

Secure the Grid Coalition & EMP Task Force on National and Homeland Security

EPRI “JUNK SCIENCE” REPORT WRONG ON EMP THREAT

The Electric Power Research Institute (EPRI) represents itself as independent, but is in fact funded by the electric power industry. It acts as a lobby for that industry by producing often dubious “research” intended to promote the political and fiduciary interests of electric utilities.

EPRI’s latest report dismissing the threat from nuclear electromagnetic pulse (EMP) attack, “High-Altitude Electromagnetic Pulse and the Bulk Power System,” is really nothing new. It repackages false arguments EPRI and other industry lobbies (the North American Electric Reliability Corporation and Edison Electric Institute, for example) have been making for years.

EPRI’s EMP Report is transparently an effort by interested parties (i.e., electric utilities) to use “junk science” to derail President Trump’s “Executive Order on Coordinating National Resilience to Electromagnetic Pulses” (March 26, 2019) that directs the U.S. government to fast-track protection of the national electric grid and other life-sustaining critical infrastructures against EMP threats.

EPRI’s EMP Report is not a scientifically legitimate alternative view on the EMP threat. It was authored by non-experts who make false claims, and should be accorded no more credibility than the so-called “independent laboratory analyses” funded by the cigarette industry in the 1950s that falsely claimed there is no causal link between smoking and lung cancer.

EPRI implies that their report is endorsed by the Department of Energy (DOE) and its national laboratories. But DOE told the Congressional EMP Commission that, while individuals within DOE and the labs have cooperated in the past with EPRI – DOE does not endorse EPRI’s EMP Reports. In other words, EPRI is speaking *for itself* and its sponsors, *not* for DOE and the national laboratories.

EPRI's bottom-line is that a high-altitude nuclear EMP attack will be no more consequential than other localized or regional blackouts with which they have experience – contradicting rigorous EMP studies by real experts, including the Congressional EMP Commission, the U.S. Air Force Electromagnetic Defense Task Force, the Congressional Strategic Posture Commission, the U.S. Federal Energy Regulatory Commission, the National Academy of Sciences, and every other major study by the Department of Defense and the U.S. Government over more than 50 years.

In contrast to the utilities’ house organ, EPRI, the *authentically* independent and competent [Congressional EMP Commission](#), for example, warns that a nuclear EMP attack would be an unprecedented catastrophe, and could potentially cause a protracted nationwide blackout, putting at risk the lives of many millions of Americans.

Specific Defects of the EPRI Study:

EPRI's claim that **an E1 EMP field strength of 25,000 volts/meter will cause only minor damage** is ridiculous as it grossly underestimates the threat. *Testing proves that electronic systems can be damaged by field strengths less than 1,000 volts/meter.* This is also just common sense. In our

electronic civilization, almost everything (including SCADAS vital to electric grid operations) operate on 120 volts or less.

EPRI's claim that, within the EMP field, damage inflicted on 15% of electric grid systems (transformers, SCADAS, generators, relays etc.) constitutes "minor damage," and would be no more consequential than localized or regional blackouts with which the electric power industry has experience, is a fraud. The ten greatest blackouts in world history were caused by single-point failures constituting far less than 1% of the electric grid. The Great Northeast Blackout of 2003 that put 50 million Americans in the dark and blacked-out New York City was caused by single-point failure comprising less than 0.001% of the Ohio grid. According to the *Wall Street Journal*, a classified U.S. FERC study concludes if just 9 of the 2,000 EHV transformers in the U.S. were damaged (0.0045% of all EHV transformers) a nationwide blackout would result, lasting 18 months. EPRI is essentially claiming that an EMP event inflicting damage over 15,000 times more severe than the ten greatest blackouts in world history would be: no big deal; within the experience of the electric power industry; and routinely manageable. Such assertions are untrue and dangerously irresponsible.

EPRI's claim that E1 EMP would not damage control and protection systems, creating conditions for compound damage by E2 and E3 EMP, is also false. At best, it is an utterly unproven assertion, one of the many unrealistically benign assumptions of their model.

EPRI's claim that no EHV transformers would be damaged by E3 EMP is ridiculous and grossly underestimates the actual threats we face. Geomagnetic storms, like the 1989 Hydro-Quebec Storm, have melted EHV transformers designed to carry 750,000 volts, in just 90 seconds. *Yet these natural EMP field strengths are far weaker than those generated by a nuclear EMP attack.* EPRI's recommended protection Standard for Geo-Magnetic Disturbance (GMD), equivalent to E3 EMP 8 volts/kilometer, is wholly inadequate for the nuclear EMP threat, which should be 85 volts/kilometer. For that matter, it is inadequate for a natural EMP geomagnetic super-storm like the Carrington Event., as well. The EMP Commission, National Academy of Sciences, and U.S. FERC all calculate that a Carrington Event could destroy hundreds of EHV transformers, requiring *ten years for recovery.* The EPRI GMD/EMP Standard is like preparing New Orleans for only a Cat 1 hurricane, when you know a Cat 5 will happen someday.

EPRI's assertion that GMD protection for natural EMP from solar storms also protects against nuclear EMP attack is false, because nuclear-induced EMP field strengths are much higher, and the E1 EMP component much more damaging than the most intense geomagnetic disturbance to date.

EPRI uses "garbage-in, garbage-out" computer modeling to make its bogus claims. Anything can be proven with computer models fed data selected to achieve a pre-ordained outcome. **EPRI's claims are contradicted by over 50 years of EMP testing.** If EPRI is right about the inconsequential nature of a nuclear EMP attack, why has the Department of Defense spent billions hardening U.S. C3I and military forces against EMP, including the NORAD Alternate Command Post inside Cheyenne Mountain? How come non-nuclear EMP weapons, that generate much weaker fields than a nuclear EMP attack, can crash airplanes, blow-up natural gas pipelines, stop cars, damage SCADAS etc.?

Military scientific and doctrinal writings, plans, and exercises by potential adversaries of the U.S. (including Russia, China, North Korea, and Iran) all concur that nuclear EMP attack would have catastrophic consequences, collapsing the U.S. electric grid and other critical infrastructures, offering the key to victory in war. We leave the grid vulnerable to such real-world threats at our extreme peril.

The Secure the Grid Coalition and EMP Task Force are genuinely independent entities that draw upon the expertise of actual experts on electromagnetic threats and the vulnerability of the U.S. electric grid.