

Protecting the Electric Grid: South Carolina's Initiatives, a "Pathfinder" for the nation!

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See www.highfrontier.org for more information.

*South Carolina InfraGard Members Alliance (SCIMA) Conference
Boiling Springs Fire Department
208 Blacks Drive, Greenville, SC 29615
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For more information on the threat and how to get involved to protect your family and friends, see www.highfrontier.org and its links to others who are already engaged in this important fight.

North Korea demonstrates the urgent need!



Possible North Korean ballistic missile trajectories—note threats to Guam, Hawaii and much of the Western United States overfly the Pacific.



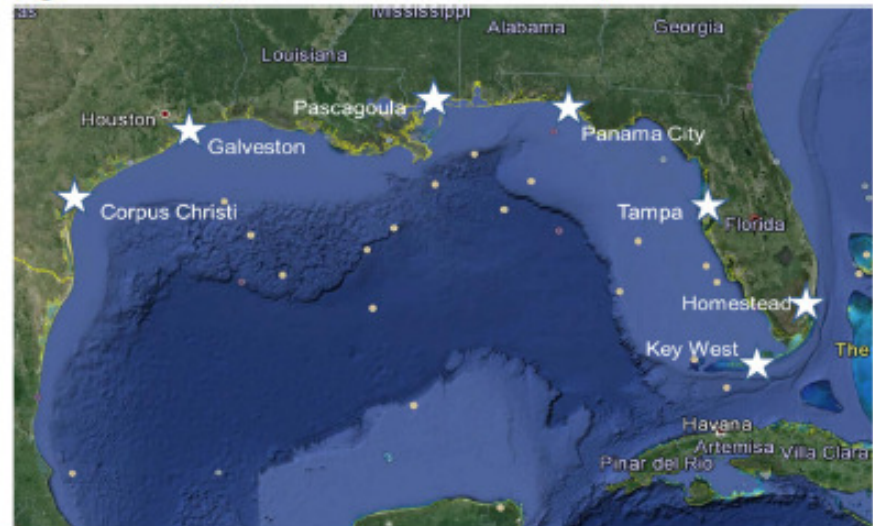
Demonstrated North Korean satellite launch trajectories to the South

Already have ballistic missiles that can reach the USA—and our overseas troops, allies and friends! Armed with nuclear weapons!

We are currently threatened by EMP attack “from the South” . . . to which we seem oblivious and are not addressing!

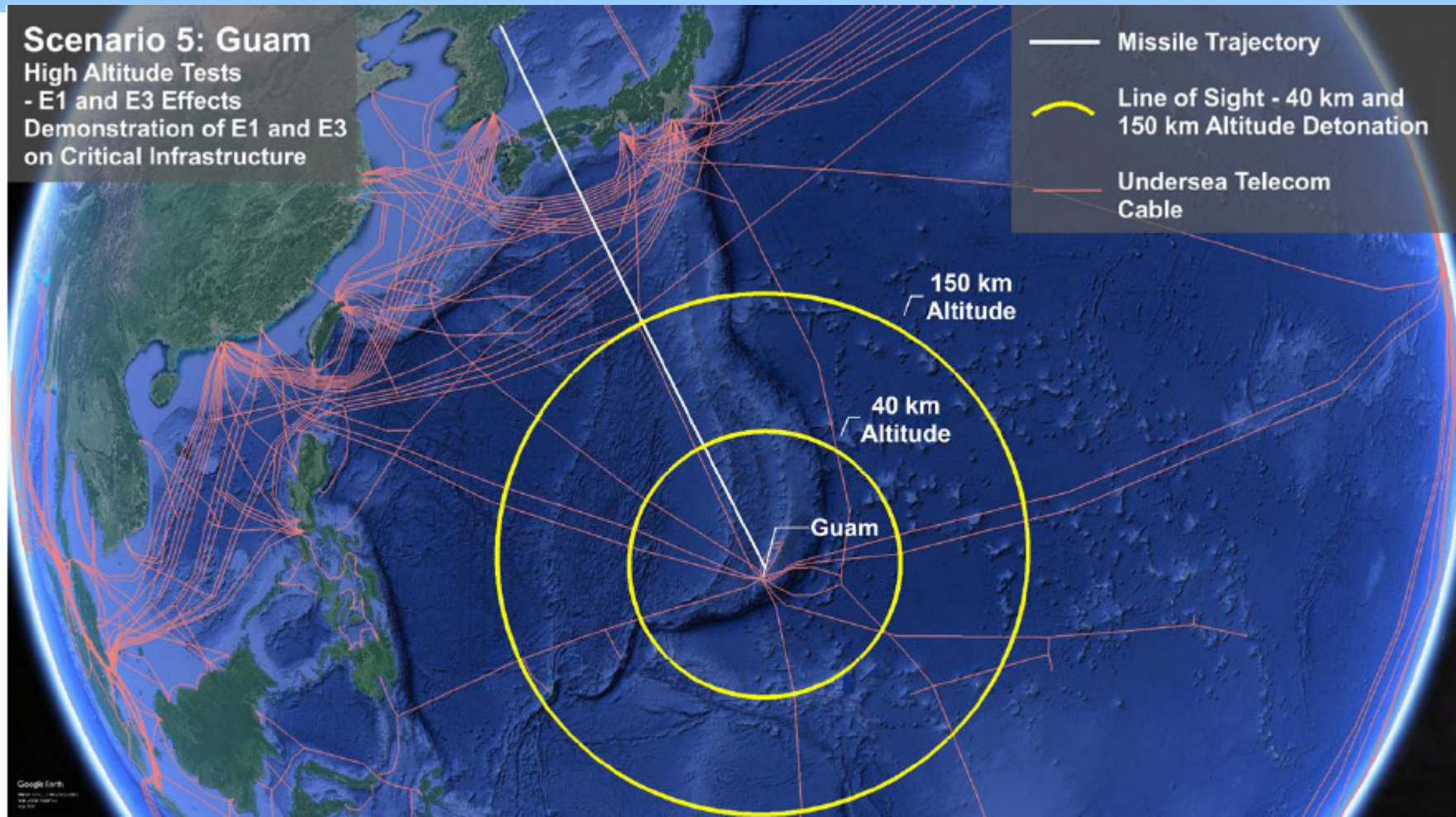


- *June 2013 Wake Up Call: Intercepted North Korean ship carrying from Cuba to & through the Panama Canal nuclear capable SA-2s and other technology, illustrating the “Cacophony of Proliferation”*
- *Currently vulnerable to Iranian (or terrorist) missiles launched from ships off our coasts, especially in the Gulf of Mexico or from Latin America, e.g., Venezuela*
- *Deploy Aegis Ashore BMD sites on 3-4 military bases around the Gulf of Mexico, like in Romania (operational) and Poland (in 2018)*



***No R&D is required for these relatively inexpensive needed defenses!
But DoD has no program to provide them???***

What Happens if North Korea Tests?

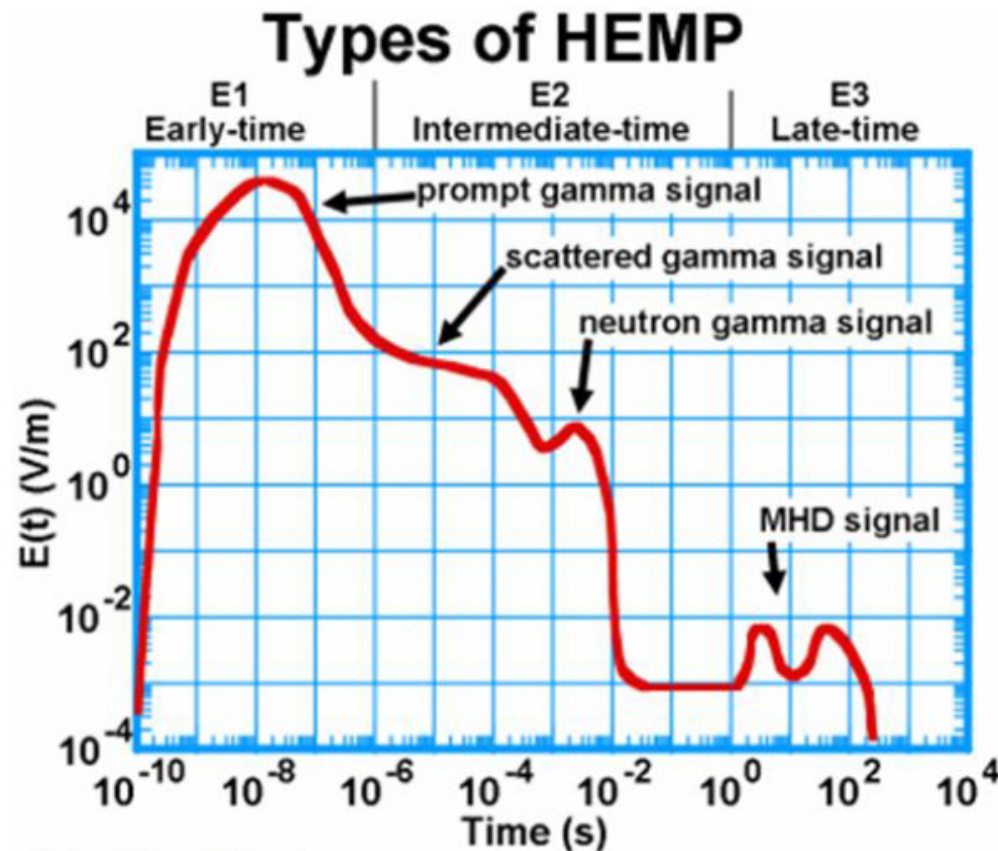


*Cable Paths: TeleGeography. "Submarine Cable Map." August, 11, 2017; paths are indicative but not precise.
Graphic: Foundation for Resilient Societies*

Note the undersea cables could be lost—impacting commerce throughout the Pacific region; even globally!

Components of the High Altitude EMP (HEMP) Threat that North Korea seeks!

- E1 is a potentially catastrophic “shock” to electronics
- E2 is like lightning
- E3 couples into long lines that focus damaging energy on critical substations and their large transformers and generators



Note: Notional Waveform

Source: Savage, Edward, et. al. "The Early-Time (E1) High-Altitude Electromagnetic Pulse (HEMP) and Its Impact on the U.S. Power Grid." Metatech Corporation, January 2010.

Protect against E2 with state of the art surge arrestors—E1 and E3 require more a more dedicated hardening and maintenance regime

Give Top Priority to Boost Phase Interceptors

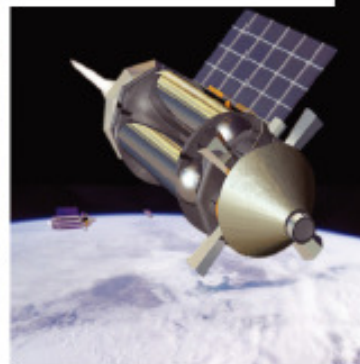
(First from airborne platforms, then from space)



A Burt Rutan Raptor Demonstrator that executed high-altitude, long-endurance UAV flights, satisfying rigorous performance criteria on flights of up to 65,000 ft. and over 48 hours endurance.



Helios prototype flying wing moments after takeoff to begin its first test flight on solar power—it set a high altitude record of 96,863 ft. in a 2001 flight from the U.S. Navy's Pacific Missile Range Facility on Kauai, HI.



Brilliant Pebble



Clementine

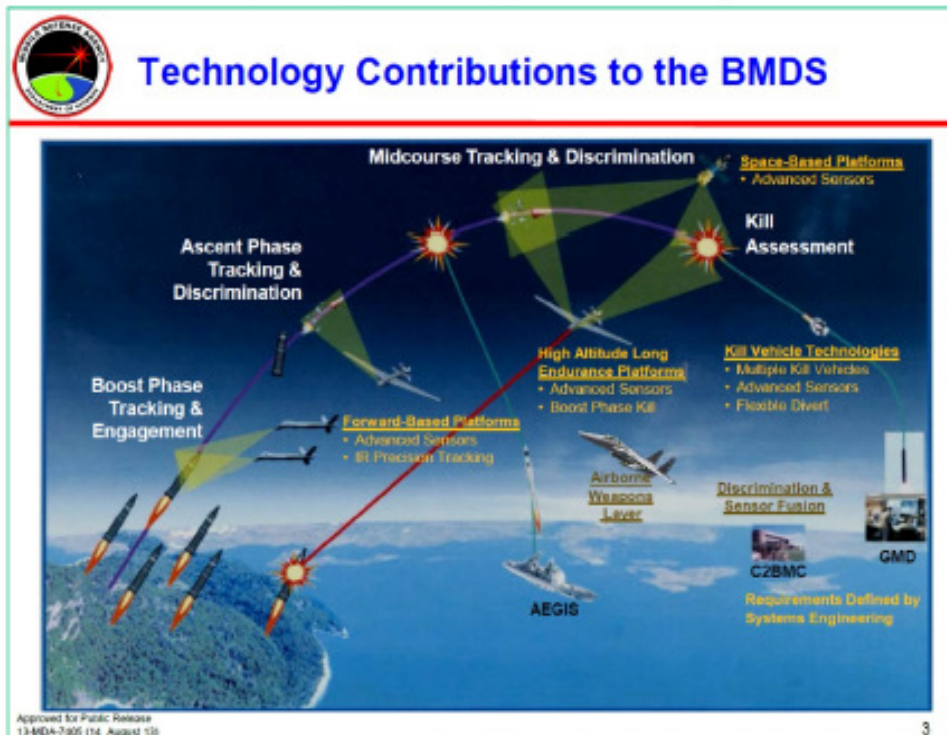


Astrid

“There was a time when space-based missile defense was criticized as ‘weaponizing space.’ So, while we sat back and tried to show leadership on this issue, Russia and China weaponized it for us . . . [I]t’s time to get past ideology and develop real defenses, and space-based missile defenses shouldn’t be off-the-table. For less than our current systems, we could deploy a missile defense system in space that’s more capable than what we have in today’s GMD system.” Rep. Mike Rogers (R-AL) ... 2015

STRATCOM Commander USAF General John E. Hyten: A Breath of Fresh Air & Hope for the Future!

- *Responsible for global command and control of US strategic forces to meet decisive national security objectives, providing strategic capabilities and options*
- *Advocate for space defenses*
- *Knows we must address the EMP threat!*



"[O]ur nation as a whole has not looked at EMP, we have not looked at the critical infrastructure that could be damaged by EMP, and we need to take a step back and look at that entire threat because it is a realistic threat." ... Gen. Hyten 2017

Will DoD be responsive to Hyten's warning?

- *Credible Threats to the Nation's Unprotected Electric Grid*

- *Manmade threats can/probably would be orchestrated in planned combined attack packages . . . Physical, Cyber, EMP*
- *Natural threat will occur—only the time is uncertain*

- *Existential National Threats*

- *Most Americans could die from thirst, hunger, disease, and societal collapse within a year*

- *We know how to “harden” the grid against this threat—have known for half a century!*

- *But . . . not DoD's Problem???*
- *Even though U.S. military bases & operations depend on the electric power grid!!!*



“NORTHCOM was born because of the 9/11 attacks for there was no commander of the homeland. But we are not the commander in charge of defending against terrorist attacks for that is the mission of the Departments of Homeland Security and Justice. We are a supporting command to them in dealing with terrorist threats.” ~ Admiral William Gortney, then Commander of NORAD & NORTHCOM), April 2016

DoD has obstructed progress as an unreliable partner ... delayed startup of EMP Commission for a year and supported its disestablishment in the NDAA 2018!!!

Urgently Need Local & State Initiatives to Address Electric Power Grid Vulnerabilities

- ***An Existential Threat***
 - ***Electricity is Essential***
 - ***Manmade & Natural Threats***
 - ***Lethargy in Washington***
- ***What can/should be done***
 - ***Protect the Electric Grid***
 - ***Missile & Cyber Defense***
 - ***Physical Protection***
- ***Significant State and Local roles***
 - ***Potential National Guard leading role***
 - ***Pilots to Protect Nuclear & other Power Plants and engage key local players***
 - ***South Carolina opportunity to lead***



While there are hopeful signs that Washington is waking up to this threat, it is still essential that State and Local authorities—especially in South Carolina—get involved to assuring the combined threat is addressed in a timely way!

Nuclear Power Reactors may be a hazard, but can be a critically important part of the solution!



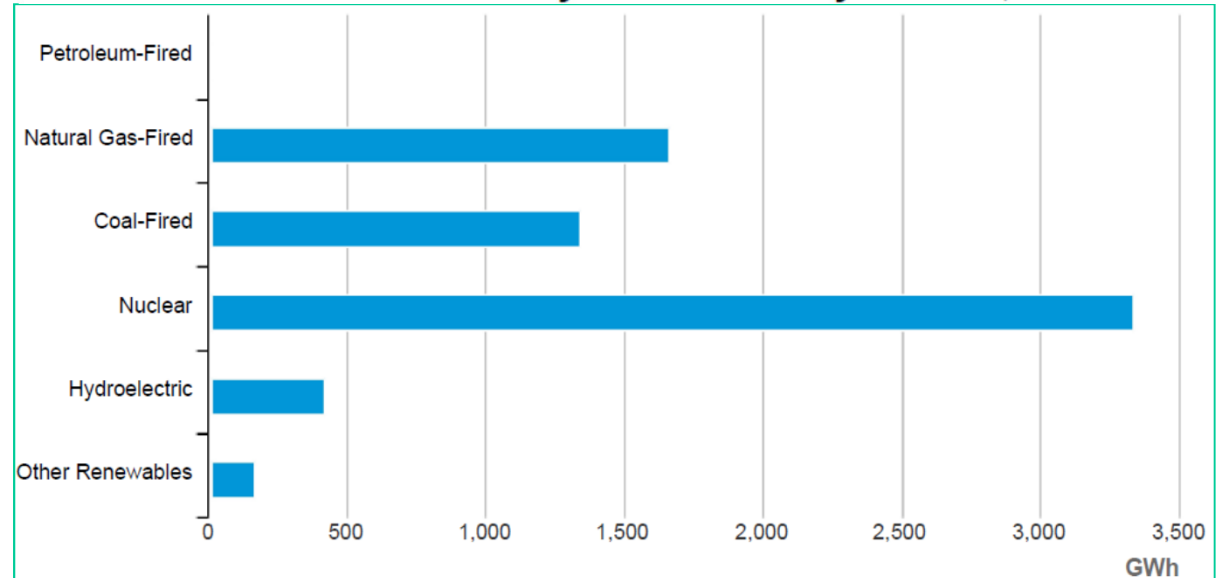
- *Reactors produce about 20% of US electricity—most are in the “Eastern Interconnection”*
- *If they lose the grid, they will shut down, possibly leading to multiple meltdowns*
- *Result could be up to ~100 Fukushimas, with radiation carried by wind across the US*
- *However, if engineers can figure out how to make them viable in such a shutdown, they would be important in reestablishing the national grid.*

Top priority: Assure nuclear reactors remain safe & can be restarted after a grid shutdown and become a source for restoring electricity to all Americans—SC & NC can help begin such an initiative!

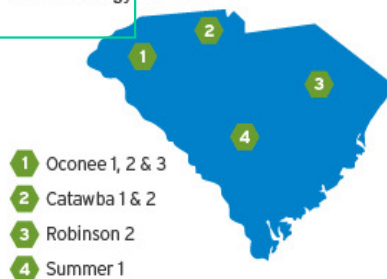
Notional Plan to assure SC Citizens of Viable Post-EMP Event Sources of Electric Power

- *Reactors produce over 50% of SC electricity, coal about 20%*
- *Grid shutdown causes reactors to shut down to protect themselves*
- *Assure Hydroelectric and/or Coal power sources survive with hardened pathways to restart reactors—as part of a hardened, viable “island” source region!*
- *Natural Gas fired plants likely depend on vulnerable SCADAs—So stockpile replacements!*
- *Prepare National Guard and local first responders!*

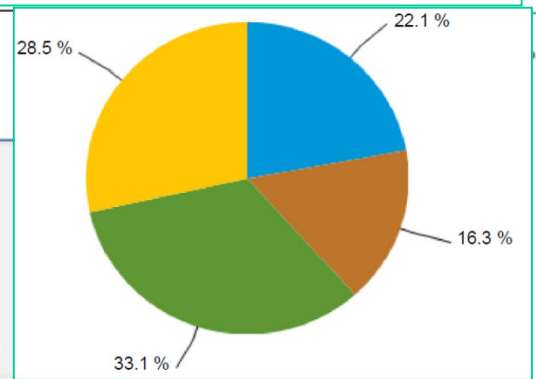
South Carolina Net Electricity Generation by Source, Nov. 2015



Nuclear Energy Facilities



Energy Consumption by End User

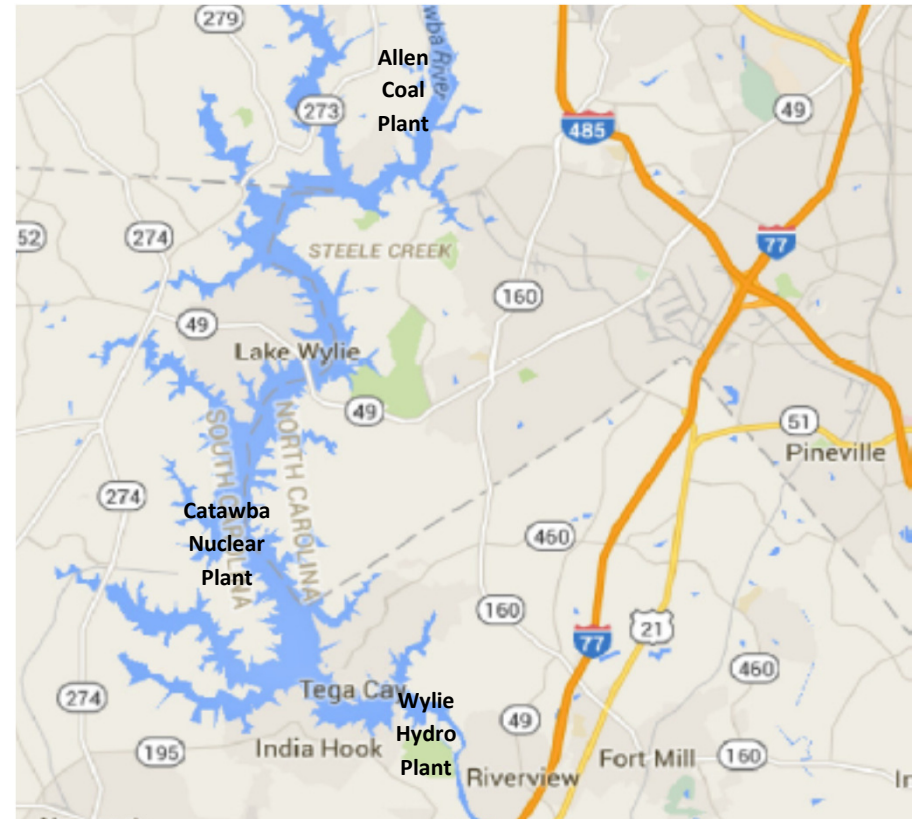


Top priority: Assure nuclear reactors remain safe and can be restarted after a grid shutdown as key sources for restoring electricity to all Americans—SC has an important role!

Lake Wylie Pilot Study

Emergency Management Objectives

- Help Duke Energy and York County Utilities and CoOps assure safe operations of Duke's power plants and all associated infrastructure that supplies electricity to York County citizens
- Examples of Needed Operations Support
 - Security of key transmission infrastructure
 - Safety/Life Support for Restoration Crews
 - Communications/Transportation Support for key goods and personnel
 - Maintain links to National and State Guard
 - Develop integrated CONOPS for at least York (SC); Gaston and Mecklenburg Counties (NC); and Duke Energy—in concert with National and State Guard
 - Identify shortfalls in current capabilities and outline plans for timely improvement
- Some Specific Key Questions
 - Integration of CoOps and Duke infrastructure?
 - Mission critical components to harden or stockpile?
 - Communications/transportation requirements?
 - Who provides minimum essential fuel?



- How to meet water/wastewater needs?
- Public needs-essential recovery operations plan?
- Law enforcement /emergency management plan?
- Who is the architect?

Studies show Prepared Local & State Responders are key to assuring viable recovery from a long duration Grid Blackout

Key Focus on Meeting Water-Wastewater Challenge

- **Water/Wastewater is a lifeline sector –its functions are essential to core operations in nearly every other critical sector.**
- **When lost even for short periods, consequences can be widespread and dramatic—if lost for an long time, the results can be catastrophic.**
- **Sufficient backup water resources cannot be stored to maintain key operations, e.g., in hospitals, office buildings, chemical plants, generators and manufacturing facilities.**

Exhibit III-I. Consequence of Water and Wastewater Service Disruptions

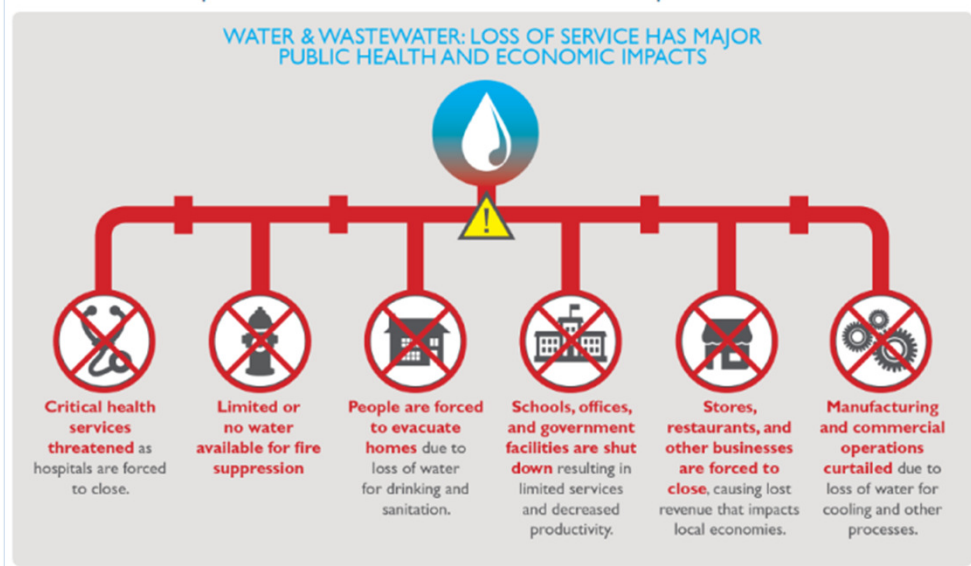
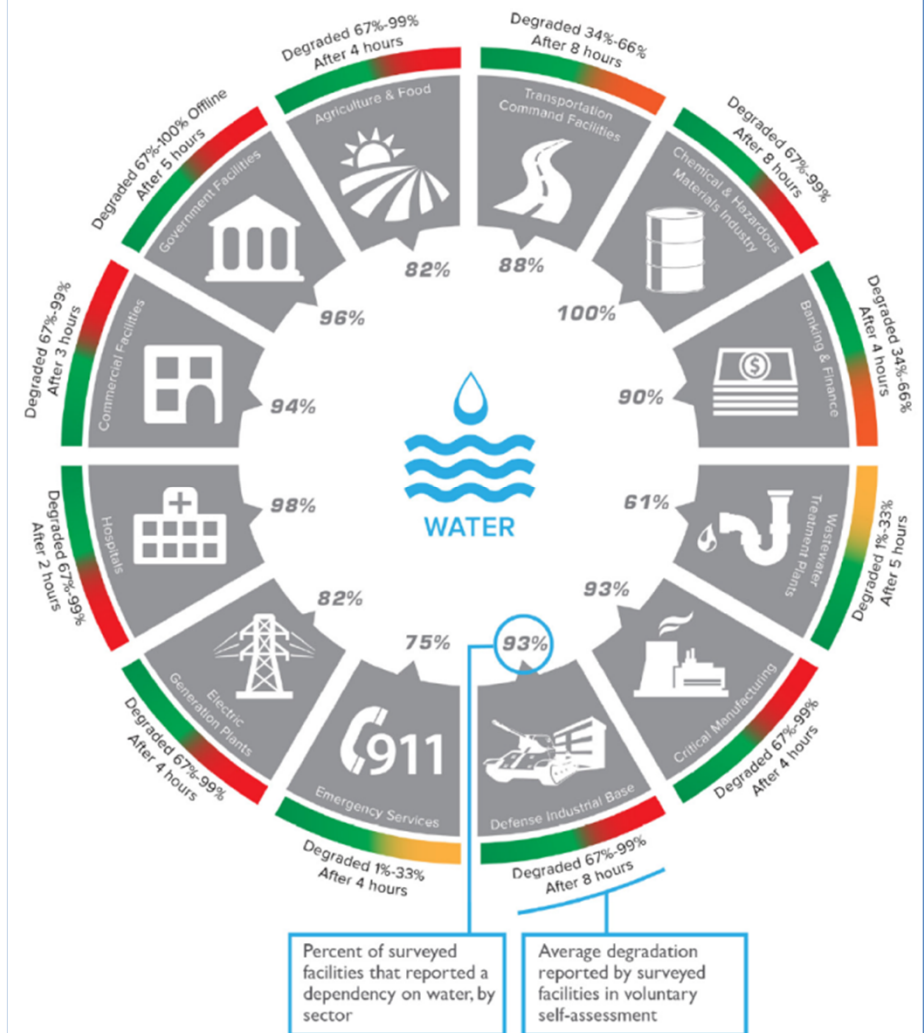


Exhibit ES-I. Critical Infrastructure Dependence on Water and Potential Function Degradation Following Loss of Water Services³



Need viable infrastructure connecting sources of electricity, e.g., Duke Energy, to the people, e.g., Rock Hill CoOps

The South Carolina National Guard has an Important National Role—including the 263rd Army Air and Missile Defense Command (AAMDC), which:

- *Is located in Anderson, SC, manned and led by SC National Guard personnel—and is a direct report to SC Adjutant General, under the Governor of SC*
- *Is already linked to critically important elements of our Homeland Defense*
 - *As ordered by the Governor, provides Defense Support to Civilian Authorities (DSCA), including for security operations in support of disaster relief, crowd control, or other duties as assigned by the Governor.*
 - *Under a USAF Lt. General at Tyndall AFB, Panama City, FL who is Commander of First Air Force, (AFNorth) and the Air Component Commander of the Continental NORAD Region (CONR)—and who has sole responsibility for ensuring the air sovereignty and air defense of the continental United States, U.S. Virgin Islands and Puerto Rico, as a direct report to the Commander of Northern Command in Colorado Springs*
 - *The Commander of the 263rd AAMDC is the Deputy Area Air Defense Commander for Continental NORAD Region (CONR)*
 - *Under an USA Lt. General who is Commander of Fifth Army (Army North) at Ft. Sam Houston, Texas who is charged with protecting the American people and their way of life, a direct report of Northern Command in Colorado Springs*
 - *Under Northern Command plans and operations, conducts Joint and Combined Theater Air and Missile Defense in support of designated operations plans and contingency operations.*
- *Role to be determined with respect to Aegis Ashore deployments to counter theater range ballistic missiles or other threats from the South*

I expect to help the SC Adjutant General's office support National Guard “tabletop” exercises that include EMP and lead to a future Vigilant Guard exercise that would involve neighboring and other states.

Bottom Lines

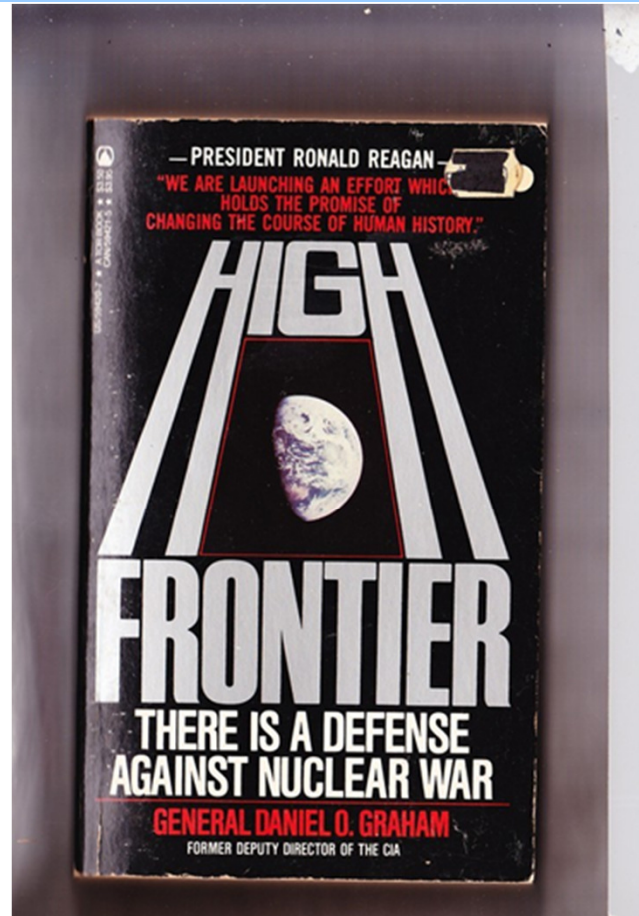
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 - *Natural threat will occur—only the time is uncertain*
- *Both pose an Existential National Threat*
 - *Most Americans could die from thirst, hunger, disease, and societal collapse within a year*
- *We know how to counter this threat—have known for half a century!*
- *Need to get on with affordable solutions*
 - *Defenses, Hardening, Planning and Preparations*
 - *Nuclear Reactor Pilot Studies—Lake Wylie Initiative Pathfinder!*
 - *Get the bureaucracy out of the way!*

Get involved today—inform yourself and act! For more information on the threat and how to get involved to protect your family and friends, see www.highfrontier.org

Please Let Us Hear From You!

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Check out our webpage at
www.highfrontier.org



Daniel O. Graham



Ambassador Henry F. Cooper

Thanks for your support—the vision lives on!!!

At High Frontier, we dedicate ourselves to passing to future generations the blessings passed to us by the Founders and Forefathers.

May God bless America!