



BLACKOUT SURVIVAL GUIDE

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TABLE OF CONTENTS

Introduction	1
WHAT IS THE POWER GRID EXACTLY	2
POWER GRID WEAKNESSES	4
THE NORTHEAST BLACKOUT	7
BLACKOUT SURVIVAL – LONGER TERM EFFECTS	9
FOOD AND WATER – PRIMARY CONCERNS.....	11
FIRST AID.....	14
POWER GENERATION.....	15
OPSEC AND HOME DEFENSE	16
COMMUNICATIONS	17



INTRODUCTION

IT'S SAFE TO SAY THAT AMERICA REQUIRES POWER to operate. Not political power, or purchasing power, or even military power – she needs all of those - we are speaking of *electrical power*. Most every aspect of our daily existence requires power to accomplish. From heating our breakfast to driving the kids to school, from growing the food we eat to supplying the power to operate the lights in our classrooms, we depend on electricity and the power grid for our every day life.

There are those that depend more on this than others – consider that there are currently approximately 40,000 people on life support in America right now that depend on electrical power to run their feeding tubes, respirators, and dialysis machines in order to even live. On a larger scale, we all depend on power in some way or another for basically everything.

Once considered a novelty, electricity is now an essential part of American life. It is what makes us a first world country. It is what allows us to have running water in places that water would not normally run. It is what allows us to pick up the phone and have the police come within minutes when we hear a noise outside. Our

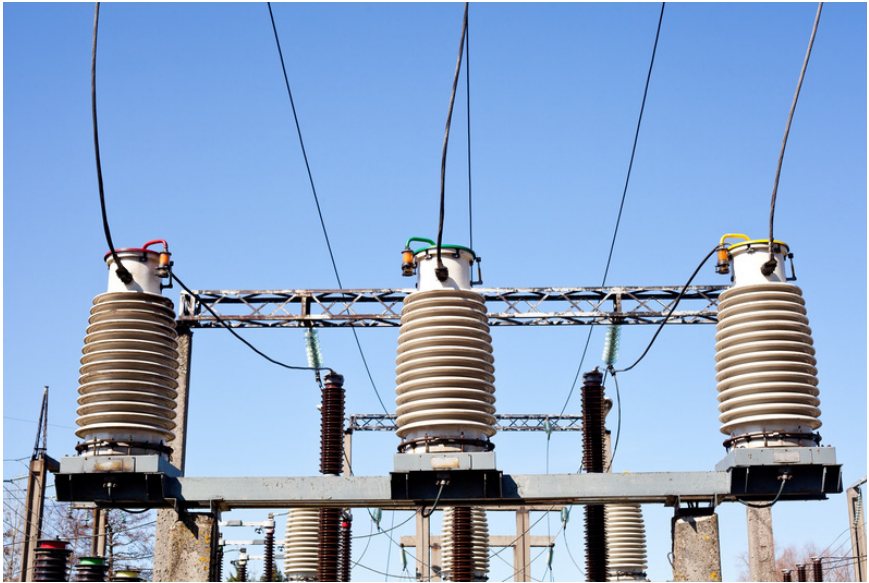
power grid, the mechanism by which all this power makes its way from the power plant right to our wall socket is aging, however, and is increasingly vulnerable to attack. Consider that the average home will experience at least one power failure per year. This failure usually lasts a few minutes – in extreme cases, the power might be out for half an hour or more. Some areas suffer more frequent power outages due to the deteriorating infrastructure on which they rely on; yet others suffer brownouts, which are voltage reductions that still keep the power on but at a reduced and less useful capacity.

True blackouts lasting a few hours or more, and potentially a few days, are relatively rare, but are alarmingly increasing in frequency, especially on the East Coast where the power grid is heavily taxed at all times, and even natural occurrences like heat waves wherein people overuse their air conditioning are enough to cripple an already fragile system. The handwriting is on the wall – America's power usage is growing exponentially while its ancient power grid is being repaired with band-aid solutions.

WHAT IS THE POWER GRID EXACTLY

The power grid in America is made up of three main components; the first of these is the power plants that actually produce the power. In America, there are several methods of generating power that are in use: hydroelectric power, meaning that water in a river or dam passes over a series of turbines which spin to produce electricity; coal, wherein coal is fired to heat boilers, the steam generated therein spins turbines, thereby producing power; nuclear, in which nuclear fuel is used to heat boilers which once again produce steam that drives turbines that produce power. There are several smaller specialty types of power plants – in its quest to diversify power generation, America employs wind farms, natural gas plants, biomass plants, wave farms, solar farms, and a host of other technologies.

The second component of the power grid is the thousands of miles of transmission lines. The power needs to get from the power plant to the consumer, and this journey is accomplished through the superhighway of transmission lines that connect the entire country using the ubiquitous towers seen everywhere.



Lastly, the power grid relies on a massive network of substations to form the distribution network. High voltage lines bring the electricity from the power plant to the substation; the substation must then step that power down using transformers and then distribute it to individual homes and businesses at a reduced voltage. These substations are critical because of a factor called *voltage drop*. A basic example of voltage drop is thus: If one had a 12 volt battery and connected a wire from the battery that was 1 foot long, and then one measured the voltage at the end of that 1 foot wire, the voltage would be 12 volts even. If that wire were a mile long, however, the voltage from the battery would barely register – if at all. This is because as the length of the transmission line increases, resistance diminishes the power seen at the far end of the wire. Thus, if the average American home requires 240v alternating current voltage to operate, the transmission lines must be many thousands of volts in order to move that voltage short distances, and many hundreds of thousands of volts to move that voltage long distances. Clearly these voltages would fry the wiring of a modern home – so before they enter homes they are stepped down by a series of transformers and then distributed from there. Some large industries and hospitals require several hundred volts of power to operate and are thus sent

more voltage; residences require the least amount of power but are most numerous and thus are apportioned accordingly.

POWER GRID WEAKNESSES

All by itself, even without external threats of any kind, the power grid is constantly on the verge of failing. America's power demand has outpaced the construction of power plants and her move into further suburban development has taxed transmission lines nationwide. It's so bad that Bill Richardson, a Clinton era Secretary of Energy, calls America "a superpower with a third world grid". The grid generally suffers from age in the East; some power generation and transmission equipment there is decades old, while the West suffers from inadequate transmission lines to bridge the great distances to ever burgeoning developments.

There are several mundane and unexciting reasons why the power grid can fail locally. One of these is the transmission lines. As they carry more voltage, the lines heat up, which causes them to sag between transmission towers. Any errant vegetation that touches these lines can trigger a short, which will immediately trip the automatic power relays and shut down the line. The load will then be moved to other transmission lines so that the consumer doesn't even notice the outage. However, if those other lines are already running at or near capacity due to usage, the power failure can cause an overload in those lines and shut them down one after another in what is called a cascade. It's these cascades that cause the widespread power failures that last for hours as engineers from dozens of companies attempt to fix the damage to power lines, systems, and transformers that are inextricably linked to each other.

There are all sorts of nefarious why the power grid can fail; one of the foremost fears of the US government is concerted cyber attacks designed to bring the grid down. The reason why the electrical grid is such a critical infrastructure is that our lives essentially depend on its constant and unfailing operation. Our enemies know and realize this, and would love to take the grid down, knowing full and well that potentially thousands of deaths could be caused by the manifold factors that we depend on electricity for. Our enemies

could launch something like an Electromagnetic Pulse (EMP) attack, but that requires the high altitude detonation of a nuclear weapon. Not all countries have access to nuclear weapons or the delivery systems (rockets) to get the nukes into orbit. Also, an EMP attack is a declaration of war by whoever launches it, thus is not a palatable risk for even the most radical of rogue nations. A cyber attack, however, is anonymous, silent, practically untraceable, and capable of being launched by a small cell anywhere in the world – and it will cause much of the devastation an EMP attack could.

It has been estimated that a targeted cyber attack on the power grid could last for as long as nine to eighteen months just by an internet based shutting down of certain critical transformers. The reason these attacks are so feared and so paralyzing to American security agencies has to do with new computerized “smart grid” technology. In days of old, power generation, transmission, and distribution was accomplished by hand – that is to say, humans were responsible for keeping the system running and balanced. Security consisted of locked gates to sensitive areas. The problem with these older systems is that they were not particularly efficient. Modern smart grid systems use computers to balance the loads and send power to



where it is required automatically and on the fly. These computers are linked via the internet – not directly linked as your computer at home, but still very vulnerable to attacks by experts that can infiltrate the systems and shut them down or cause damage that would take weeks or months to repair. The government recognizes the grave threat to this and is currently scrambling to rush bills into law that will channel new funds and personnel to guarding against this problem.

It is important to note that these sensitive power generation, transmission, and distribution facilities are still open to conventional terrorist attacks using personnel, small arms, or high explosives. Many critical infrastructure systems related to the power grid are extremely lightly guarded, if at all. Hardly anyone has given thought to the fact that these systems might come under attack. Nuclear power plants are guarded mainly for their radioactive fuel rather than for their importance on the grid, and most conventional power plants only possess the most cursory security measures, mainly used to prevent petty theft. Some substations and distribution networks only contain rudimentary security measures such as chain link fences and padlocks; all of these facilities are highly vulnerable to a terrorist threat.

Geomagnetic storms are another major threat to the power grid and unfortunately there isn't much that can be done to prevent against them; the sun does as it wills. Solar rays and powerful coronal mass ejections release energy into space that hurtles at high speed towards the Earth. These rays hit the Earth's magnetosphere and cause it to be electrically charged – these electrical charges are in turn imparted into long, metallic conductors on the surface and just under the surface of the Earth, things like power lines and pipelines. These power lines experience surge activity and unexpected high voltages that fry line equipment, disrupt computer control systems, and cause massive blackouts like the Quebec Hydro blackout in 1989, which left 6 million people without power for the better part of a day – all caused by natural occurrences that are certain to happen again.

THE NORTHEAST BLACKOUT

The Northeast Blackout of 2003 remains the single largest blackout in United States history, resulting in the loss of power to over 55 million people. This monster blackout affected people in dozens of states and resulted in the blackout of large metropolitan areas like Toronto and New York cities, which were without power for the better part of 12 hours.

Heat was named as a contributing factor in the outage; it was the middle of August and the temperature on the day of the blackout averaged 88 degrees in the Northeast. There wasn't a single glaring cause to the event – the outage had several triggers, among them, trees in the Ohio area making contact with 345,000 volt power lines overhead. As the hot day grew hotter and air conditioners were turned on by the overheated populace, the power lines began to sag; soon enough, one made contact with a tree and shorted out, followed by another. As power was diverted to other lines, a series of cascading failures ensued that ultimately shut down over 100 power plants in an unprecedented outage – as demand dropped, one geographical area after another simply dropped off the grid. By the end of the outage, 256 power plants would be rendered inoperative and 55 million people would be without power.

To understand what this means, one need only look at the effects of such a massive and unintentional power failure:

- Millions of homes were totally without power, some for close to 20 hours.
- Many areas lost water pressure – the water pumps are electric. Imagine a situation with extreme heat and extremely limited water.
- Loss of electricity in water treatment plants caused contamination in the water supply, some of which lasted for days after the event.
- Numerous chemical spills into waterways were reported from plants that had their control systems fail due to lack of power.



- Sewage backups were widespread due to the fact that the electric sewage pumps were offline and could not move sewage out of the drains.
- Most trains running into and out of New York City were inoperative.
- Flights were cancelled due to inability of screening and E-ticket systems to function.
- Gas stations were unable to pump fuel since their electric pumps were inoperative- many unprepared motorists were stranded.
- Several oil plants were shut down, losing production, and causing gas prices to increase for weeks afterwards.
- Cellular telephone communications rapidly failed as backup generator power died.



- Cable television networks went off the air and did not resume broadcasting until the power was back on, effectively leaving confused and scared citizens without a method of receiving timely news on the disaster.
- Traffic jams and backups were widespread as street lights became inoperative.
- In New York State alone, over 800 stalled elevators with people inside were reported, as well as over 600 rail cars stalled between stations.
- Deaths were reported due to heat stroke, especially in elderly folk as temperatures reached over 92 degrees.
- As power generators failed due to lack of fuel, 911 services became sporadic.

Overall, the blackout had many insidious effects only realized once people saw how interlinked all of the nation's systems were and how they all contributed to utter chaos when they failed. Over 11 deaths were blamed on the power failure as well as dozens of injuries and overall, hundreds of millions of dollars worth of economic effects. All of this occurred due to natural causes, a perfect storm of circumstances that lasted less than 24 hours.

BLACKOUT SURVIVAL – LONGER TERM EFFECTS

If all of the above happened in less than 24 hours, what would the blackout have been like if it lasted for weeks? What about if it had occurred during the winter, instead? All of these scenarios have played out recently, and they all have their ups and downs for those who are prepared; for those who are unprepared, they can be deadly.

Imagine for a moment that the power is out for two weeks. Two weeks doesn't seem like a long time – many people have gone camping for two weeks at a time without power – what's the big deal? Consider these effects after just two weeks without power to a widespread area:

- Thousands of dead as life support systems in hospitals fail.
- Flights grounded as repair, ticketing, telemetry, and air traffic control systems fail.
- Roads gridlocked with vehicles that have run out of fuel.
- Fuel unable to be pumped from gas stations.
- Widespread water contamination due to lack of electric power for purification.
- Public transportation of all kinds effectively halts.
- Widespread looting and panic as security systems become inoperative and 911 ceases to function.
- Grocery stores cannot be resupplied with food causing widespread food and water shortages and associated panic.

The above is only a slight sampling of how devastating the effects of a long term blackout could be. Realize that while America's enemies are planning for such an attack, it can happen *right now* from natural causes without any human intervention! To say that such a blackout would be staggering to our nation is an understatement.

The reason why a blackout is so devastating is because of our utter reliance on electricity for everything. A blackout doesn't just shut off the lights – it shuts off the food, the water, the fuel, the communications, and much more. Therefore, you need to be prepared for every contingency that might occur. Also, consider that the longer the power stays off, the harder it will be to recover from the effects. Like a bad hangover, it will take the affect area a long time to resume normal function once again. If you have a contingency plan for a two week power outage, you better have a month or more of supplies on hand to deal with the after effects!

FOOD AND WATER – PRIMARY CONCERNS

While the power outage represents an inconvenience as far as electronics, lights and communications is concerned, realize that an extended power failure will be a direct threat to your life and the lives of your loved ones. Besides city water that can fail or become contaminated due to lack of electrical power to operate pumps and decontamination equipment, understand how grocery stores operate. A modern grocery store only stocks enough food for a couple or three days of normal consumption at a time. These stores rely on a fleet of ever present trucks to bring them fresh food from distant distribution areas. Without this resupply, supplies of food would quickly dwindle on its own – not to mention the pillaging that would go on at the stores once the average citizen caught wind of the fact that there were no more incoming deliveries.



Food and water must be your primary concerns before all else when facing a blackout. If and when a blackout occurs, immediately begin filling the home's bathtubs – most homes have at least one. This water will be present for some time after the failure and you need to get it before the pressure drops. Also remember that the water in your toilet tank is good to drink. These strategies should be considered last minute top offs to an already existing water supply, which should be built up over time.

This water supply can be built up in many easy and inconspicuous ways: every home has at least one bed raised off the floor. Usually, the space under a bed is unused or lightly used. Every time you go to the grocery store, buy a gallon of water in a square container, and throw



it under the bed until water containers occupy the total area under the bed. These last almost indefinitely and can be rotated for use, and represent an investment of a little over a dollar each. Do that to three or four beds in the home and you'll find yourself sitting on a very comfortable water supply that is essentially out of sight and doesn't occupy any space that you were previously using. Keep in mind that water weighs approximately eight pounds per gallon so you don't want to point load a weak home structure. Still, any home that could accommodate a waterbed can accommodate this plan.

For additional water supply, focus on water filtration or purification strategies. No power for long periods of time will eventually mean no natural gas, so boiling surface waters from creeks or rivers will be impossible. Keep in mind that *all* naturally occurring water must be boiled in order to



be safe for consumption. Parasites, bacteria, and harmful organisms are naturally present in creek, lake, and river water, which many people will try to drink directly from in desperation. Don't fall into this trap! Obtain a portable membrane based water filtration now while it is still available so that you maintain the capability to purify water for months after the blackout if need be.

The availability of food at our fingertips is part of what makes America a first world country, and the lack thereof will quickly starve and kill citizens who are unused to not eating. Panic always follows anything resembling a natural disaster and sheep-like citizens will strip down grocery stores like locusts in short order, even bulk buying things they don't need in a terror. Don't succumb to this madness! Your food supply, like your water supply, should be carefully planned out and purchased over time. Not many people have the ability to buy \$4000 worth of emergency food in one single expenditure; most of us, however, can spend an extra ten dollars on each trip to the grocery store and stock this food away for a rainy day.

Your emergency food supply should consist of a healthy dose of canned goods first and foremost. Canned goods have been known to last up to a century if the integrity of the can remains intact. Canned goods aren't just for fruits and vegetables any longer; a wide array of meats, fish, and even entire cooked meals is now available for purchase basically anywhere. Look for a variety of foods that have healthy protein content since you are more likely to be more physically active during the time without power. Additionally, buy foods you will actually eat- taste them before an emergency to ensure satisfaction. There is no need to die of a bland and monotonous diet!



Legumes and rice should be stored in sealed, food grade buckets as a cheap source of carbohydrates that will also last indefinitely. Round out your emergency food supply with a supply of treats like energy



bars and candy bars, both of which will keep for quite some time if stored in a cool, dry place. Avoid such emergency meals as MREs (Meals Ready to Eat), as military food of that nature is designed for extremely active personnel, causes radical constipation with prolonged use, is expensive for what you get, and is bulky to store. MREs are designed for warfighters, not overweight couch potatoes in a survival situation. While having a case or two would round out your supply nicely, realize that you can buy much cheaper, better tasting food in a much larger quantity dollar for dollar than MREs.

FIRST AID

Lack of power means for an extended period of time puts you on your own as far as medical care is concerned. Be ready to treat injured family members – or have them treat you! Your medical kit should be comprehensive and extensive for such things as lacerations and puncture



wounds as well as burns. Lacerations are an easy way to bleed out or get serious infections from. Ensure your kit contains tourniquets and compression bandages to staunch blood loss.

An extended power failure means the power of the internet might not be available to you. Americans have a propensity to self diagnose via the internet, and that isn't a bad thing. One can look up photos of rashes, symptoms, or conditions on the internet and quickly pinpoint the cause of a problem. You can keep this knowledge alive by downloading it *now* to a laptop or burning it to a CD for posterity. Solar chargers for laptops are available everywhere and with the right model you could charge your laptop indefinitely and access critical manuals for medical care among other things. Remember to keep a long term supply of prescription medication available for any of your family members that require it.

POWER GENERATION

Just because the grid is down doesn't mean you can't still make power to charge laptops, HAM radios, and other gadgets that make life easier.

Solar power is cheap and widely available. From roof mounted solar panels to portable units that can charge small equipment, solar power comes in all shapes and sizes. Don't wait for a power failure to purchase this, as it will not be available for long!



Generators seem like a good idea at first but quickly become more trouble than they are worth. Besides requiring fuel and regular oil changes, generators are loud and those that use them generally use them in a foolish manner. It is not a cool novelty to use a generator to run all of your lights when everyone else is out of power – it's an OPSEC (operational security) nightmare. You are identifying yourself as the only person on the block with power, and if you are that prepared, you must have more emergency supplies that you might need to be relieved of. Also, if your generator doesn't have a lockout to isolate your home from the power grid, you might be feeding power back into the grid, which could harm power company workers who think the line is dead. If you must run a generator, do so sparingly.

An inverter is a better choice; a simple box that converts DC power from things like car batteries to AC power that you can use to power tools, equipment, and appliances, inverters are inexpensive and silent.



When coupled with a vehicle, they create an almost limitless supply of AC power. A car uses its engine to spin an alternator, which charges the battery, which could in turn power an inverter and make AC power. An idling car uses very little fuel and makes almost no noise – and if used judiciously, the car doesn't even need to be started to make power.

OPSEC AND HOME DEFENSE

A time without power can quickly turn into a time without law and order. Realize that most homes will be darkened (except for the genius with the generator!) and home security systems will be inoperative; police and emergency crews will also have their hands full. Your home defense will depend on you!



Even if you have a generator or some other form of emergency backup power, have materials on hand to black out your windows. It is important to exercise good light discipline when everyone else is darkened. This is because there is a certain criminal element that has no survival preparations to speak of – their plan is to take from others if and when the day comes. Having lights on in the midst of widespread blackouts shows people you are prepared – you most likely have weapons, food, and fuel as well, all for the taking.

Stand watch during the night, and consider arming members of your family to ensure that you aren't surprised. Keep in mind that every member of your family able to wield a weapon should have one, as well as several thousand rounds of ammunition on hand to defend the home. Don't discuss your preparations with strangers or even with neighbors. They will remember all your hard work when the power goes out and come looking for handouts – perhaps even attempt to take it by force!

COMMUNICATIONS

The likelihood that a blackout will envelop the entire country is extremely slim, and thus a good form of long range communications is in order, both able to be powered by batteries; HAM and shortwave radios are critical to be able to keep tabs on what is going on. A shortwave

radio allows you to passively listen to updates from potentially thousands of miles away, while a HAM radio will allow you to speak with others many miles away (even hundreds of miles away with the right repeater setup), giving you critical intelligence on happenings and government messages updating the populace.

Email, cell phones, and the internet will not likely work if the power failure is widespread enough. Landlines usually work, but are often overloaded with call volumes during emergencies.



* * *

A widespread blackout can be a true test of your ability to survive in a modern world without modern conveniences. All of your skills and preparations will be put to the test; your ability to feed, administer medical care to, and defend your family will be needed. The time to get training on survival situations is now, while the training is available. The time to stock up on food, water, medicine, and firearms is also now while they can still be acquired.

For many people, an extended power failure will be a life and death situation. Realize that it doesn't have to be. Whether you ride it out comfortably fed, hydrated, and safe in your home or whether you starve to death, freeze, or die of thirst, it is up to you.



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