Grid security is one of our greatest national vulnerabilities: An interview with James Woolsey, former Director of the Central Intelligence Agency

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America's power grid may be the nation's proverbial Achilles heel. For over a decade, scientists and intelligence professionals have been shouting at the federal government to do something – anything – to protect and strengthen the grid from a cataclysmic collapse, which could leave much of the nation in the dark for months, possibly even years. So far, though, it seems their concerns have fallen on deaf ears, as little, if any, concrete action has been taken to shore up grid security.

Today, the grid remains vulnerable to an array of dangers, be it from naturally caused phenomenon such as solar flares to terrorism manifest as either a cyber-attack or a conventional bombing of critical substations. But standing above all is the danger posed from an electromagnetic pulse (EMP). An EMP is generated when a nuclear bomb is detonated in "low Earth orbit" (i.e. a few tens to a few hundreds of miles in altitude over the US). The resulting radiation (not the blast) renders all electronics over the detonation area useless. The harmful waves also travel along power lines, knocking out transformers as they go until the entire grid is shattered. The result is a nation in the dark with no way restart the system and no ability to investigate the type or source of the event.

An EMP detonation may seem like science-fiction, but it is a real and credible threat to the grid. I recently sat down with former CIA director James Woolsey, a leading advocate for grid security, to learn more about the EMP threat specifically and to find out what the government is doing to protect the grid from such an attack. Director Woolsey is the co-founder of the United States Energy Security Council and has testified before Congress on multiple occasions on the danger posed by an EMP attack. He recently penned an op-ed in the *Wall Street Journal* to raise awareness of the threat within the financial community.

Q: What would the US look like without a grid?

A: It would be pretty bad. The destructive force of an EMP could knock out the grid for a year, maybe even longer. That's because the parts needed to fix the transmission lines and transformers destroyed are bespoke, with many only made in two places, South Korea and Germany. The EMP Commission, which was set up after 9/11, estimated that within 12 months of an EMP event, two-thirds of the US population would likely perish from starvation, disease and societal breakdown. Other experts estimate the likely loss to be closer to 90 percent.

Q. Really? That bad?

A. Oh, sure. William Forstchen's novel, *One Second After*, gives a chilling portrayal of what life may look like after an EMP detonation. It describes a population totally unsuited for living in the dark. Deaths come in waves; first the elderly and then those who depend on medication. Following that are those who die of simple diseases, like typhoid or dysentery, as well as those who have no survival or farming skills, though even subsistence farming would likely be a challenge given the speed in which society would collapse versus the time it takes to actually prepare fields and grow substantial amounts of food. Eventually, the few survivors in the small town who have overcome these deprivations and learned to produce food face continual security issues, having to fight off marauding bands and, interestingly, bullets become a base currency in their economy. It's pretty bad stuff.

Q: How easy would it be to launch an EMP attack and where might one come from?

A: The EMP commission found that it took just one, low-yield nuclear detonation in the center of the country to knock out the entire US electrical grid. The explosion didn't have to be big; it could be smaller than the blast at Hiroshima, for example. Getting it over Omaha or Kansas is a pretty simple task, easier than you may think. The North Koreans could do it. Recently, declassified documents show that the North Koreans recruited Russian scientists back in the early 1990s to build a nuclear weapon that could deliver a major EMP shot. As you know, the North Koreans now have the bomb, so delivering it may be as simple as hiding a small nuclear device in a satellite and having it detonate while in orbit over the US.

But it's not just state actors we should be worried about. Terrorist groups, if they can get their hands on some fissile material, and they wouldn't need a lot, could set off an EMP blast by attaching a small nuclear device to a simple weather balloon and detonating it once it gets 20 miles or so above the ground. In *One Second After,* the US power

grid was knocked offline with just one missile launched from a cargo ship floating in the Gulf of Mexico. It really isn't that difficult to do this.

Q: During the Cold War, the strategy was around prevention through deterrence. Would that work here?

A: Not in this case. Back then, the impact of an EMP detonation was secondary to the destructive power of an all-out nuclear war with the Soviet Union. In that scenario, it was impossible to protect anything, so the focus was on deterrence through mutually assured destruction. That's not the case today. We cannot deter this threat because it could be deployed easily by an irrational state, or potentially non-state, actors. In order to attack us, you don't need thousands of nuclear missiles here, you just need one. And, as importantly, the effects are instantaneous and cataclysmic. So, once we have been attacked, we would have no ability to understand the origins. We simply wouldn't know, maybe for years, if it was North Korea or a solar flare that hit us.

Q: How hard would it be to fortify the grid in order to prevent an EMP catastrophe?

A: Right now our grid is totally vulnerable to an EMP attack. Fortifying it actually wouldn't cost that much money – we just have to do it. The EMP commission estimated back in 2008 that to protect the critical power infrastructure would cost the American people only around $2 billion. That's equivalent to seven dollars per American. I think this is understated. They are probably talking about a few high voltage transformers. Then they say $20 billion to protect the grid. But both of those are tiny numbers in national budgetary terms and even smaller – insignificant in fact – compared to the damage an EMP could have on our society.

Q: The Commission Report came out in 2008. Why haven't these things been done?

A: Nobody's really in charge of this so nothing is getting done. In theory, agencies like FERC (the Federal Energy Regulatory Commission) and DOE (the Department of Energy), should be in charge here. The Defense Department and Homeland Security as well as state agencies, municipalities and the utilities themselves also have an interest and a role to play. But, due to jurisdictional issues and budgetary constraints, they really can't get anything done without the support of the White House and Congress.

Q. So you think the President should be leading the charge here?

A: I don't think you can fix it without it becoming a national mission to protect against both cyber and EMP. That's why I think the President should take this up. Somebody's got to be in charge, and there isn't anyone stepping up at the moment. Americans work best when there is an initial flap about something that scares the hell out of everybody, like Pearl Harbor, and then we mobilize. The thing about an EMP attack is that the first shot could conceivably destroy the country.