disconnected fare somewhat better than those plugged in and running, but this is not a guarantee.

### WHY THIS ONE RUNS LONG

The catastrophe of an EMP is not the blackout, it is the destruction of the hardware needed to end the blackout. When the transformers and the electronics that would rebuild the grid are themselves damaged, restoration timelines stretch from months into years. Prepare to live without grid power for that long.

## What to do before it happens

EMP is the only threat in this series where a specific, targeted investment matters: shielding a small set of critical electronics so you have working tools on the other side.

**FIRST**

**Build or buy Faraday protection.** A shielded enclosure blocks the pulse from reaching what is inside. This is your single EMP-specific action.

**FIRST**

**Protect a backup communications device.** A radio you can actually use afterward is worth more than a phone with no network.

**NEXT**

**Store spare vehicle ignition parts** (condenser, ballast resistor) if you own an older vehicle, inside the shielding.

**NEXT**

**Keep non-electric tools and skills.** Manual can openers, hand tools, paper maps, mechanical everything.

### HOW FARADAY SHIELDING WORKS

A Faraday enclosure is any sealed, conductive container. The metal shell spreads the electromagnetic charge around its outer surface, so the energy never reaches the contents inside. The effect works whether or not the cage is grounded, for the fast E1 pulse. The single most important requirement is a complete, gap-free conductive enclosure. Seams, gaps, and openings are how the pulse gets in.

**DIY OPTION THAT WORKS**

A galvanized steel trash can with a tight metal lid makes an effective, low-cost cage. Line the inside with cardboard so devices never touch the metal. Seal the lid-to-can gap with copper tape for a continuous conductive seam. For individual devices, wrap in non-conductive material (cloth or paper) first, then two to three layers of heavy-duty aluminum foil with no gaps. A metal ammo can with a gasket seal also works well for smaller items.

**DO NOT SKIP THIS**

A device stored in a Faraday container cannot receive signals, so it is useless for daily life. The correct approach is a dedicated backup device, kept permanently shielded, separate from the phone or radio you use every day. You are protecting the tool you will need afterward, not the one you use now.

## The devices worth protecting

You cannot shield everything, and you do not need to. Focus on the small set of electronics that deliver the most capability on the other side of an EMP.

PRIORITY	DEVICE	WHY IT MATTERS
Tier 1	Emergency radio (AM/FM/shortwave, or ham)	Information and communication when networks are down. Ham radio may become the primary link to the outside world.
Tier 1	Backup phone or small tablet	Stored data, offline maps, documents, and reference material.
Tier 1	Power bank / solar charger	Keeps the protected devices running with no grid.
Tier 2	Medical device controllers	Spare electronics for any powered medical equipment a household member depends on.
Tier 2	LED flashlights / headlamps	Light that does not rely on the grid.
Tier 3	Spare vehicle electronics	Ignition components for older vehicles, if applicable.

### VERIFY YOUR PROTECTION

A basic field check: place a switched-on phone inside the sealed enclosure and call it. If it does not ring, the cage is blocking cellular frequencies. Note the limit honestly, this only tests higher frequencies, not the low-frequency E1 pulse, which needs lab equipment to verify. It is a useful confidence check, not a guarantee. A complete, gap-free enclosure is what actually matters.

## What EMP shares with every grid-down event

Faraday protection is the EMP-specific layer. But shielded electronics beside two weeks of water is a plan optimized for the least likely threat. The foundation below is what carries you through all three scenarios.

Whether the electronics are fried by an EMP, the transformers destroyed by a solar storm, or the control systems corrupted by a cyberattack, the shared consequence is identical: no grid power for an extended, unknown period. Build for that first.

- Water:** stored supply plus a way to filter and purify more. One gallon per person per day, minimum.

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- Food:** shelf-stable staples that need no refrigeration, enough for weeks to months, not days.

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- Heat and cooling:** a grid-independent way to stay warm in winter and manage heat in summer, that produces no dangerous indoor exhaust.

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- Sanitation:** a plan for when the toilets and water stop, disease is a leading disaster killer.

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- Medical:** backup for anyone dependent on refrigerated medication or powered devices.

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- Power:** a renewable source you can regenerate, not just a battery bank you will drain.

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- Light and comms:** non-grid lighting and a protected way to receive information.

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### THE SINGLE MOST IMPORTANT SHIFT

Think past the two-week mark. An EMP is not a long camping trip, it is a period where grid power is not coming back on any timeline you can wait out passively. What matters is whether any part of your setup renews itself without the grid. A source of power you can regenerate is the line between preparing for a blackout and preparing for its aftermath.

## EMP brief, one page

FACTOR	EMP
Probability	Low. Requires a hostile actor and a nuclear weapon.
Warning time	None. Instant, no notice.
Failure mode	Destroys electronics directly, not just their power.
Duration	Months to years, because the hardware to recover is also damaged.
Unique defense	Faraday shielding for critical backup electronics.
Shared defense	Extended grid-down foundation: water, food, heat, sanitation, medical, renewable power.

### THE THREE ACTIONS THAT MATTER MOST

1. **Shield a small set of critical electronics** in a complete, gap-free Faraday enclosure, kept separate from daily-use devices.
2. **Build the extended grid-down foundation** that every scenario demands, this is where most of your effort belongs.
3. **Secure a renewable power source**, because the duration of an EMP outage rewards regeneration over storage.

#### READ THE OTHER TWO BRIEFS

EMP is the dramatic scenario, but not the most likely. The Solar Storm brief covers the one grid-down event that is a statistical certainty over time, and the Cyberattack brief covers the one most credible assessments rank as most probable. The same foundation serves all three.

*This brief is for general preparedness education. It is not emergency, medical, or engineering advice. Faraday effectiveness depends entirely on correct construction. Figures on grid recovery and pulse behavior are drawn from public preparedness and reliability sources and represent general estimates, not guarantees. Adapt all guidance to your own circumstances and consult qualified professionals where appropriate.*