

When the Lights

GO OUT

Emergency Power and EMP Protection



The good, the bad,
and the ugly truths almost nobody will tell you.

Electricity controls our lives.
From the lights in this room
to the phone in your pocket
to the clock on the wall,
it seems like everything
uses electricity!



Do you panic?

- Where's that flashlight? Ah, here it is. Oh, no! Dead batteries!
- Are there any candles? Or matches to light them?
- How am I going to cook dinner? I'll starve!
- My cell phone died! I can't call or text anybody!
- The furnace isn't blowing warm air! I'll freeze!
- I'll never wake up on time without my alarm clock!
- No TV, no Internet, no music – how will I survive?



What if it went out for a week? A month? Longer?

50%

In a 2016 poll, 50% of the public said they would not be able to get by more than 2 weeks without power. And a shocking 75% predicted that within two months, they would be dead.

75%



If the power were cut off for 2 years or more ...

THE REPORTS ARE ALARMING

A 2015 Senate report said that up to 90% of the U.S. population could die from starvation, lack of water, and social disruption.

90%



25%

And it is estimated that only 25% of Latter-day Saints are well prepared.

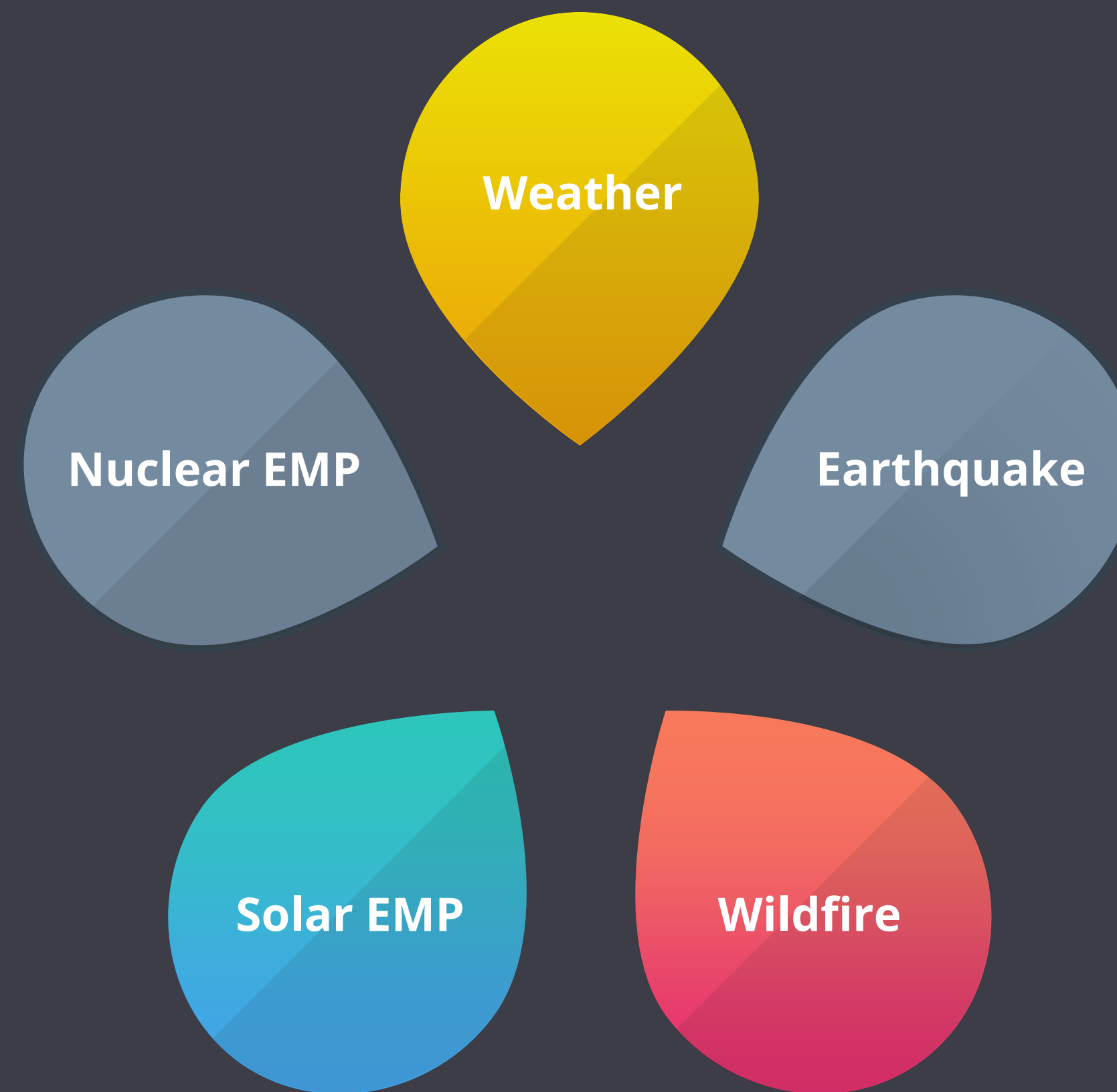
What would life be like in an extended power outage?

Things That Might Stop Working



Some Things That Can Cause Extended Power Outages

And these are just the most likely causes....



WHAT IS AN EMP?

EMP = Electromagnetic Pulse

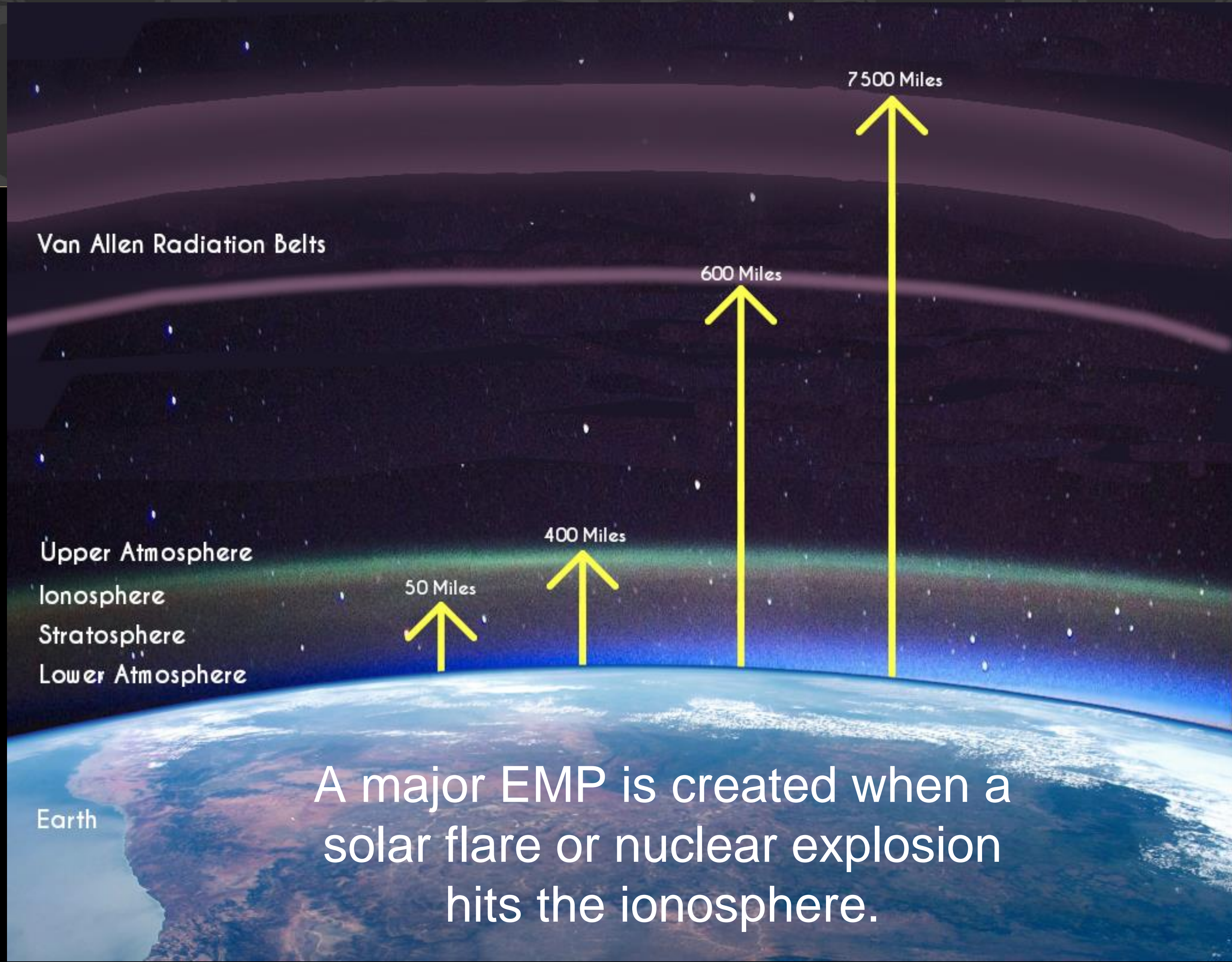
- An intense burst of high-energy electromagnetic radiation
 - Ionizes the atmosphere and spreads through the air
 - Most common cause is lightning
- Can cause damage to electronic devices, especially those with power cords or antennas
 - The most dangerous kinds of EMP are solar and nuclear



POSSIBLE EFFECTS OF AN EMP

“An EMP could cause widespread failure of the electric grids of entire regions, grinding the U.S. economy to a halt. Without electricity, almost nothing will work, which means that millions of people will die as a result of not being able to refill medical prescriptions, millions more will be without food, and predictable rioting and looting can quickly create a state of anarchy.”

--The Heritage Foundation



Van Allen Radiation Belts

Upper Atmosphere
Ionosphere
Stratosphere
Lower Atmosphere

Earth

A major EMP is created when a solar flare or nuclear explosion hits the ionosphere.

SOLAR EMP

The Carrington Event (September 1-2, 1859)

- Lit up night skies for two days around the world
- Disrupted telegraph communication across several countries
- Shorted out telegraph lines and gave electric shocks to telegraph operators

The Charlemagne Event (774 AD)

- Estimated to have been 80 times more powerful than the Carrington event

On average, a Carrington-level (or worse) solar flare hits the earth about once per century.



HAVE WE BEEN WARNED?

“And there shall be signs in the sun, and in the moon, and in the stars; and upon the earth distress of nations, with perplexity; the sea and the waves roaring; Men’s hearts failing them for fear, and for looking after those things which are coming on the earth: for the powers of heaven shall be shaken.”

--Luke 21:25-26

NUCLEAR EMP

Caused by a nuclear explosion in the ionosphere.

- Can disrupt power over an area up to 4,000 miles wide
- Can cause electrical problems on the ground, in the air, and in space
- A large-scale detonation 300 miles above Kansas could take down most of the continental U.S. power grid
- The most likely vehicle to set off a nuclear EMP would be a balloon



Operation Starfish Prime

July 9, 1962

Van Allen Radiation Belts

A high-altitude nuclear test that was supposed to hit the Van Allen belts accidentally detonated in the ionosphere. A nuclear EMP resulted.

Upper Atmosphere

Ionosphere

Stratosphere

Lower Atmosphere

Earth



EFFECTS OF STARFISH PRIME

- 1.45 megaton nuclear blast 250 miles above the Pacific Ocean
- Lit up the night skies for hours from Hawaii to New Zealand
- Caused blackouts and telephone outages across much of Hawaii
 - Ruined many electronic instruments
 - Damaged at least 9 orbiting satellites



WE'VE BEEN WARNED

“We do not say that all of the Saints will be spared and saved from the coming day of desolation. But we do say there is no promise of safety and no promise of security except for those who love the Lord and who are seeking to do all that he commands.

It may be, for instance, that nothing except the power of faith and the authority of the priesthood can save individuals and congregations from the atomic holocausts that surely shall be.”

--Elder Bruce R. McConkie, April 1979 General Conference

But there's good news...

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It's absolutely possible to live without electricity.

- Our pioneer ancestors did it.
- About 1 billion people on this planet do it now.
- It was done throughout most of human history.
- And, with a little preparation, you can do it too!



And more good news...

Some things might actually be better without electricity.

- People actually talking to each other.
- No harmful social media.
- Neighbors sharing and working together.
- No junk mail or email spam.
- Other thoughts?



Not to mention...

There are many ways to generate your own electricity.



Let's See Some Examples...





The Good

- Can power larger appliances such as a heater or refrigerator.
- Works regardless of whether the sun is shining or the wind is blowing.
- Great option for short-term power outages or camping.

The Bad

- Cannot be used indoors.
- Noisy, smelly, and hot.
- Needs periodic maintenance.

The Ugly

- Requires a lot of fuel.
- Most fuels have a short storage life.
- It's difficult or impossible to store enough fuel for a long-term power outage.



The Good

- Solar panels have no moving parts and require very little maintenance.
- Requires no fuel.
- Solar panels come in many sizes and are built into many small appliances.

The Bad

- Cost can be high.
- Dependent on sunlight. Doesn't collect energy at night and is less efficient on cloudy days.
- Requires a lot of south-facing space to generate significant amounts of power.

The Ugly

- Requires expensive batteries that have to be maintained and periodically replaced.
- If hooked to the grid, it won't work during a power outage.



The Good

- Requires no fuel or sunlight.
- Takes up little or no ground space.
- Can be used in tandem with solar panels.

The Bad

- Can be very expensive to install.
- Makes a lot of noise and may be a danger to birds.
- Only collects energy when the wind is blowing.

The Ugly

- The most expensive kind of alternative energy.
- Moving parts and batteries need a lot of maintenance.
- Can be severely damaged by high winds.
- Turbine needs to be placed very high (preferably 65+ feet) to generate optimal amounts of power.



The Good

- Constant source of energy as long as water is flowing.
- Inexpensive in the long run.
- Can be used for irrigation.

The Bad

- Expensive to install.
- Moving parts and batteries need frequent maintenance and periodic replacement.
- Doesn't work when the water freezes or flow slows too much.

The Ugly

- Only available where there is a steady, reliable, strong flow of water.
- May require a permit to install and operate. Not allowed at all in some areas.
- Can be hazardous to fish.



The Good

- Requires no fuel, no wind, and no sunlight.
- You get your exercise while creating electricity.
- There are many hand-powered devices and charging options, such as hand crank, bicycle, shaking, etc.

The Bad

- It takes a lot of time and energy to generate electricity manually.
- Storage of energy depends on batteries that must eventually be replaced.
- You may exhaust yourself before you generate enough power for your needs.

The Ugly

- Moving parts such as cranks and gears will eventually wear out.
- You can't generate enough electricity manually to power large appliances.
- The work is tedious, tiring, and possibly painful. Eventually you are likely to give up.

Also...

There are ways to protect your electronic equipment against an EMP.



What Is a Faraday Cage?





The Good

- Can protect sensitive electronic devices, especially those with cords or antennas, from EMP radiation.
- Available in many sizes and shapes. Boxes, bags, backpacks, and more.
- You can make your own for very little money.



The Bad

- There are Faraday cages on the market that don't work. Do your homework before purchasing!
- Commercial Faraday cages can be expensive.
- The sides of the cage can accumulate enough electricity to give you a nasty shock if it's not grounded.

The Ugly

- Some high frequency radiation can penetrate a Faraday cage.
- Claims of Faraday cage effectiveness are based on low-energy EMP tests and educated guesses.
- How well will a Faraday cage work in a major EMP? The honest truth is that we don't know for sure.



PREPARE – DON'T PANIC!



IS THIS OUR FUTURE?



OR THIS?



THE FUTURE IS AS BRIGHT AS OUR FAITH

“I testify to you that our promised blessings are beyond measure. Though the storm clouds may gather, though the rains may pour down upon us, our knowledge of the gospel and our love of our Heavenly Father and of our Savior will comfort and sustain us and bring joy to our hearts as we walk uprightly and keep the commandments. My beloved brothers and sisters, fear not. Be of good cheer. The future is as bright as your faith.”

--President Thomas S. Monson

“If ye are prepared ye shall not fear.”

--Doctrine & Covenants 38:30