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EMP Awareness Day: The First Step to Averting Disaster

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In June, Maine became the first state to require a study of threats to the electric grid from weapons causing an electromagnetic pulse (EMP) effect and solar storms. The catastrophic consequences of an EMP or massive solar storm are too great to ignore. Indeed, massive power outages and the loss of nearly all electronic devices in the affected areas would cause the U.S. economy to grind to a halt. Such devastation would last for years if not decades and could lead to millions of lost American lives.

Despite multiple warnings from respected congressionally mandated commissions and organizations, however, the federal government has not acted, and the U.S. remains vulnerable. Washington should follow Maine's example and raise awareness of this threat. Congress should establish August 15, the anniversary of the largest blackout in North American history, as EMP Awareness Day to strengthen the national dialogue of what should be done to address this threat.

An EMP Could Cripple the U.S. An EMP is a torrent of electromagnetic energy that disrupts and destroys electronic devices within an affected area. As a result of such an event, most electrical

devices would fail, most cars would cease functioning, airplanes would fall from the sky, and critical infrastructure—such as water and sewers, banking, energy, transportation, information technology, and others—would shut down.

Importantly, the electrical components and transmission systems would be permanently destroyed, requiring enormous levels of repair and rebuilding. Huge swaths of the U.S. would be without even the most basic of services for years, and it could take decades to fully recover. The economic and human losses would be catastrophic.

EMP Threats Are Real. One way a major EMP event could occur is by a nuclear detonation high in the atmosphere. Such a detonation over North America could impact all of the continental United States.

This means that a potential enemy does not have to have accurate missiles. A bad actor could use long-range ballistic missiles—or even short-range ballistic missiles launched from a ship off the U.S. coast. Iran and North Korea already possess significant ballistic missile capabilities. North Korea also possesses nuclear weapons, and Iran is well on its way to obtaining them soon.

But a severe solar storm can also generate an EMP-like effect and shut down the electrical grid. In 1859, British astronomer Richard Carrington spotted a remarkably large solar flare, and within minutes, electromagnetic particles reached earth and affected the first widespread electrical device, the telegraph. Operators were shocked unconscious, and machines caught on fire. Today, with electronics in far greater use, a similar Carrington event would have far more destructive consequences.

This paper, in its entirety, can be found at
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U.S. Fails to Heed Multiple Warnings. None of this is new information. The U.S. first became aware of the threat of EMPs during its 1962 nuclear weapons test called Starfish Prime. Since then, several commissions and well-respected organizations and panels—such as the Commission to Assess the Threat to the United States from EMP attack, the Quadrennial Defense Review Panel, NASA, the National Academy of Science, and the U.S. National Laboratories—have warned of the danger of EMPs from nuclear weapons or space storms.

Despite these warnings, comprehensive threat assessments and planning for EMP events remains minimal. The Department of Homeland Security (DHS), which is charged with preparing for, mitigating, and recovering from major catastrophes, does not have a National Recovery Plan or a National Planning Scenario for an EMP event. U.S. state and local governments are also poorly prepared, although Maine has taken the first step to mitigate its vulnerability. Given the damage that an EMP event could cause, it is well past time for the U.S. to take action.

EMP Awareness and Preparedness Is Worth Having. The EMP threat is too serious to ignore. It is time for the government to engage with the U.S. people on the dangers of an EMP and to make August 15 National EMP Awareness Day. The day should be a stark reminder of how even the brief blackout of August 2003 affected millions of Americans and how much worse it would be if an EMP event occurred.

EMP Awareness Day should lead to real efforts to protect the U.S. from an EMP. Congress and the Administration should:

- **Mandate additional research into mitigating EMP threats.** Similar to what Maine is doing, the U.S. should undertake additional research into how an EMP would affect electronics and electrical systems and how these vulnerabilities can be removed or lessened.
 - **Determine which countries could undertake EMP attacks.** The U.S. should understand where potential EMP attacks could come from and produce intelligence estimates on nations that are pursuing or already have weapons capable of producing an EMP. This information can then be used to better inform policymakers on how best to respond to potential threats and prevent EMP attacks from occurring.
 - **Improve and fully fund U.S. missile defense.** Ballistic missiles are one of the most effective means of delivering an EMP. U.S. missile defense should be advanced to address the threat, especially as the East Coast remains less protected than the West Coast. Improved command-and-control features and interceptors tied to forward-deployed radar would give the Standard Missile-3 (SM-3) interceptor the ability to counter long-range ballistic missiles in the late midcourse stage of flight. The government should improve the SM-3's ability to intercept short-range ballistic missiles in the ascent phase of flight. Ultimately, the U.S. should develop and deploy space-based missile defense, the best way to protect the U.S. and its allies from ballistic missiles.
 - **Develop a National Recovery Plan and National Planning Scenario for EMP.** The catastrophic cost of an EMP event means that it deserves careful preparation and planning. Such plans should take the advice of the EMP commission and employ a risk-based approach that recognizes that certain infrastructure—particularly electrical and telecommunication systems upon which all other sectors depend—is most important in preparing for and recovering from an EMP event. Additionally, DHS should have a National Planning Scenario dedicated to EMP so that local, state, and federal authorities understand what would happen in an EMP event and what their respective responsibilities are in terms of both response and recovery.
 - **Prepare and protect critical cyber infrastructure.** Cyber infrastructure is completely and uniquely dependent on the power grid, which makes it particularly vulnerable to an EMP. The U.S. should explore ways to protect and shield the circuit boards of critical networks. Additionally, the U.S. should consider the interdependency between the nation's cyber infrastructure and the other critical infrastructures and take actions to prevent cascading failures.
- The Risk Is Too Great to Ignore.** The U.S. is vulnerable to an EMP event, whether caused by a nuclear weapon or by solar storms. Despite many warnings, the U.S. has done little to mitigate or prepare for an EMP event, which could cause widespread

power and critical infrastructure failures, potentially leading to the deaths of millions of Americans. Now is the time to act; the U.S. should prepare for the possibility of an EMP.

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