

The EMP Threat Is Real and Growing

Building defenses against the electromagnetic threat has never been more urgent – or more doable.

By [Bryan Gabbard \(/topics/author/bryan-gabbard\)](/topics/author/bryan-gabbard) and [Robert Joseph \(/topics/author/robert-joseph\)](/topics/author/robert-joseph)

Oct. 1, 2015, at 8:00 a.m.



Ongoing crises make it difficult for policymakers to devote sufficient attention to electromagnetic threats, which are less prominent but potentially catastrophic. Events that reflect our growing vulnerability to these threats often slip quickly from the front page, as did the cyberattack against Sony Pictures. Others, such as solar storms across Alaska in March and the accidental power station explosion in April that left Washington, D.C. in the dark, go mostly unnoticed. And even events that dominate headlines, like the Iran nuclear agreement, don't tell the whole story about electromagnetic threats. As a nuclear threshold state, Iran may quickly race to build a bomb that could be used to conduct a devastating electromagnetic attack against the United States.

Our nation is increasingly reliant on technology to manage and monitor the network of systems that deliver our basic goods and services, and our system for generating and distributing electricity is the core of this network. A failure here could cascade across other vital national infrastructures, severely disrupting everything we take for granted, from food and water to cell service and sewer systems. However, little has been done to take the necessary steps to protect our infrastructures, thus our vulnerability only continues to increase. As this dangerous condition grows, the devastation that would follow such an attack also multiplies, making electromagnetic attacks an increasingly attractive option to U.S. adversaries. This is compounded by the fact that nuclear proliferation has resulted in new capabilities for those who may be more inclined to exploit our vulnerabilities to electromagnetic attack, particularly rogue regimes like Iran and North Korea.

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Of special concern are natural events and man-made electromagnetic threats that expose and exploit weaknesses based on the very strengths of our modern digital society. Solar geomagnetic storms create immediate and intense energy fields that may disrupt electrical and microelectronic systems, potentially on a continental scale. Cyberattacks, intentional electromagnetic interference weapons and high-altitude EMP attacks produced by the detonation of a nuclear device above the atmosphere could cripple our critical infrastructure and wreak havoc on the lives of millions of Americans.

Such threats are often dismissed as unlikely or a relic from the Cold War. They are not. Solar storms are not infrequent, making it only a matter of time until one impacts our critical infrastructure. And unlike natural phenomena, there is no reliable methodology for quantifying the likelihood of an EMP attack. Nevertheless, it is possible to identify developments that increase our adversaries' capacity and incentive to conduct an electromagnetic attack. These include the proliferation of ballistic missiles – especially in the hands of hostile actors like Iran and North Korea – and the growing perception of U.S. vulnerabilities to such attacks.

While policymakers have known of these vulnerabilities for years, little has been done to strengthen our infrastructure and build societal resiliency against the full range of electromagnetic threats. In the past, there seemed to be good reasons to put off action: The likelihood of attack appeared small, the cost enormous. Today, new developments make addressing this threat both more urgent and more feasible.

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First, the threat spectrum has grown. While this presents a significant challenge, it is also an opportunity. An integrated approach is needed against all threats that could jeopardize the functioning of critical infrastructure, especially the electric grid. This will yield economies of scale that can be used to advantage in hardening selected assets to address multiple dangers.

Second, opportunities for action have grown. The U.S. electric grid is not static. Elements are constantly being replaced and upgraded. This represents a major opportunity to reduce vulnerabilities, hardening the electric grid and electronic infrastructures and executing smart shutdowns of the power grid on warning. Both enhancements would require smart reconstitution of the grid after an electromagnetic event. And all of these steps will require prioritization, improved planning, modeling and exercises.

With the proper standards in place, the cost of hardening equipment to increase resilience could be as little as 3 percent more than existing capital investment for electric grid upgrades. Those existing annual investments run around \$100 billion, so the added cost would be on the order of \$1-3 billion per year.

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Third, new public-private partnerships are possible. The perennial challenge of critical infrastructure protection stems in part from the divide between those responsible for keeping Americans safe (the government) and those who own and control the systems that need protection (private entities). Significant progress has been made in thinking through these relationships as part of an effort to better protect against cyber and terrorist threats. But new laws and insurance mechanisms for improving these partnerships need to be broadened to address electromagnetic threats.

Fourth, an improved approach to deterrence is needed. Little attention has been devoted to the role of deterrence in regards to man-made electromagnetic threats, perhaps because of the assumption that nuclear deterrence policies from the Cold War are sufficient. With the proliferation of nuclear actors and new potential electromagnetic threat vectors, serious thought should now be given to electromagnetic-specific deterrence.

These recommendations are not exhaustive, but by taking practical steps to address our most pressing areas for improvement, the U.S. can begin devising a broad set of balanced solutions to better protect the critical infrastructure upon which our way of life depends.

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Dr. Gabbard is the executive vice president of the Defense Group Inc. and a former member of numerous Defense Science Board and other Task Forces on Nuclear Matters. He is a co-chair of a new EMP Task Force at JINSA's Gumunder Center for Defense and Strategy.



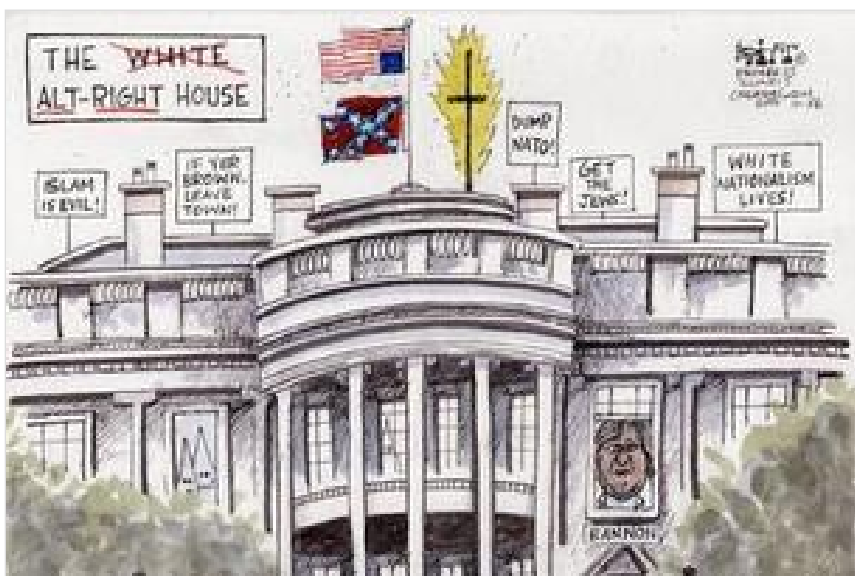
Ambassador Robert Joseph is a former under secretary of state for Arms Control and International Security. He is a co-chair of a new EMP Task Force at JINSA's Gemunder Center for Defense and Strategy.

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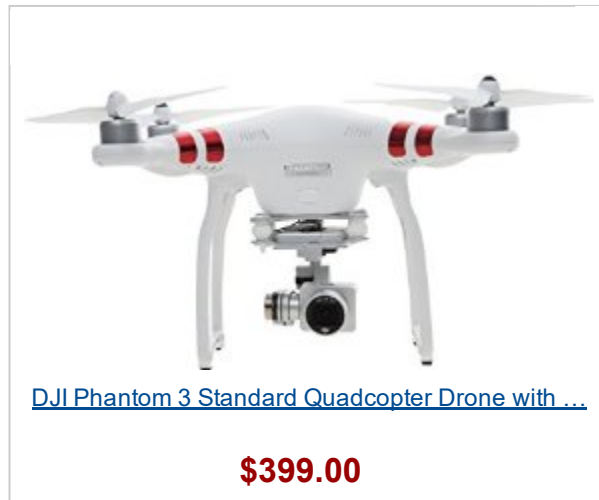


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'Small Business Saturday' is cute, but it's nowhere near what's needed to cure the

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Iran's message has rightfully been measured since Donald Trump won the presidency.

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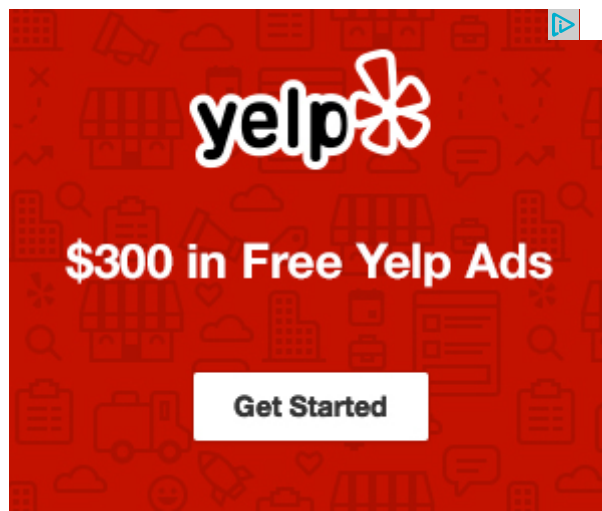


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