



## CENTER FOR SECURITY POLICY

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19 March 2019

The Honorable Kelly Hancock, Chair  
The Honorable Robert Nichols, Vice Chair  
Senate Committee on Business & Commerce  
Texas Senate, Room SHB 370  
Austin TX 78711-2068

**Subject: SB 475 & Bills on Electric Grid Security**

Dear Chairman Hancock, Vice-Chair Nichols and other members of the Committee:

I am an employee of the Center for Security Policy, a 501 (c) (3) organization under the IRS Code, so I do not lobby for or against specific legislation but rather seek to educate the committee in such a way that it can craft policy that most effectively and efficiently contributes to our national security.

I have served in the United States Marine Corps on active duty and in the reserves for nearly 17 years but am not testifying as a Marine Officer, but rather in my civilian capacity as the administrator of the Secure The Grid Coalition – a broad group of national security experts working hard around the country to secure our nation’s most critical infrastructure – its electric grid.

I first want to thank everyone in this room who is a part of the electric industry for their service. After each of my tours overseas to Iraq, Afghanistan, and Africa I would thankfully be greeted by patriotic Americans thanking me for my service. I’m here to tell each and every one of you that nothing I have ever done in uniform, or will ever do as a Marine, will come close to the service you provide in keeping the “lights on” in our country, since this electricity is the foundation upon which every American life depends.

I also want to thank the Texas Legislature for hosting our very first “Breakfast Briefing” on the topic of grid security on January 21<sup>st</sup> 2015, the day after Governor Abbott’s inauguration. Since that time **our Secure the Grid Coalition has facilitated four additional educational opportunities and more than 30 hours of education on this topic**, some of which took place in this very committee two years ago and the last of which took place on January 14<sup>th</sup> of this year.

Indeed, over the past four years the public has grown more and more informed on the vulnerability of our nation’s grid and on the importance of protecting it. You will notice in my written testimony the enclosed picture of Venezuelans struggling to capture water from a broken sewage pipe in order to provide hydration for their families as a result of a nearly nationwide

blackout there. These images burn into the hearts of mothers and fathers across this country as they recognize the need to pray for the people of Venezuela, but also the need for our own nation to secure its own electric grid – against ALL HAZARDS – including Electromagnetic Pulse (EMP) and Geomagnetic Disturbances (GMD).

The public has also recognized that the Federal government has failed to protect America against the hazards of EMP & GMD. In fact, this recognition is shared by many members of Texas' own Congressional Delegation. **In 2015 and again in 2018 numerous members of the Texas Congressional delegation authored letters to Governor Abbott requesting that he take action to Secure the Grid of Texas against ALL HAZARDS – including EMP & GMD.** Copies of both letters are enclosed in this written testimony.

Given this broad opportunity for education among policymakers, the growing awareness among the public about these threats, and the encouraging steps already taken in Texas to begin protecting the grid against EMP & GMD, **I find the current language in SB 475 to be dangerously erroneous and potentially immensely costly to the lives and livelihoods of Texans in (6) main areas:**

1. **Potential Costs of Codifying the Omission of the Profound Threats of EMP & GMD:** Despite 30+ hours of education spread out between each calendar year from 2015 to 2019, being hosted in this Capitol, and being made available to all elected officials and their staff members, SB 475 leaves out the two most catastrophic threats to the Texas electric grid: EMP & GMD. In the enclosures I have provided the biographies of the speakers at just one of these events and have confirmed that these experts are still willing to consult with the Texas legislature to assist the state in defending against these threats. Unfortunately, SB 475 does not create the conditions for this type of collaboration, wasting the nation's foremost expertise on these threats. Worse yet, omission of these threats in the statutory language forming the Grid Security Council could also codify the omission of these threat vectors from the future research of the Grid Security Council, resulting in the Council doing nothing to protect against a hazard that numerous federal government studies have established could cause a loss of up to 90% of the population of the United States.
2. **Potential Costs of Codifying the "Status Quo":** SB 475 codifies the "status quo" by using language such as "may" rather than "shall" and thereby does not require the protection of the Texas electric grid, nor create economic incentives for communities that choose to take the initiative to protect their own local critical infrastructures against all hazards. By creating a Grid Security Council that is composed of the Chair of the Public Utility Commission, the chief executive officer of ERCOT, and the Governor or his representative, the bill puts the same people in charge of finding a solution who have had plenty of time to take action already. Today, all the three of these parties already have more authority to address this problem than SB 475 gives them.
3. **Potential Costs of Codifying "Initiative Killing" Procedures:** Rather than a call for immediate action, SB 475 simply sets up a Council that is not required to take any action

at all unless the Governor, Lieutenant Governor, or the Chair of the House or Senate Committee having jurisdiction over energy utility regulation requests that it come up with recommendations. These parties have the authority to do this now, without legislation, and they have not. Since SB 475 expressly states that only these three entities can request recommendations from the Grid Security Council, it effectively “kills” any initiative that the Council might take on its own to begin studying threats to the grid and making recommendations immediately upon SB 475 being enacted. The public should rightfully ask the question: What if the Governor, the Lieutenant Governor, or the Chair of the House or Senate Committee having jurisdiction over energy utility regulation decide NOT to require any work of the Grid Security Commission? Does the Commission then exist without the ability to get started working on solutions to these grave threats....and for how long?

4. **Potential Time & Monetary Costs of Following vs. Leading the Nation:** The Trump administration recognizes that the public is acutely aware of the threat of EMP and that our enemies are planning to use this type of attack against us. In the last two years, numerous executive branch documents have called for the protection of critical infrastructure against EMP (see educational resources below). There is a forthcoming Executive Order on EMP that will come from the White House and further direct action by the Federal government to address the threat of EMP, likely spurring federal and state-level vulnerability studies. Because SB 475 leaves out EMP/GMD, any studies conducted by the Grid Security Council will need to be re-executed after this White House executive order, costing priceless time and taxpayer monies.
5. **Potential Costs of Retrofitting EMP Protection vs “Baking It In”:** As is made clear in the numerous educational resources cited below and in the written testimony provided by members of our Secure the Grid Coalition and enclosed with my own, “designing EMP and GMD protections into new infrastructure systems may add 2 to 5 percent to overall system costs” whereas “retrofitting, if later required, can add 25 percent or more to system costs.” Therefore, any grid protection initiated by the Grid Security Council formed under SB 475 will not contain “baked in” EMP/GMD protections, creating the conditions for a much more costly retrofit later – costs that will be borne by the people, either through an increase in their electricity rates or through their taxes.
6. **Codifying Self-Regulation of Grid Security and Excluding Key Stakeholders:** One of the characteristics of the electric utility industry that has prevented the Federal government from properly addressing the profound threats to the electric grid posed by EMP & GMD is the way in which it is regulated. Numerous documents contained in the list of educational resources below chronicle the “self-regulation” that takes place between the North American Electric Reliability Corporation (NERC) and the Federal Energy Regulatory Commission (FERC). SB 475 codifies a Grid Security Council that includes a 2/3 ratio of grid regulators to executive branch officials. This is a recipe for the continuation of “self-regulation” when it comes to grid security. Worse yet, it EXCLUDES important stakeholders such as the Texas Military Department, the Texas Division of Emergency Management, the State Office of Risk Management, The Texas

Military Preparedness Commission, the Office of State-Federal Relations, representatives of power generation companies / transmission utilities / distribution utilities, and representatives within essential services sectors such as: law enforcement, emergency services, communications, water and sewer services, health care, financial services, and food & agriculture.

Chairman Hancock, Vice-Chair Nichols and other members of the Committee, it is ACTION that your constituents expect at the state level because of the failures of the Federal government to take sufficient action to protect the grid from all hazards, including EMP and GMD. **As I have pointed out above, SB 475 does not prompt such action and, if anything, will do more damage if it is enacted.**

Around the nation other states are enacting effective legislation to protect against the dangers of EMP & GMD. For example, on September 11<sup>th</sup> of last year, the California governor signed into law SB-1076 – a law that requires the office to update the State Emergency Plan to include cost-effective preparedness recommendations to feasibly harden the critical infrastructure of electrical utilities against an electromagnetic pulse attack, geomagnetic storm event, or other potential cause of a long-term outage.

Possessing its own grid interconnect and a populace that sees the benefits of a secure Texas electric grid, this state can quickly regain the lead among the rest of the states in the Union. In order to take such a lead, **the Texas legislature would be wise to either discard SB 475 or amend it to match the language exactly of either SB 76 or SB 1003** – two bills filed in the current session that would spur immediate action and a focus on the ALL HAZARDS grid protection that the citizens of Texas deserve.

**Replacing SB 475 with either SB 76 or SB 1003 would result in rapid action and economic incentives for businesses, American citizens, and U.S. Military planners seeking a state that is home to an electric grid resilient to ALL HAZARDS. A resilient Texas electric grid would be the catalyst for the largest economic boom in Texas history.**

I will once again make myself – and all the experts of our coalition – available to you and your staffers to discuss this incredibly important topic at your convenience. I encourage you to carefully consider this testimony and the below educational material as you make this immensely important decision. I also want to encourage you to know that the citizens of Texas are aware of these threats and expecting you to serve the public interest.

If you have any questions, please don't hesitate to contact me at 202-302-1974 or [twaller@centerforsecuritypolicy.org](mailto:twaller@centerforsecuritypolicy.org) Thank you very much.

Semper Fidelis,



Thomas J. Waller Jr.  
Vice President, Special Projects  
Center for Security Policy

**Additional Members of the Secure the Grid Coalition who concur with this testimony:**

Ambassador Henry Cooper, Chairman, High Frontier  
Dr. Peter Vincent Pry, former Chief of Staff, Congressional EMP Commission  
Dr. George Baker, Senior Technical Advisor, Congressional EMP Commission  
Frank J. Gaffney, Founder of the Center for Security Policy  
Ken Chrosniak (Brigadier General, USA Ret.)  
Michael Mabee (Command Sergeant Major, USA Ret.)  
Jim LeBlanc, Chair, Louisiana Grid Coalition

**Additional Enclosed Written Testimony by Members of the Secure the Grid Coalition:**

- Written Testimony on SB 475 before this Committee: Foundation for Resilient Societies
- Written Testimony on SB 475 before this Committee: Joint Comments of Mary D. Lasky, William R. Harris, and Stephen Vollandt, officers of the InfraGard Electromagnetic Pulse Special Interest Group

**Additional Enclosures:**

- Single Page Bio – Tommy Waller
- Picture of Venezuela, dated March 11<sup>th</sup>, 2019. (Photo Credit Reuters)
- Invitation to Breakfast Briefing, January 21<sup>st</sup>, 2015
- Texas Congressional Delegation Letter to Governor Abbott dated November 2, 2015
- Speaker Bios for 2016 Energy Security Summit
- Texas Congressional Delegation Letter to Governor Abbott dated September 28, 2018

**Suggested Educational Resources:**

**DHS’s NCC Guidelines for EMP Protection (2019):**

National Coordinating Center for Communications (NCC). “Electromagnetic Pulse (EMP) Protection and Resilience Guidelines for Critical Infrastructure and Equipment” February 5, 2019.

[https://michaelmabee.info/wp-content/uploads/2019/02/2019-02-05-EMP-Protection-and-Resilience-Guidelines-v2\\_2-5-Feb-2019-Final.pdf](https://michaelmabee.info/wp-content/uploads/2019/02/2019-02-05-EMP-Protection-and-Resilience-Guidelines-v2_2-5-Feb-2019-Final.pdf)

(See especially executive overview on Page 2)

**USAF Air University’s Electromagnetic Defense Task Force (EDTF) (2018):**

EDTF Project Spartacus Report: [https://media.defense.gov/2018/Nov/28/2002067172/-1/-1/0/LP\\_0002\\_DEMAIO\\_ELECTROMAGNETIC\\_DEFENSE\\_TASK\\_FORCE.PDF](https://media.defense.gov/2018/Nov/28/2002067172/-1/-1/0/LP_0002_DEMAIO_ELECTROMAGNETIC_DEFENSE_TASK_FORCE.PDF)

**The President’s NIAC Report: “Surviving a Catastrophic Power Outage.” (2018)**

President’s National Infrastructure Advisory Council (NIAC) on “Surviving a Catastrophic Power Outage.” [https://www.dhs.gov/sites/default/files/publications/NIAC%20Catastrophic%20Power%20Outage%20Study\\_508%20FINAL.pdf](https://www.dhs.gov/sites/default/files/publications/NIAC%20Catastrophic%20Power%20Outage%20Study_508%20FINAL.pdf)

**DHS Strategy on EMP (2018):**

[https://www.dhs.gov/sites/default/files/publications/18\\_1009\\_EMP\\_GMD\\_Strategy-Non-Embargoed.pdf](https://www.dhs.gov/sites/default/files/publications/18_1009_EMP_GMD_Strategy-Non-Embargoed.pdf)

**Congressional EMP Commission Reports & Documents (2004, 2008, 2017):**

All of the UNCLASSIFIED reports and documents of the EMP Commission are listed below and can be found here: <http://www.firstempcommission.org/>

1. 2004 Report of the Commission to Assess the Threat to the United States from EMP Attack: Volume 1 Executive Report
2. 2008 Report of the Commission to Assess the Threat to the United States from EMP Attack: Critical National Infrastructures
3. 2017 Chairman's Report. UNCLASSIFIED assessment of EMP threat and recommendations in greater depth than Executive Summary.
4. 2017 Executive Summary—Assessing the Threat From EMP Attack. UNCLASSIFIED. Natural and manmade EMP are existential threats deserving highest-priority to protect electric grids and other life-sustaining critical infrastructures through a White House-level executive agent with responsibility, powers, authorities, and new institutional arrangements to replace the failed old.
5. Recommended E3 HEMP Heave Electric Field Waveform for the Critical Infrastructures. UNCLASSIFIED critique and correction of erroneous E3 EMP studies by NERC, EPRI, others.
  - a. *Note: The research and preparation of the "Recommended E3 HEMP Heave Electric Field Waveform for the Critical Infrastructures" report was done by Dr. William Radasky and Dr. Edward Savage of the Metatech Corp. using data provided to them by scientists from the Russian Federation at the request of the EMP Commission.*
6. Risk-Based National Infrastructure Protection Priorities for EMP and Solar Storms. UNCLASSIFIED critique and correction of risk-based assessment of threat from nuclear and natural EMP threat.
7. Electric Reliability Standards for Solar Geomagnetic Disturbances. UNCLASSIFIED critique of grossly inadequate U.S. FERC-NERC Standard for GMD and E3 EMP.
8. Examination of NERC GMD Standards and Validation of Ground Models and Geo-Electric Fields. UNCLASSIFIED critique and correction of NERC GMD/E3 EMP Standard which grossly underestimates GMD and E3 EMP threat.
9. Life Without Electricity: Storm-Induced Blackouts and Implications for Electromagnetic Pulse Attack. UNCLASSIFIED. Storm-induced blackouts prove life-sustaining critical infrastructures will likely collapse for months or years in an EMP event.
10. Nuclear EMP Attack and Combined-Arms Cyber Warfare. UNCLASSIFIED assessment of revolutionary new way of warfare by Russia, China, North Korea and Iran and worldwide scenarios describing how these states could wage combined EMP and cyber-attacks.
11. Political-Military Motives for Electromagnetic Pulse Attack. UNCLASSIFIED analysis of foreign military doctrines, planning, exercises, and capabilities for EMP attack.
12. Foreign Views of Electromagnetic Pulse Attack. UNCLASSIFIED analysis of foreign military doctrines on EMP attack.

**Research by the Government Accountability Office (2016)**

April 25, 2016 report: CRITICAL INFRASTRUCTURE PROTECTION: Federal Agencies Have Taken Actions to Address Electromagnetic Risks, but Opportunities Exist to Further Assess Risks and Strengthen Collaboration



(On P.1 GAO concluded: “[U.S. Department of Homeland Security] DHS and [U.S. Department of Energy] DOE, in conjunction with industry, have not established a coordinated approach to identifying and implementing key risk management activities to address EMP risks.”)

<https://www.gao.gov/assets/680/676030.pdf>

### **Research by Foundation for Resilient Societies**

1. Draft Situation Report on Venezuela:  
[http://www.resilientsocieties.org/uploads/5/4/0/0/54008795/draft\\_situation\\_assessment\\_of\\_venezuela\\_blackout\\_20190314.pdf](http://www.resilientsocieties.org/uploads/5/4/0/0/54008795/draft_situation_assessment_of_venezuela_blackout_20190314.pdf)
2. High Consequence Scenarios for North Korean Atmospheric Nuclear Tests with Policy Recommendations for the U.S. Government:  
[http://www.resilientsocieties.org/uploads/5/4/0/0/54008795/nk\\_emp\\_paper\\_20171130.pdf](http://www.resilientsocieties.org/uploads/5/4/0/0/54008795/nk_emp_paper_20171130.pdf)
3. Petition to the NRC PRM 50-96:  
[https://www.resilientsocieties.org/uploads/5/4/0/0/54008795/petition\\_for\\_rulemaking\\_resilient\\_societies\\_docketed.pdf](https://www.resilientsocieties.org/uploads/5/4/0/0/54008795/petition_for_rulemaking_resilient_societies_docketed.pdf)

### **Research by Michael Mabee on the pitfalls of Electric Power Industry Self-Regulation:**

Retired Command Sergeant Major Michael Mabee has been researching the threats to the electric grid for over 7 years. His website hosts more than two decades of federal reports, congressional hearings and studies that unequivocally prove that our electric grid is susceptible to numerous known threats. He has published a comprehensive list of these reports and studies here:

<https://michaelmabee.info/government-documents-emp-and-grid-security/>

Michael has also chronicled the safety and security pitfalls of the “Self -Regulation” taking place between FERC & NERC and among the electric utility industry members here:

<https://michaelmabee.info/>

### **Research by the Secure the Grid Coalition Shedding Light on Industry Misinformation**

A Rebuttal to the Edison Electric Institute White Paper “Electromagnetic Pulses: Myths vs. Facts”

<https://securethegrid.com/fake-news-by-edison-electric-institute/>

### **FERC / Metatech Collaborative Research Documents (2010 & 2017):**

1. U.S. Federal Energy Regulatory Commission (FERC) Interagency Report, coordinated with the Department of Defense and Oak Ridge National Laboratory: Electromagnetic Pulse: Effects on the U.S. Power Grid, Executive Summary (2010)  
[https://www.ferc.gov/industries/electric/indus-act/reliability/cybersecurity/ferc\\_executive\\_summary.pdf](https://www.ferc.gov/industries/electric/indus-act/reliability/cybersecurity/ferc_executive_summary.pdf)
2. FERC Interagency Report by Edward Savage, James Gilbert and William Radasky, The Early-Time (E1) High-Altitude Electromagnetic Pulse (HEMP) and Its Impact on the U.S. Power Grid (Meta-R-320) Metatech Corporation (January 2010)  
[https://www.eiscouncil.org/App\\_Data/Upload/9b03e596-19c8-49bd-8d4e-a8863b6ff9a0.pdf](https://www.eiscouncil.org/App_Data/Upload/9b03e596-19c8-49bd-8d4e-a8863b6ff9a0.pdf)
3. FERC Interagency Report by James Gilbert, John Kappenman, William Radasky, and Edward Savage, The Late-Time (E3) High-Altitude Electromagnetic Pulse (HEMP) and Its Impact on the U.S. Power Grid (Meta-R-321) Metatech Corporation (January 2010)  
[http://www.futurescience.com/emp/ferc\\_Meta-R-321.pdf](http://www.futurescience.com/emp/ferc_Meta-R-321.pdf)

4. FERC Reliability Technical Conference, Docket No. AD17-8-000, Testimony of Dr. George H. Baker: <https://www.ferc.gov/CalendarFiles/20170717080646-Baker,%20EMP%20Commission.pdf>

### **Research by the EIS Council**

Energy Law Journal Article: VULNERABILITY OF NATIONAL POWER GRIDS TO ELECTROMAGNETIC THREATS: DOMESTIC AND INTERNATIONAL PERSPECTIVES <https://www.eba-net.org/assets/1/6/12-1-Schnurr.pdf>

### **Research by Lloyds of London (2013 & 2015)**

1. 2013 Report - Solar storm risk to the North American electric grid  
<https://www.lloyds.com/~media/lloyds/reports/emerging-risk-reports/solar-storm-risk-to-the-north-american-electric-grid.pdf>  
(This report, which was produced in collaboration with the Atmospheric and Environmental Research (AER), examines the impact of solar storms on North America's electric grid)
2. 2015 Report - Business Blackout:  
<https://www.lloyds.com/~media/files/news-and-insight/risk-insight/2015/business-blackout/business-blackout20150708.pdf>  
(This Lloyds scenario postulates a cyberattack on the electric grid that burns out 50 generators and plunges into blackout the northeastern U.S., 15 states, including NYC and Washington DC, 93 million people, for weeks, costing \$243 billion - \$1 trillion. Lloyds is right to be concerned.)

### **California Legislation: SB-1076 (2017-2018)**

Emergency preparedness: electrical utilities: electromagnetic pulse attacks and geomagnetic storm events. [http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=201720180SB1076](http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1076)  
This bill requires the office to update the State Emergency Plan to include cost-effective preparedness recommendations to feasibly harden the critical infrastructure of electrical utilities against an electromagnetic pulse attack, geomagnetic storm event, or other potential cause of a long-term outage. It was signed into law by the California Governor Jerry Brown on September 11<sup>th</sup>, 2018.