WORLD BUSINESS ACADEMY
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PERSPECTIVES

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"Fortress America" – Electrical Grid Vulnerability

It's Not Just Putin

A great many things about the Russian invasion of Ukraine bother us, as well they should: the genocide, the war crimes, the images of starving children intermingled with dead bodies and urban wreckage that hasn't been seen in Europe since the bombing of Dresden. Through it all, we in the US have imagined ourselves tucked safely far away from Europe in what, during World War II, we called "Fortress America."

This last century idea holds that the fighting and dying was occurring "over there" and that we, safely behind two oceans and non-threatening neighbors like Canada and Mexico, could go to bed every night without fear of being swept up in the insanity of war. The theory was that we, in the good ole US of A, could remain safe even if all our allies fell to autocrats like Tojo Hideki and Adolf Hitler.

Since mid-March we've begun to wisely question just how safe we are—and how that safety could be abruptly upended.

A report issued by the Federal Bureau of Investigation (FBI) on March 18, and substantiated by President Biden on the 22nd, was widely disseminated by the media last week, resulting in headlines like this one from CBS: "Russia exploring options for potential cyberattacks on U.S. energy sector, FBI warns." The story featured Mr. Biden's deputy national security adviser for "cyber and emerging technology" who shared with reporters that US officials were tracking "preparatory work" linked to "nation-state actors." CBS also reported that the FBI had identified "140 overlapping IP addresses linked to 'abnormal scanning' activity of at least five U.S. energy companies, as well as at least 18 other U.S. companies spanning the defense industrial base, financial services, and information technology."

You can confidently conclude they are referring to several "bad actors" and that Russia definitely is in the group. This should come as no surprise when we stop to consider that the Ukrainian government has suffered over 3,000 distributed denial-of-service (DDoS) cyber-attacks that swamped government websites with overwhelming traffic. No surprise, as a pair of Russian-linked cyber-attacks in 2015 and 2016 knocked power totally out in parts of Ukraine. Engineers in Ukraine have attempted to protect their electricity from Russian cut-offs by just last week connecting their country to the European-wide grid. That's a good start for emergency protection against the loss of their nuclear generating capacity but doesn't solve the basic issue of grid vulnerability. A grid connected to anything is still a grid that can be taken down remotely through cyber warfare. The Ukrainians remain vulnerable to that.

We know the Russians have done Ukrainian-style electrical cyber-sabotage, and much worse in other places, so we are wise to be concerned that they could bring our electrical grid down too. For example, Russian hackers "crashed" the Colonial Pipeline on May 7, 2021, and left the East Coast starved for jet fuel and gasoline for more than a week last year. Oops, it looks like the "Fortress" in "Fortress America" isn't so impregnable after all. If our liquid fuel can be shut off so easily, we've got to realize that our most vulnerable piece of infrastructure is the even more vulnerable electrical grid.

However, as will become clear, a malicious unprincipled enemy like Russia isn't even our biggest concern for electrical grid integrity.

Back in 2012, the National Academy of Sciences National Research Council published a declassified report prepared in 2007 for the United States Department of Homeland Security that highlighted the vulnerability of the national electric grid, specifically from potential damage to high voltage transformers. The report's findings were not immediately acted upon, and on April 16, 2013, an attack against PG&E's Metcalf transmission station in Coyote (near San Jose, California) was carried out by gunmen who fired on 17 electrical transformers resulting in $15 million worth of damage and almost brought the substation down.

The Metcalf attack, unfortunately, served to inspire a group of self-avowed Neo-Nazis in 2020 to actively plot to sabotage the grid in Utah, and then the entire Northwest grid all the way to California. An Indiana cop, Joseph Zacharek, participated in planning the activities. He was arrested just last October on gun running charges, and the authorities were able to uncover the plot that grew out of a neo-Nazi message board operated by the Nazi "Atomwaffen Division".

Lest you think these were cyber "sophisticates," they weren't. The "BSN gang" was a former porn actor, two former veterans of the U.S. Marine Corps, a currently serving Marine, and an enlisted National Guardsman armed with rifles. Had they succeeded, their next "gig" was a plan to target power transformers using homemade explosives. The materials they planned to use are widely available to the public and can burn at temperatures high enough to destroy metal transformers. Yes, as these 5 "nut jobs" have shown, you don't need to be a genius to bring down the grid.

Here in California, we've come to learn that Mother Nature is the most effective continuing threat to the power grid. As we all know, our power outages have been increasing each year. One recent study showed 25,281 blackout events occurred in 2019, which was a 23 percent increase from 20,598 in 2018. The total of affected customers jumped 50 percent in 2019 to 28.4 million from 19 million in 2018.

Just this past October, millions of us, including here in beautiful Santa Barbara, lost power from intentional blackouts, the "de-energization events" utilities declare as Public Safety Power Shutoffs (PSPSs). The utility usually triggers these during hot, dry days with sustained winds or strong gusts to prevent power lines from sparking wildfires and threatening human lives and property. They declared that PSPS events can last from 3-5 days, or as long as the dangerous weather conditions are deemed to persist. Given all current projections for climate change, the frequency and duration of these power shutoffs will only increase.

So, there you have it: our grid is vulnerable to cyber-sabotage; neo-Nazis and other saboteurs for whatever crazy reason they deem sufficient; wildfires; and utility contrived PSPS events to reduce their liability for operating an antiquated, inherently defective energy distribution system (the grid) that has failed in the past and certainly will fail with increasing frequency in the future. That's the problem. Next week in this space we'll explore the far less expensive, totally resilient, and totally reliable replacement for the grid which will protect us in the future. Until then, just remember…the problem isn't just Putin.

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