PREPARING FOR THE EFFECTS OF AN ELECTROMAGNETIC PULSE (EMP) ATTACK

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JANUARY 2018

OVERVIEW OF PRESENTATION

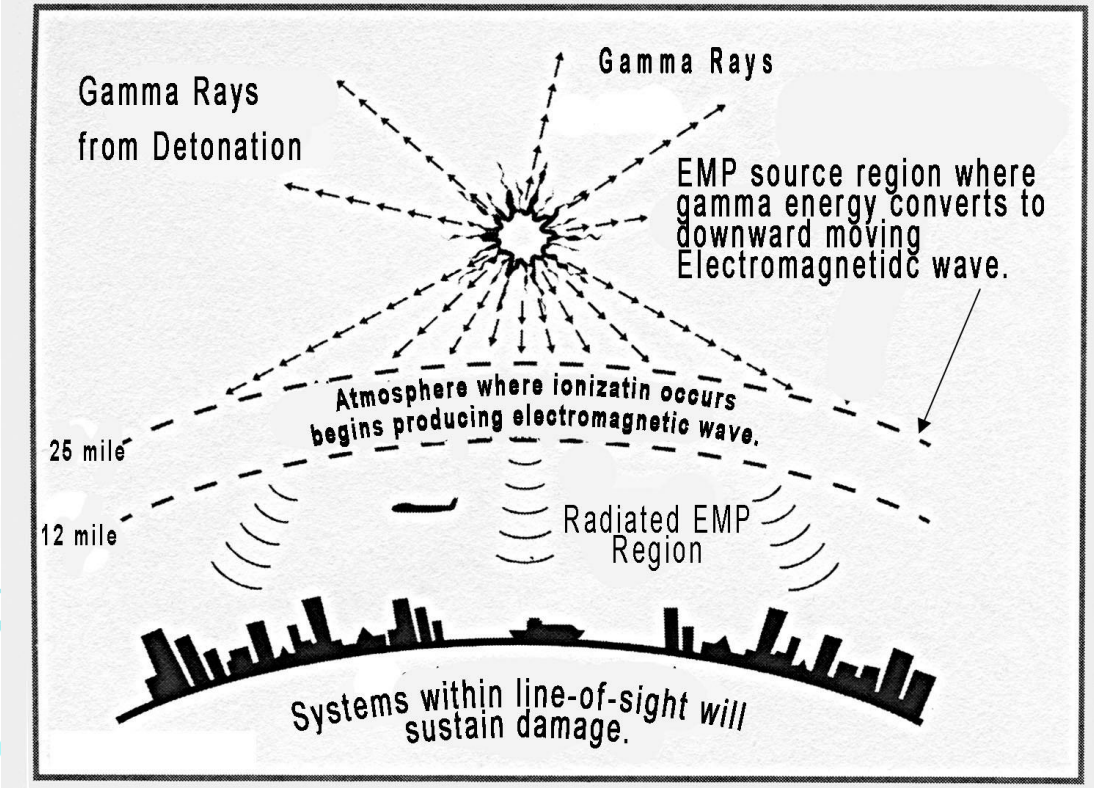
What is a High Altitude Electromagnetic Pulse (HEMP) - What Does it do?

How can HEMP Effects be Mitigated?

BENTON COUNTY EMERGENCY MANAGERS DON'T BELIEVE AN EMP RESPONSE PLAN IS NEEDED

- ***Evacuating people is misguided because that there's no way to know where or when a missile might strike.***
- ***"The phony ballistic missile alert that panicked Hawaii on Jan 13 helped drive home that point."***
- ***"Shelter in place is going to be your first option,"***
- ***Davis hopes the nuclear threat is being overstated. "You have to believe there isn't that kind of crazy in the world," she said.***
  - Deanna Davis, Benton County Emergency Services Manager, Tri-Cites Herald 25 Jan 2018 quotes are from an article by Wendy Culverwell (509.582.1514
- It is incumbent upon us to change this "normalcy bias" in our public servants

WHAT HAPPENS WHEN A HIGH ALTITUDE NUCLEAR DEVICE IS DETONATED?



High Altitude EMP Detonation

IMAGE BY REF. (1)

Tales from the Nuclear Age

- All unprotected electronic components are at risk of failure
- Electrical power generation and transmission grid will be damaged
- Infrastructure supported by electronics and electrical power will be compromised
- The effects will be long-lived

IRAN & NORTH KOREA DEVELOPING & TESTING EMP ATTACK STRATEGIES

"A [recently translated] military doctrine from Iran…mentioned EMP as a weapon more than *twenty times*." (2014)

Rep. Trent Franks, December 6, 2014

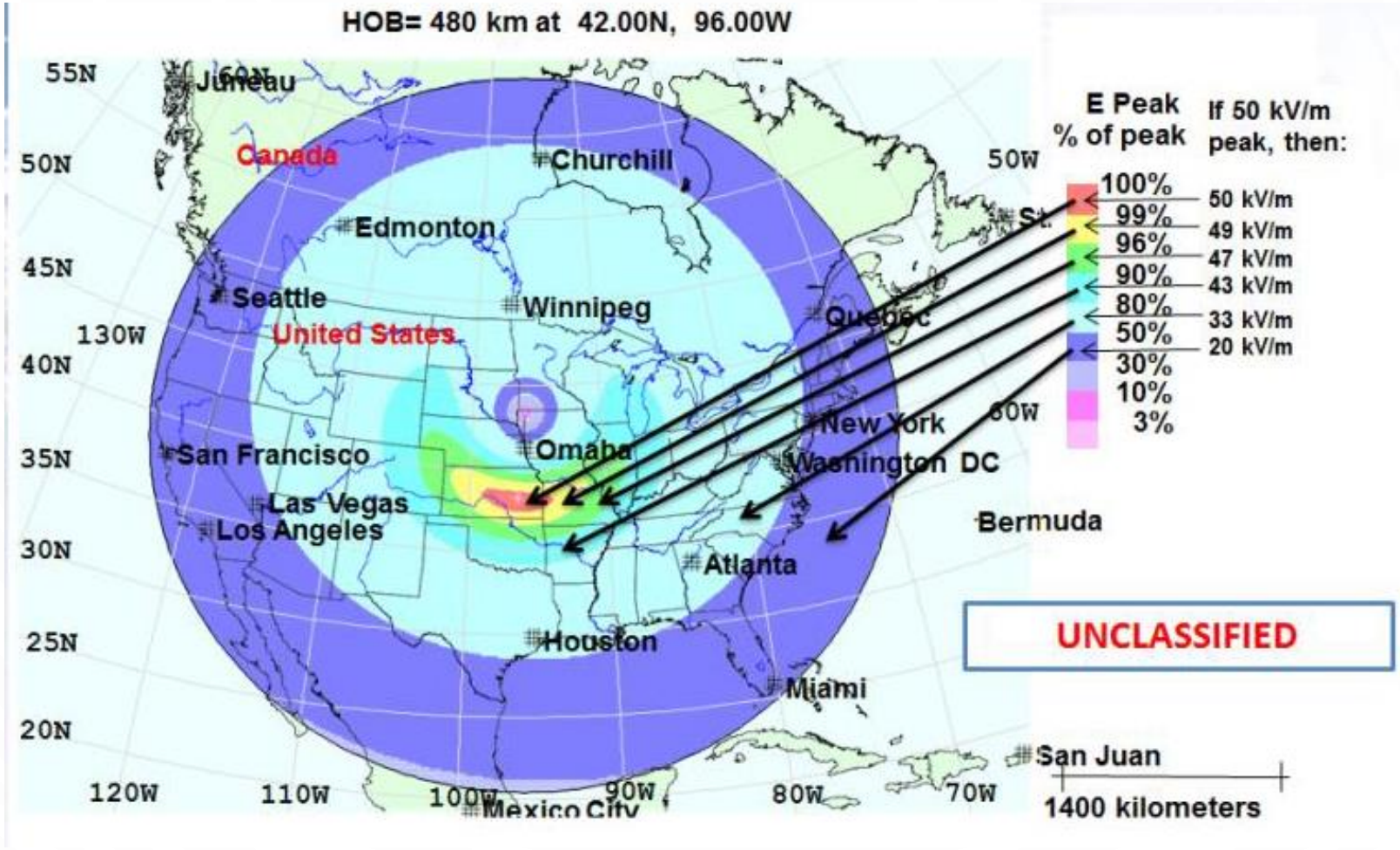
North Korean Weapon Called "Existential Threat to U.S."

(World news Daily, April 2017)

"The EMP threat, is the one way where a rogue nation like North Korea could inflict horrible damage on the U.S., possibly even neutralize it.

Former CIA chief James Woolsey, and EMP Congressional EMP Commission member Dr. Peter Vincent Pry

HIGH ALTITUDE EMP EFFECTS FROM A SINGLE DETONATION OVER CENTRAL U.S.



Electromagnetic Pulse Protection and Restoration Guidelines for Equipment and Facilities, DHS

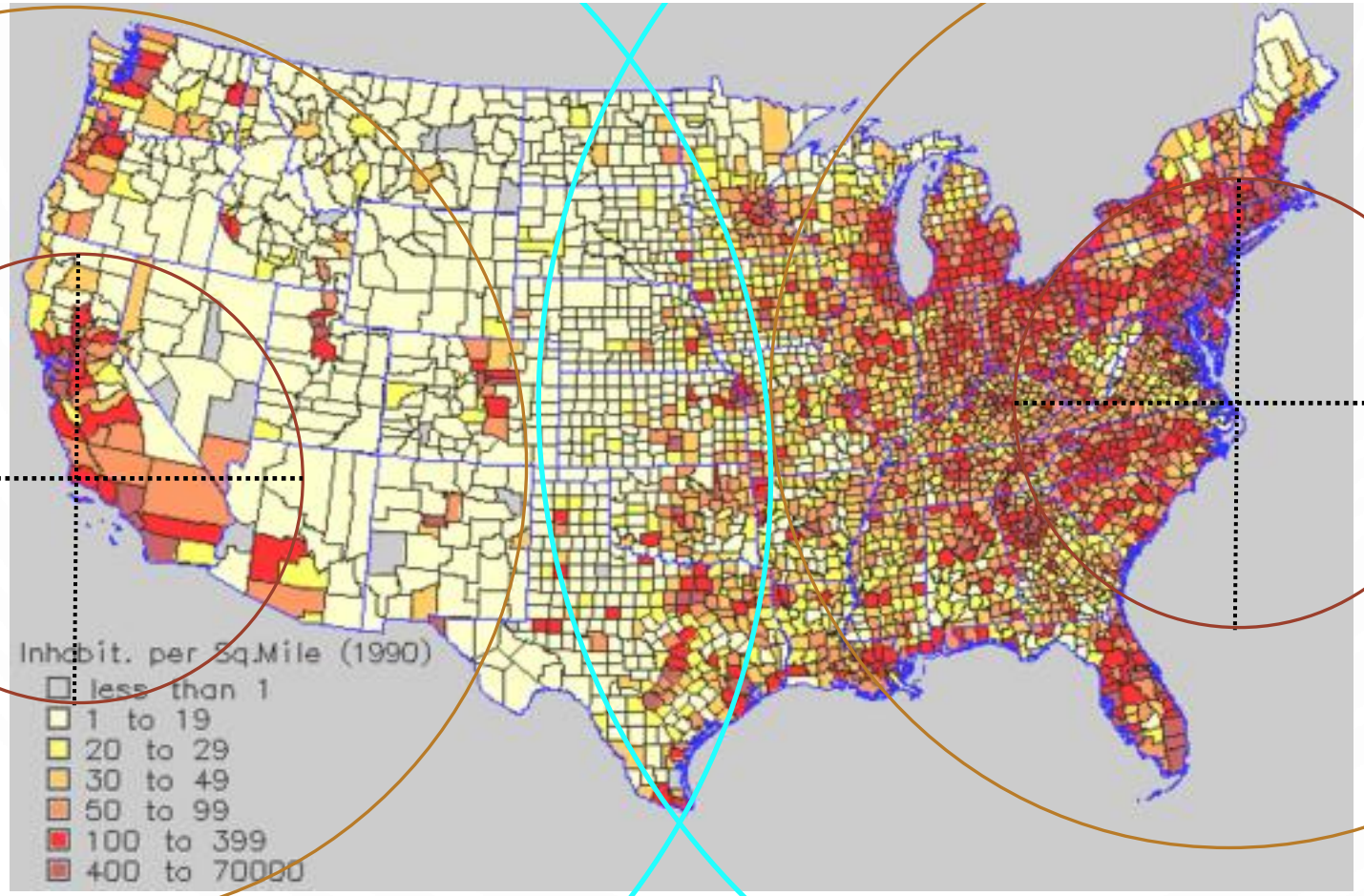
300 MILE HIGH EMP EFFECTS INCLUDE MOST OF CANADA AND NORTHERN MEXICO

30 Miles

120 Miles

300 Miles

50% TO 100% OF U.S. POPULATION COULD BE AFFECTED BY TWO HIGH ALTITUDE EMP DETONATIONS



30 Miles – 161 Million

120 Miles – 312 Million

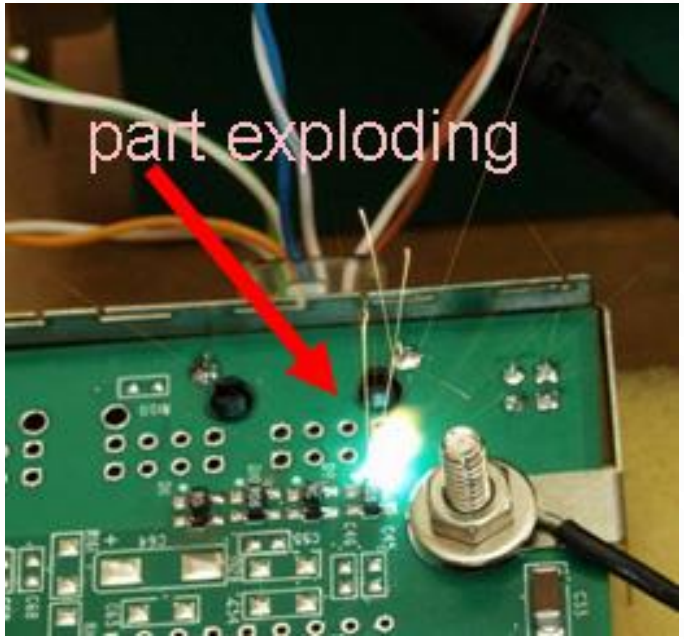
300 Miles – 321 Million

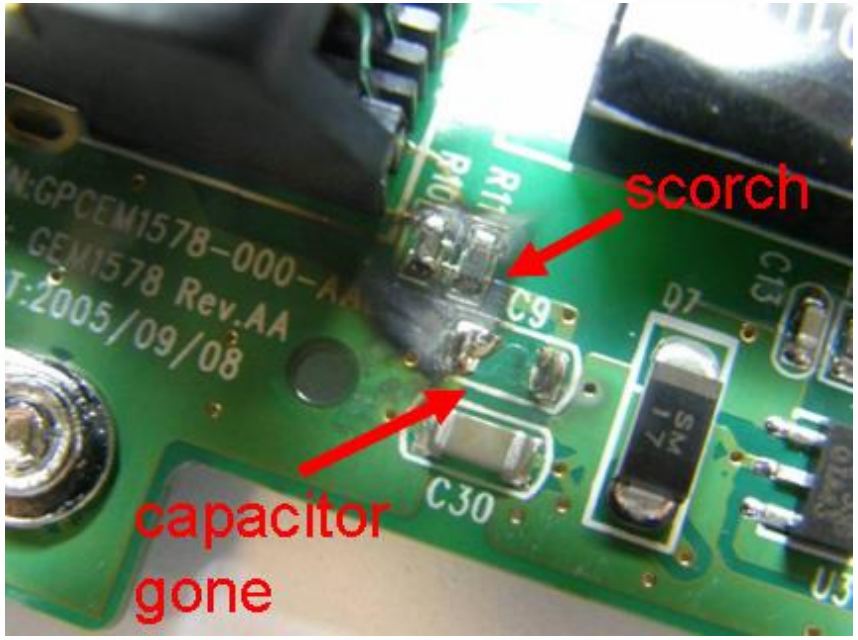
EXTENDED POWER OUTAGES HAVE NATURAL CAUSES

Transformer Fire Caused by Solar Coronal Mass Ejection event on June 7 2000

A Solar Coronal Mass Ejection event is similar to EMP except EMP has ~ 3 times higher energy level

UNPOWERED CIRCUITRY DAMAGE BY E1 PULSE





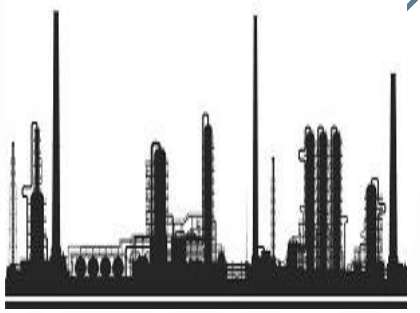
Source: Metatech Report R-320; Oak Ridge National Laboratory

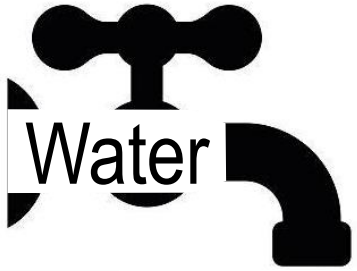
RANGE OF ESTIMATES ON THE IMPACT OF HEMP

Table 1. Estimates of Damage and Recovery Times After HEMP Attack on Washington, D.C., Regional Area

Infrastructure	Percentage of Capacity Damaged			Midpoint of Replacement Times (months)		
	Low Case	Mid Case	High Case	Low Case	Mid Case	High Case
Electric grid						
Transformers	10%	40%	**70%**	2.5	13.5	**33.0**
Other	30%	40%	50%	1.5	5.0	10.0
Communications systems						
Large	10%	20%	**50%**	4.0	18.0	**27.0**
Small	5%	20%	50%	2.0	12.0	17.0
SCADA						
All types	5%	20%	**50%**	1.5	5.0	**10.0**
Electronics						
Large	20%	45%	**70%**	4.0	12.0	**17.0**
Small	1%	2%	3%	1.5	5.0	10.0

Source: Instant Access Networks and Sage Policy Group, "Initial Economic Assessment of Electromagnetic Pulse (EMP) Impact upon the Baltimore-Washington-Richmond Region," September 10, 2007, Exhibit 2, p. 5, at [http://www.pti.org/docs-safety/EMPecon_9-07.pdf].

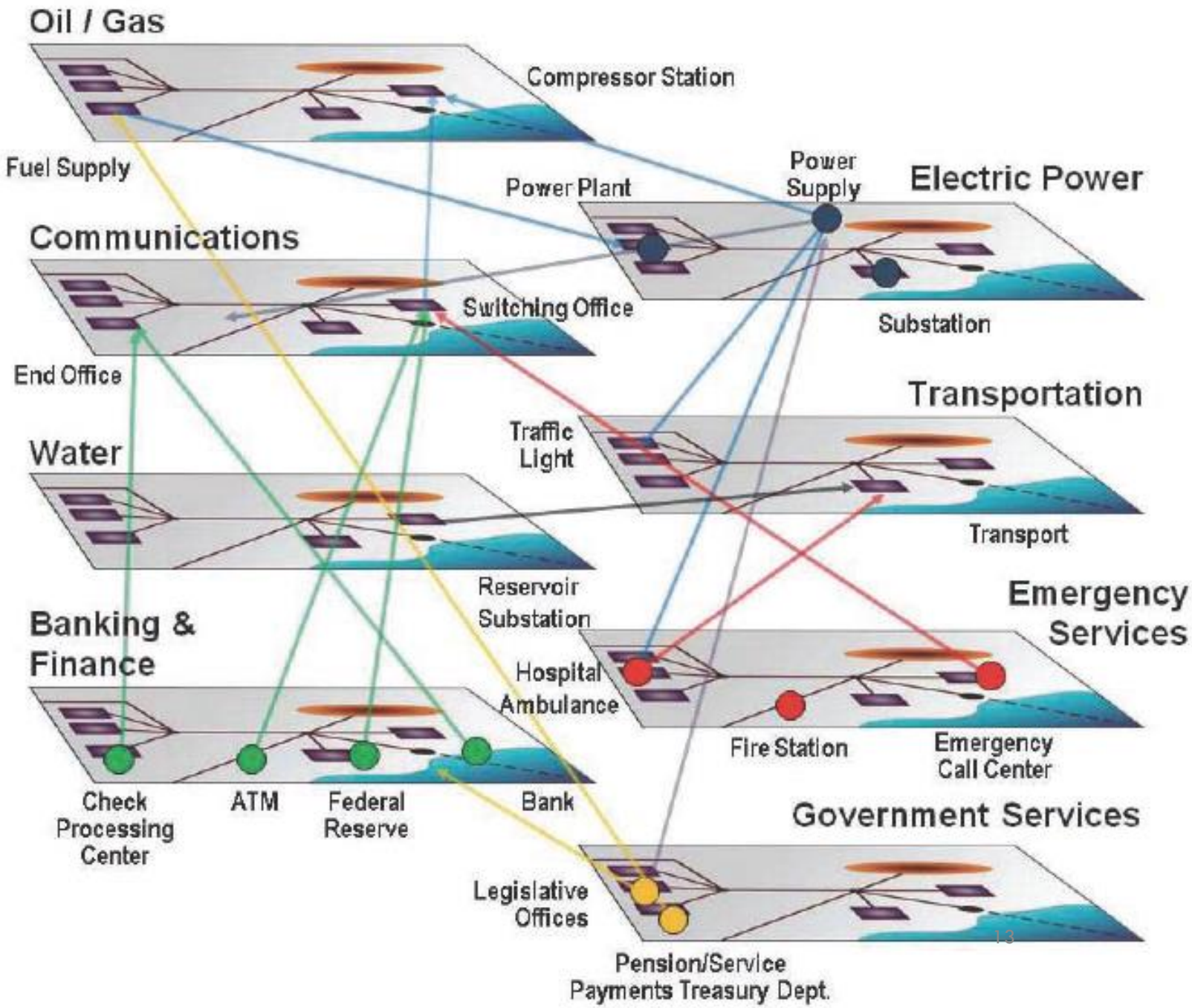


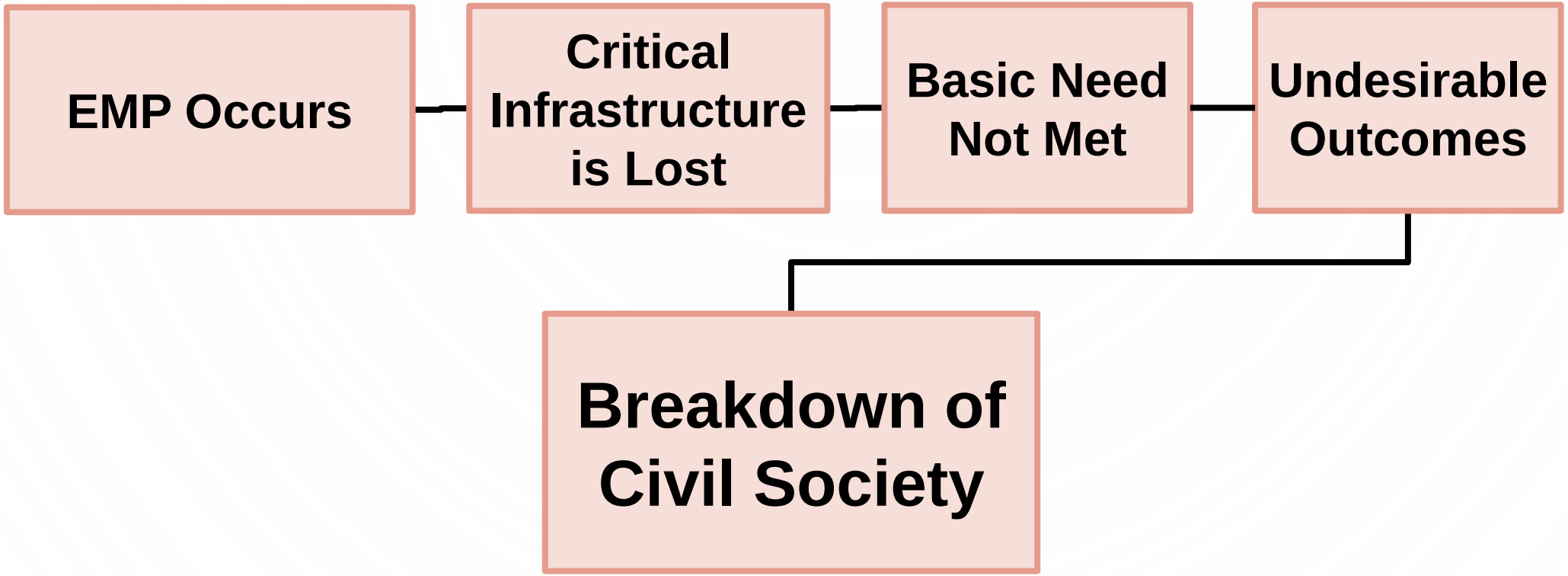


The Extended Power Outage Will Take Up to 33 Months to Restore

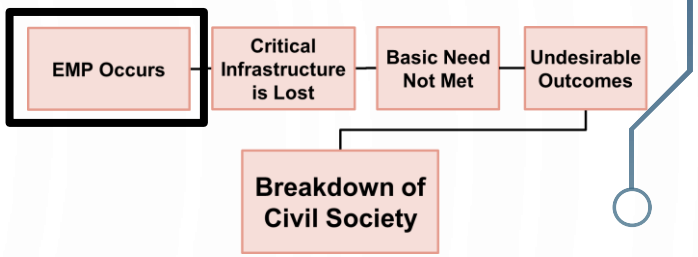
INFRASTRUCTURES ARE INTERDEPENDENT

EACH SECTOR MUST PROTECT ITS OWN MISSION CRITICAL EQUIPMENT AND FUNCTIONS




EMP Occurs
Critical Infrastructure is Lost
Basic Need Not Met
Undesirable Outcomes
Breakdown of Civil Society

IMMEDIATE CONSEQUENCES OF EMP



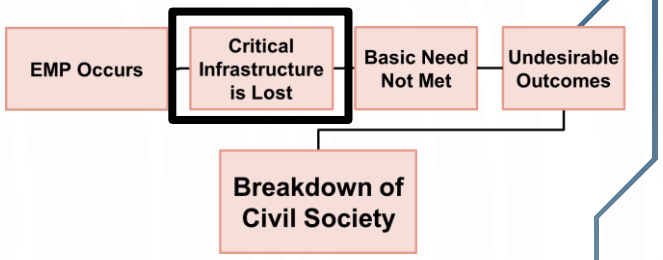
HEMP Event Occurs

Loss of electronic devices

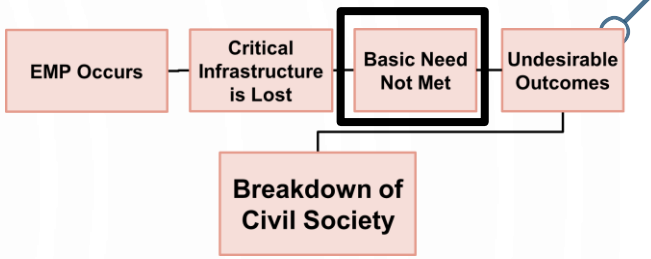
Loss of Electrical Power

FEMA, National Guard, State Emergency Operation Centers Unable to Respond

CRITICAL INFRASTRUCTURE IS KEY

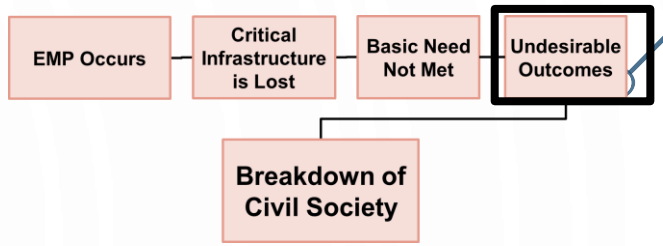


* Medical Care
  + Hospital Care
  + Treatment
* Assisted Living - Jail
* Economy
  + Credit cards
  + banking records
* Communications
* Transportation
* Food Production
  + Farming
* Food Processing
* Utilities
  + Potable Water
  + Water Treatment
  + Waste Disposal
* Emergency Response
  + Law Enforcement
  + Fire Protection
  + Ambulance
* Critical Supply Chains



Insufficiencies:

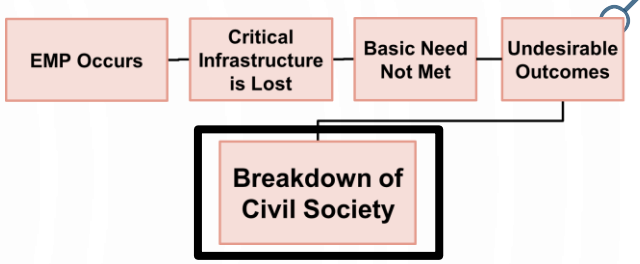
- Food Supply
- Potable Water
- Sanitation
- Waste Disposal
- Medical Treatment
- Personal Safety & Security



Outcomes

- Hunger
- Dehydration
- Increase in Diseases
- Increased Mortality Rates
- Lack of Medical Treatment
- Increased Crime
- Loss of Trust in Government

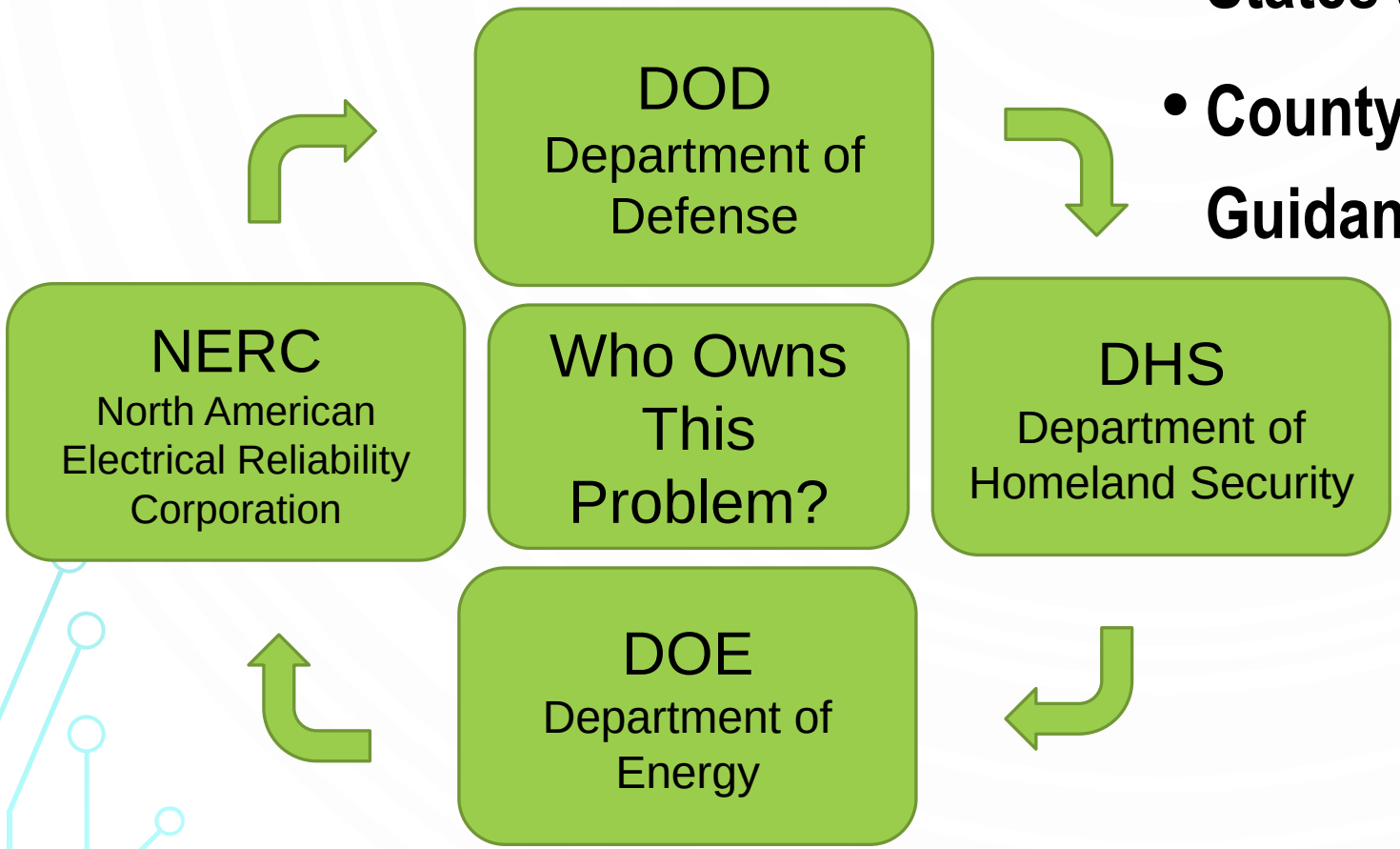
Influx of Refugees



Civil Discontent

- Loss of Civil Authority
- Lawlessness
  - + Rioting
  - + Looting
  - + Rise of "raiding" militias

SO, WITH RESPECT TO CIVILIANS, WHAT IS BEING DONE?



- **States are waiting for Federal Authorities**
- **County Authorities are waiting for State Guidance**

CONCLUSIONS ABOUT THE HEMP SITUATION

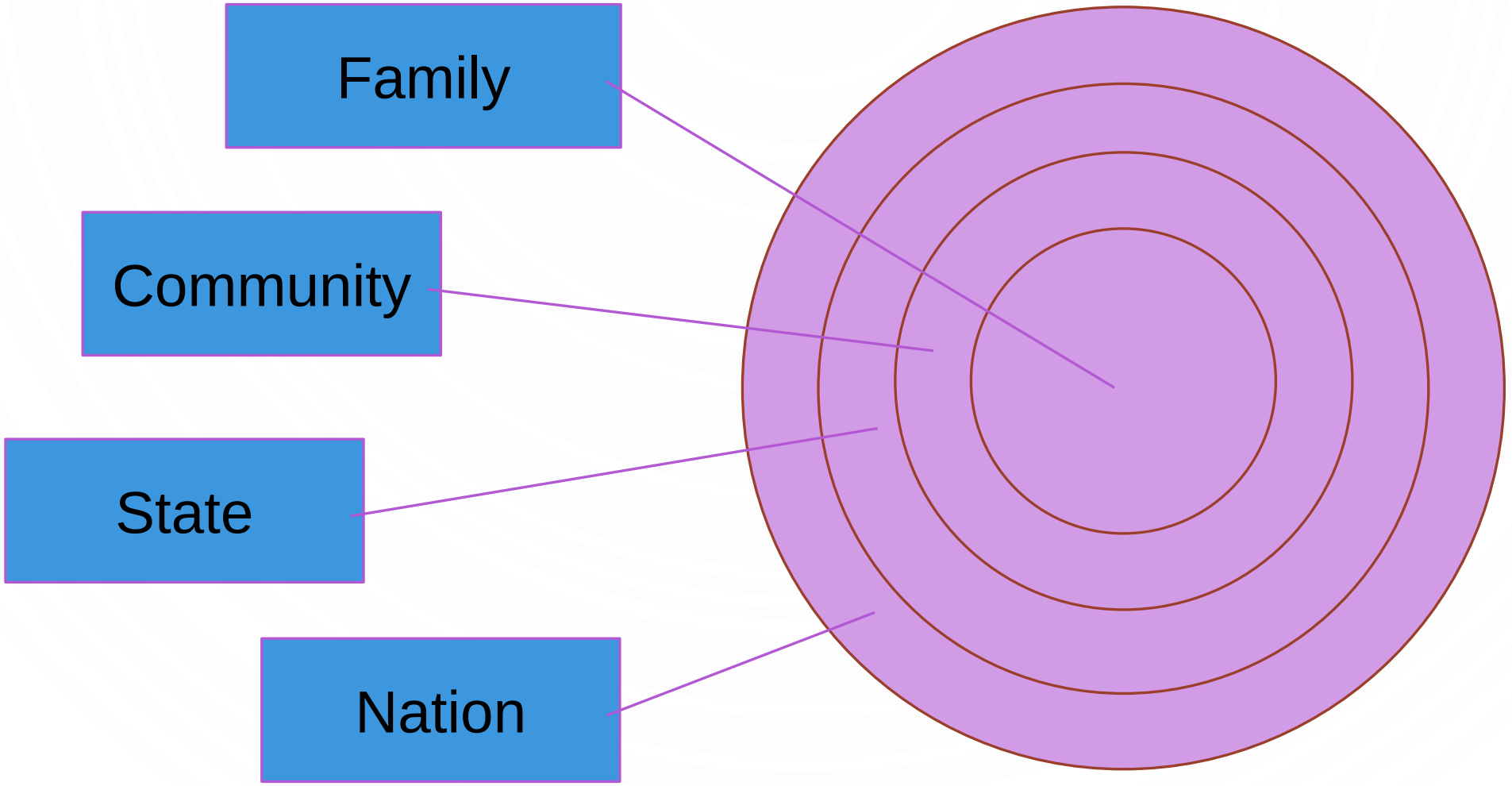
- There is a Credible Threat of a High Altitude Electromagnetic Pulse Attack
- Such an Attack will Cause an Extended Power Outage
- Infrastructure will not Support High Density Population Centers
- Plans are needed to mitigate the effects and manage the aftermath

BOTTOM LINE -

- Governmental Actions are Stalled
- Preparation falls upon Concerned, Responsible, Citizens

If It Is To Be, It Is Up To Me

WHAT CAN WE DO TO MITIGATE THE THREAT?



PREPARATION AT HOME

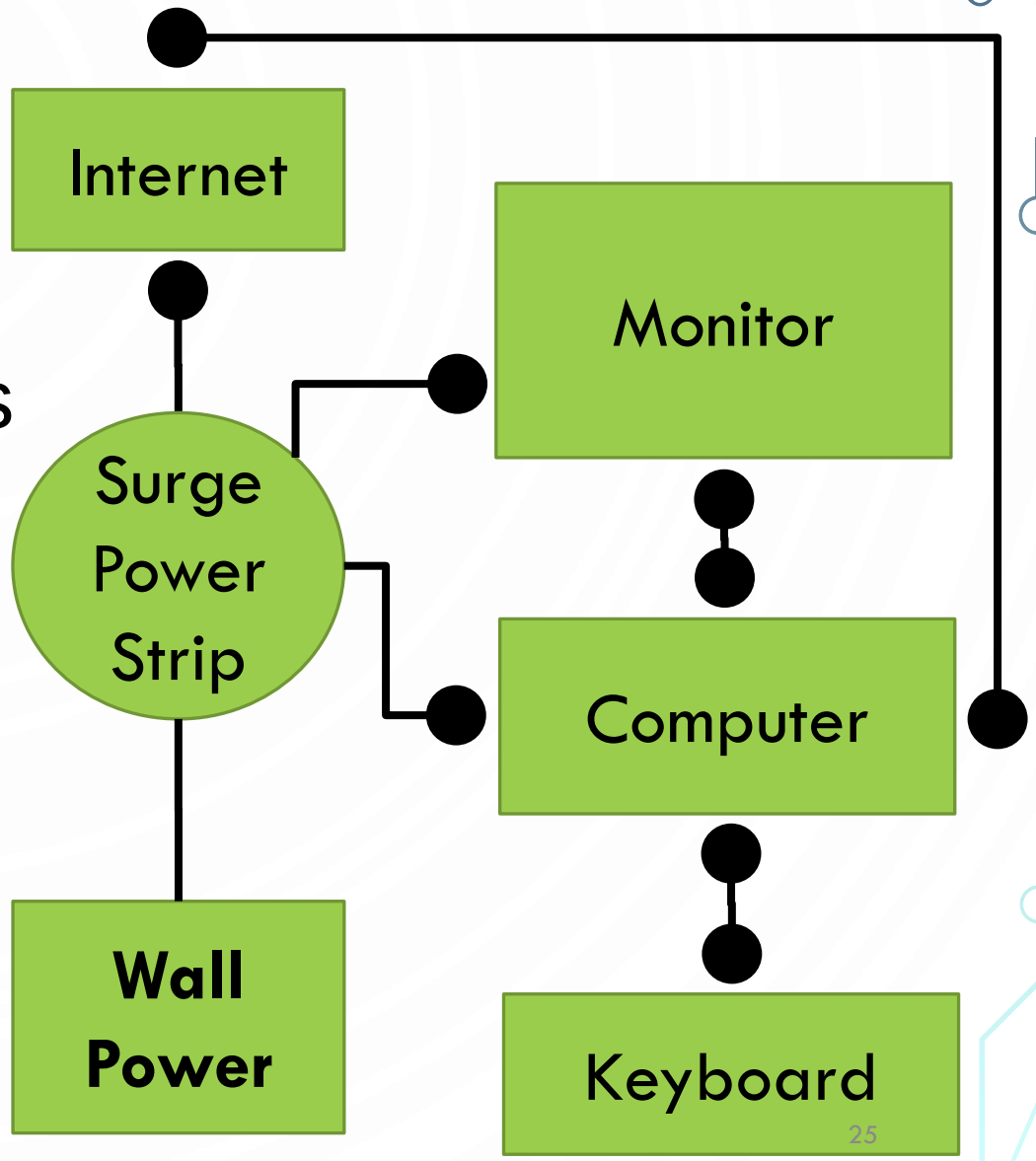
Have a Plan and a Supply of Basic Necessities

- Water
- Food
- Medical
- Batteries
- Solar powered devices
- Etc.

PREPARATION AT HOME

Protection of Operating Electronics

- Install surge suppression power strips
- Install ferrite beads on power and signal cables
- Disconnect power and signal wires when not in use



APC POWER STRIP MODELS
P8V (~$40, POWER ONLY)
P8VNTG (~$70, NETWORK AND POWER)

FERRITE CORE BEADS ~ $1 EACH

Application Occasion

Display Device

Audio Device

USB Cable Power Cord

PROTECTING CRITICAL ELECTRONIC DEVICES

- Create Faraday Protection by Using Heavy Duty Aluminum Foil
- Store Emergency Electronics in Insulated Metal Containers

FARADAY CAGES AT HOME

PROTECTING IMPORTANT ELECTRONICS

Ammo Can Lined with Cardboard

Storage for Blood Pressure Monitor

Electronic Equipment Stored in Cardboard Box

Cardboard Box is Wrapped in Foil

Foil wrapping like a present - seams Sealed using foil tape

Insulate and then wrap a second time with foil

Fold Excess Foil to Make Rolled Seams

Tape Seams with Aluminum Tape

Label Outside of Package

Wrap in Bubble wrap or other insulating, protecting material

Put wrapped & insulated equipment in galvanized container

Contents Inventory (at two locations)

- Motorola 2-way radios (2)
- Calculator (solar)
- Flashlight, (dynamo)
- 2 Broadband radio receivers (dynamo)
- Laptop computer & external hard drives or thumb drives
- Solar panel and power inverter
- Blood pressure, temperature, O2 meter
- Direct line telephone

Store data on the cloud

WHAT CAN BE DONE BY BUSINESSES TO MITIGATE THE THREAT IN OUR COMMUNITY?

Three Mitigating Actions for Businesses’

- Improve resilience of onsite systems
- Develop Plans to deal with the aftermath
- Improve critical infrastructure

ACTIONS TO IMPROVE RESILIENCE OF ONSITE SYSTEMS

Step 1: Conduct an Assessment to Identify Critical Systems and Components

Step 2: Identify Mitigation Strategy

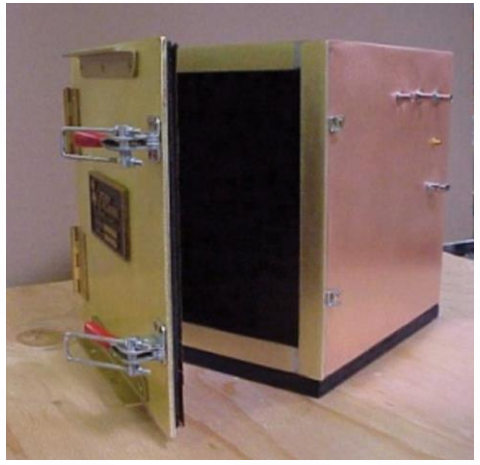
Step 3: Implement Mitigation Strategy

DHS SECURITY PROTECTION LEVELS

Department of Homeland Security Protection Levels			
Level 1 Low $s	Level 2 Hours	Level 3 Minutes	Level 4 Seconds
• Turn off, disconnect • Surge suppression power strips • Foil wrapping of electronics	• Uninterruptable power supplies • Shielded racks, rooms, or facilities • Protective Storage	• Civilian standards like IEC SC 77C • Shielding 30-80 dB • 30 days fuel for onsite power	• Military Standard (MIL-STD_188-125) • Shielding ≥ 80dB • 30+ days fuel for onsite power

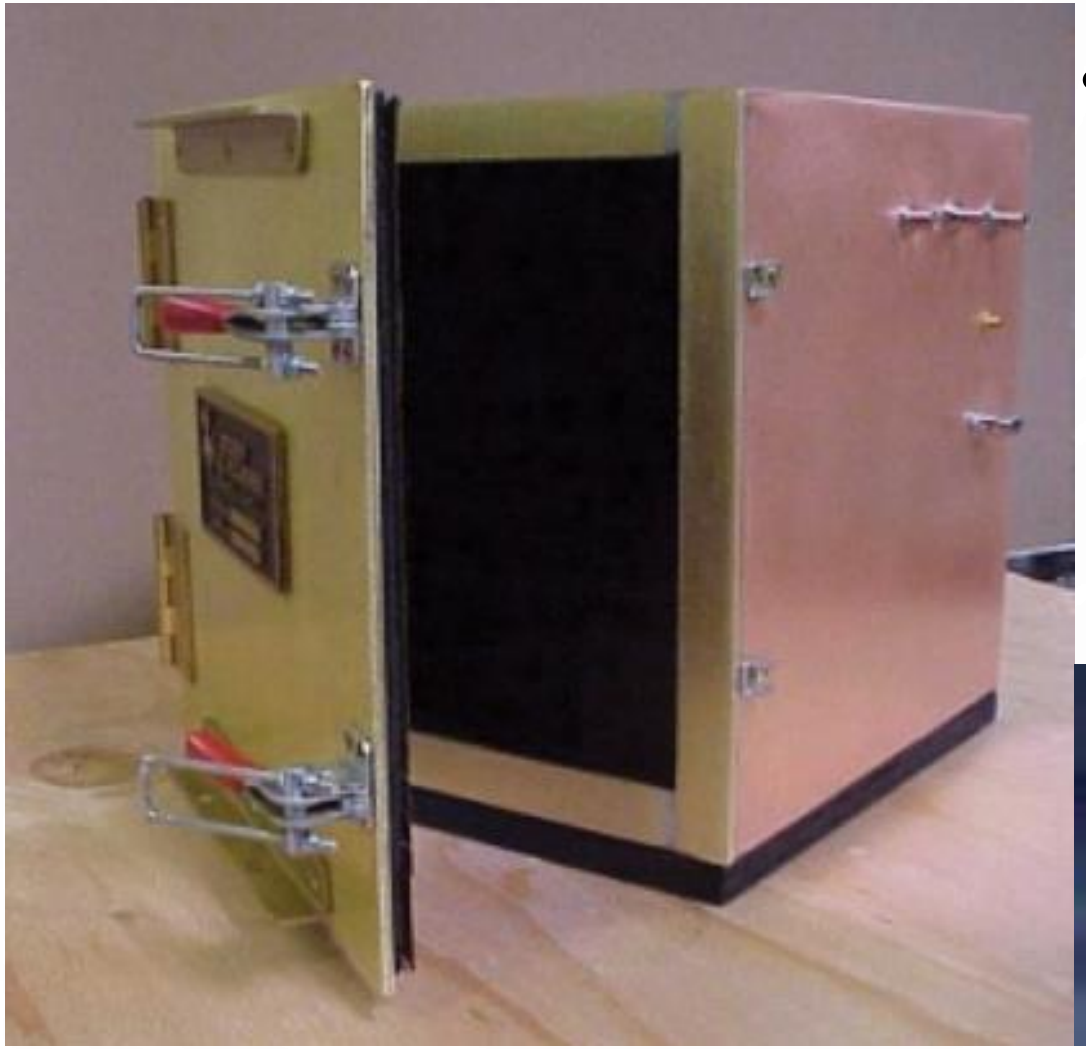
ACTIONS TO IMPROVE RESILIENCE OF ONSITE SYSTEMS

Step 3: Shield Critical Equipment



ACTIONS TO IMPROVE RESILIENCE OF ONSITE SYSTEMS

Twisted Pair Telecommunications



- Welded seam, metal enclosure with specially designed points of entry

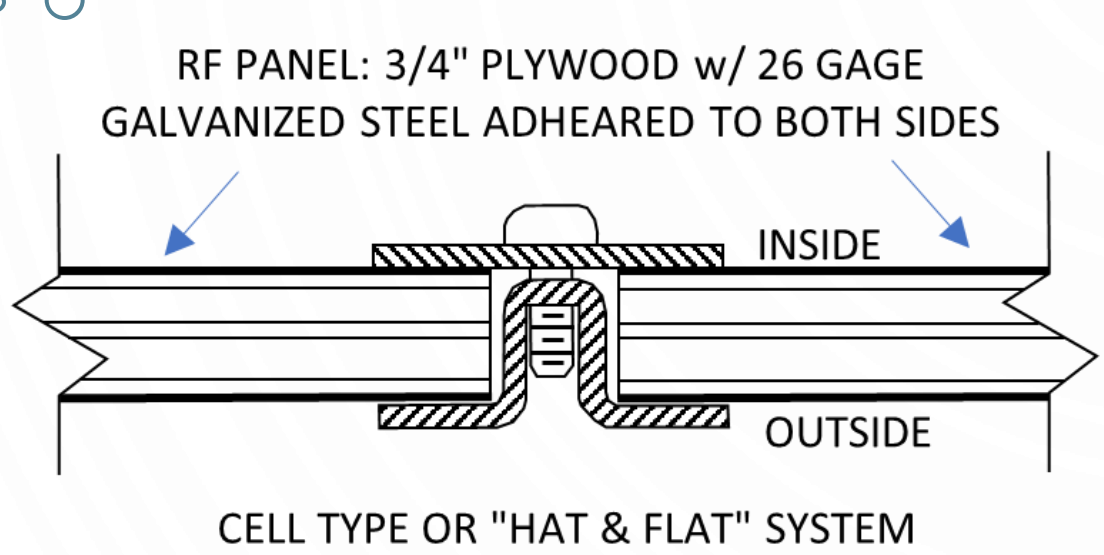
Water, Gas, Optical Fiber or Air Wave Guide Feed-through assemblies

1/2” = 4”

MULTIPLE ENCLOSURES CONNECTED WITH SHIELDED CABLE TRAYS

From ETS-Lindgren

MITIGATING STRATEGIES – ENCLOSURES & ROOMS



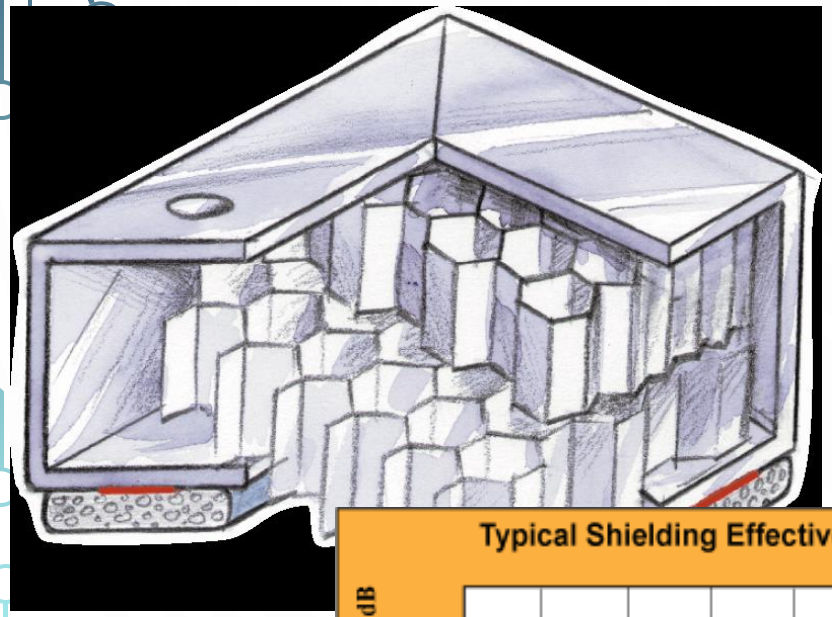
CELL TYPE OR "HAT & FLAT" SYSTEM

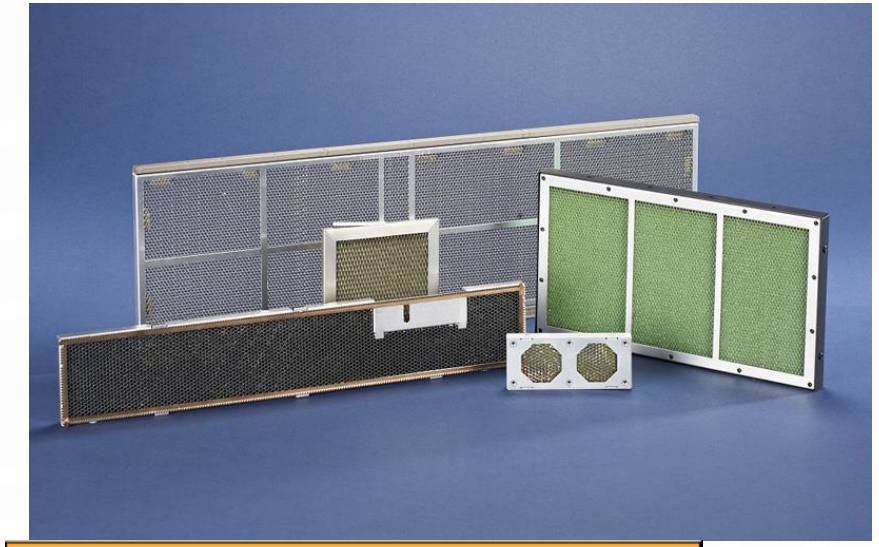
From ETS-Lindgren

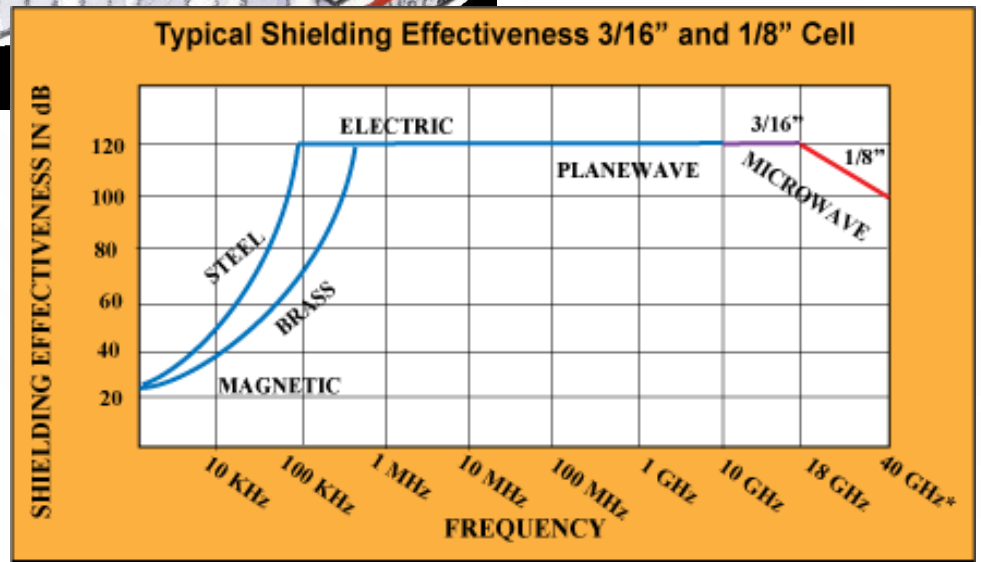
MITIGATING WITH PROTECTIVE TENTS & POUCHES

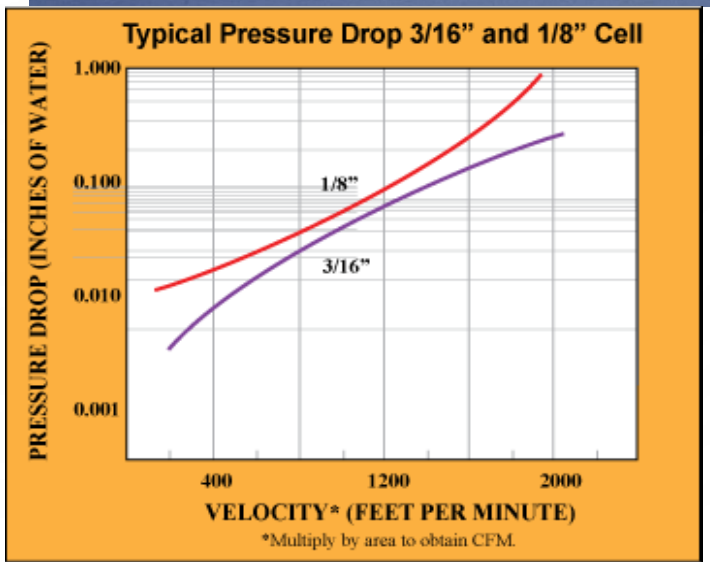
Select Fabricators' Select a Shield Products

WAVEGUIDE VENTILATION DESIGN ALLOWS AIR FLOW BUT BLOCKS HEMP FREQUENCIES









From ETS-Lindgren

COMPONENTS OF SHIELDED ROOM

PERSONNEL DOORS

FILTERS

AND SURGE SUPRESS0RS

From ETS-Lindgren

SUMMARY OF ONSITE MITIGATING ACTIONS:

Protect mission critical capabilities

Develop an onsite plan and perform table top drills

MITIGATING COMMUNITY EFFECTS

PLANNING & PREPARING TO MITIGATE EMP IMPACTS ON OUR COMMUNITY

Step 1: Inform and Involve the Public

Step 2: Apply Pressure to Local Officials to Plan and Prepare

Step 3: Form Multidiscipline Team to Develop the Plans

Step 4: Develop Worse Case Assumptions

Step 5: Identify EMP impacts on existing preparedness plans

Step 6: Develop and conduct table top drills

Step 7: Implement preparedness plans

GETTING THE WORD OUT TO OUR COMMUNITY

- Talk to your friends, neighbors, associates about the need to have County and State-wide Planning and Preparation
- Ask City Council Members, County Commissioners, Fire, and Law enforcement officials what they are doing
- Contact State Legislators
- Let people know this presentation is available to their organization

LOCAL ACTION YOU CAN TAKE TODAY

Support passage of SHB 2263, Concerning Governmental Continuity during emergency periods

Support passage of HB 2214 – Removes prohibition on preparing evacuation and relocation plans in the event of a nuclear attack

Contact your State Representative expressing your concern about EMP Attack and your support of HB 2263:and HB 2214

Benton County

- Larry.Haler @leg.wa.gov
- Brad.Klippert@leg.wa.gov
- Bill.Jenkin @leg.wa.gov
- Terry.Nealy@leg.wa.gov

Franklin County

- Mary.Dye@leg.wa.gov
- Joe.Schmick@leg.wa.gov

LOCAL ACTION YOU CAN TAKE TODAY

- The Kennewick City Council Meets February 6th and 20th at 6:30 in the council chambers located at 210 W 6th Ave Kennewick.
- Please attend one or both of these meeting with a single purpose
- Sign-up to speak - be prepared to say, who you are, what organizations you belong to, then ask them to take action to develop and implement an emergency response and preparedness plan to mitigate the effects of an EMP Attack.
- Follow the request with a few brief reasons why it's important for them to act
- Someone in this group should coordinate the speakers to ensure that all arguments are presented

CITY COUNCIL TESTIMONY – EXAMPLE 1

- My name is Person 1, I am a precinct committee officer, I am here to request that the city council take immediate action to develop and implement an emergency response and preparedness plan to mitigate the effects of and EMP attack on the US.

I am requesting this action because:

- There is no Federal, State, or County Plan to protect critical infrastructure or the citizens from the unimaginable effects of EMP
- Critical Infrastructure is needed to sustain life in densely populated communities like those in Benton County we need to be prepared
- Thank you for your service to our community

CITY COUNCIL TESTIMONY – EXAMPLE 2

- My name is Person 2, I work at Battelle and am a Boy Scout Leader, and youth coordinator for my church, I am here to request that the city council take immediate action to develop and implement an emergency response and preparedness plan to mitigate the effects of and EMP attack on the US.

I am requesting this action because:

- I don't want to receive a text message like they received in Hawaii and not know what actions are being taken
- North Korea and Iran have strategic plans to attack the US by using High altitude detonation of a nuclear weapon to create a Electromagnetic Pulse that will devastate our national infrastructures
- I appreciate the work that you do on our behalf

CITY COUNCIL TESTIMONY – EXAMPLE 3

- My name is Person 3, I'm a mother of 3 children, I am here to request that the city council take immediate action to develop and implement an emergency response and preparedness plan to mitigate the effects of and EMP attack on the our community.

I am requesting this action because:

- I don't want my family to perish because of the effects of an EMP.
- Experts estimate that between 50% and 90% of people in the US will die in the first year after such an attack because of damage to the US infrastructure.
- I am willing to work as a volunteer to support this vital activity.

CITY COUNCIL TESTIMONY - EXAMPLE

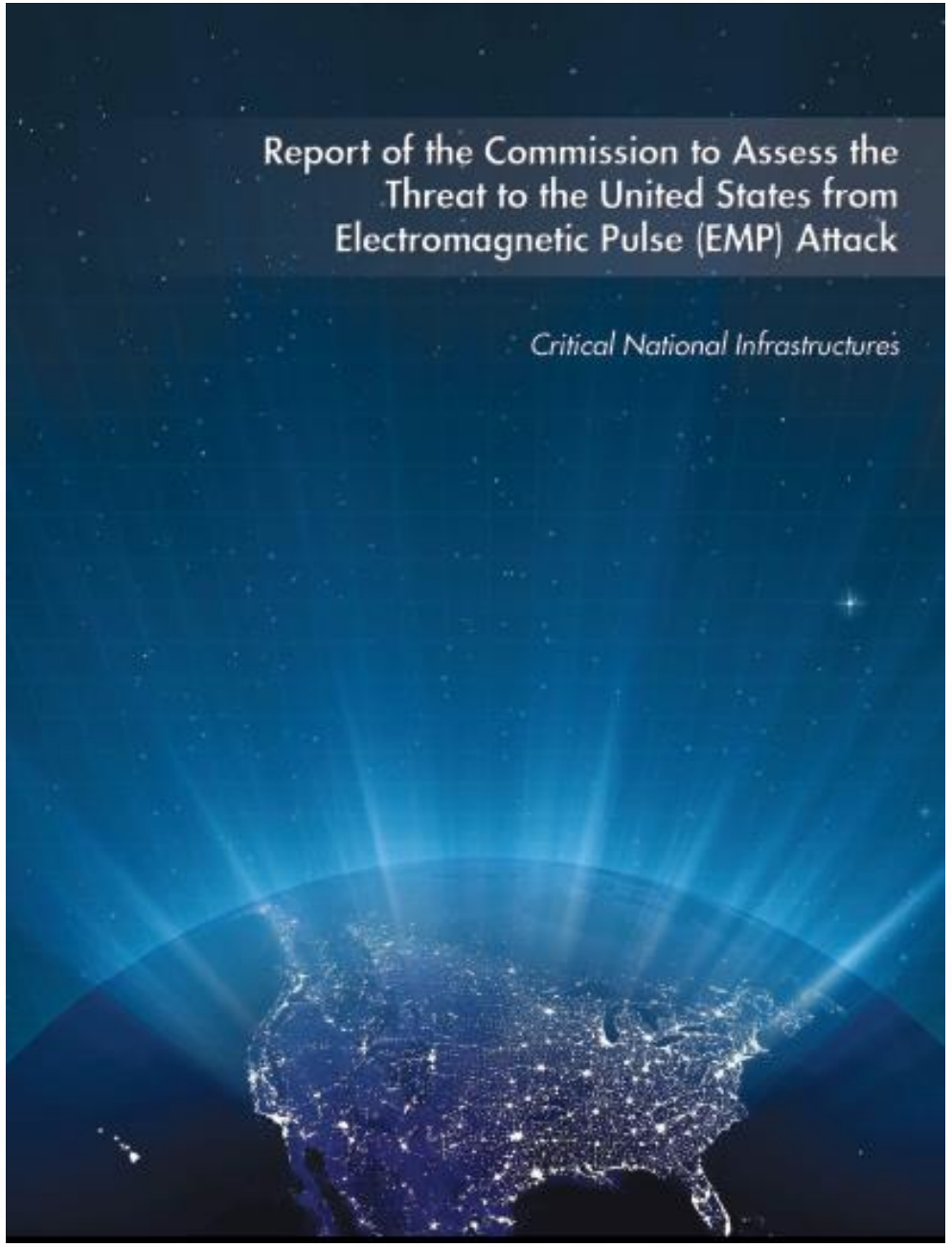
- My name is Person 4, I am an emergency room physician at Trios Hospital, I am here to request that the city council take immediate action to develop and implement an emergency response and preparedness plan to mitigate the effects of and EMP attack on the US.

I am requesting this action because:

- We are not prepared to deal with the catastrophic outcomes in the aftermath of an EMP
- The primary role of government is to protect the people.
- We need our City and County leaders to aggressively work to protect our communities from this effects of this threat

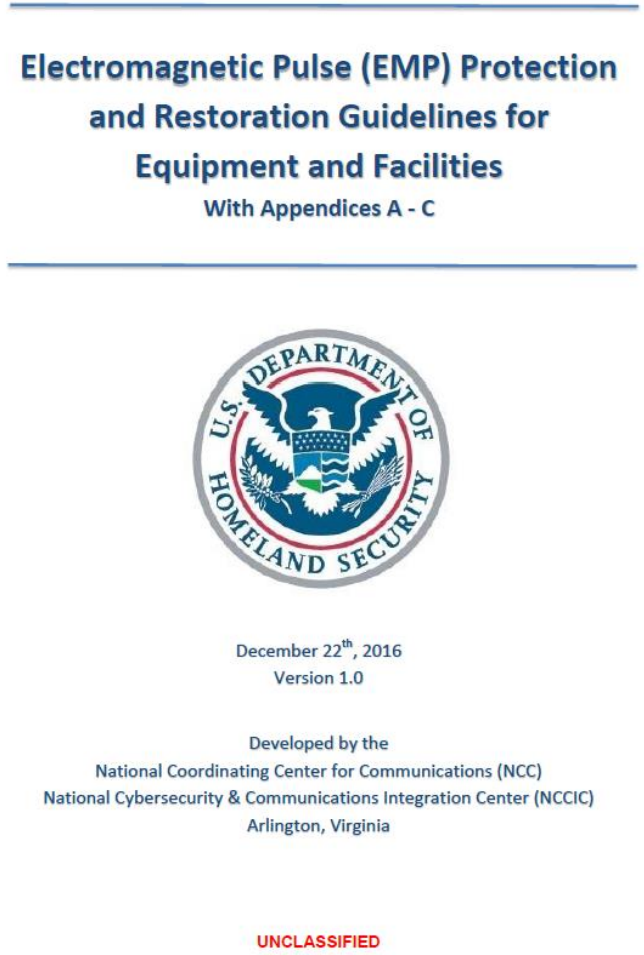
REFERENCES

- Report of the Commission to Assess the Threat to the United States from Electromagnetic Pulse (EMP) Attack
  – *Critical National Infrastructures (2008)*



REFERENCES

- Electromagnetic Pulse (EMP) Protection and Restoration Guidelines for Equipment and Facilities (With Appendices A-D) (December 2016)



Electromagnetic Pulse (EMP) Protection and Restoration Guidelines for Equipment and Facilities

With Appendices A - C

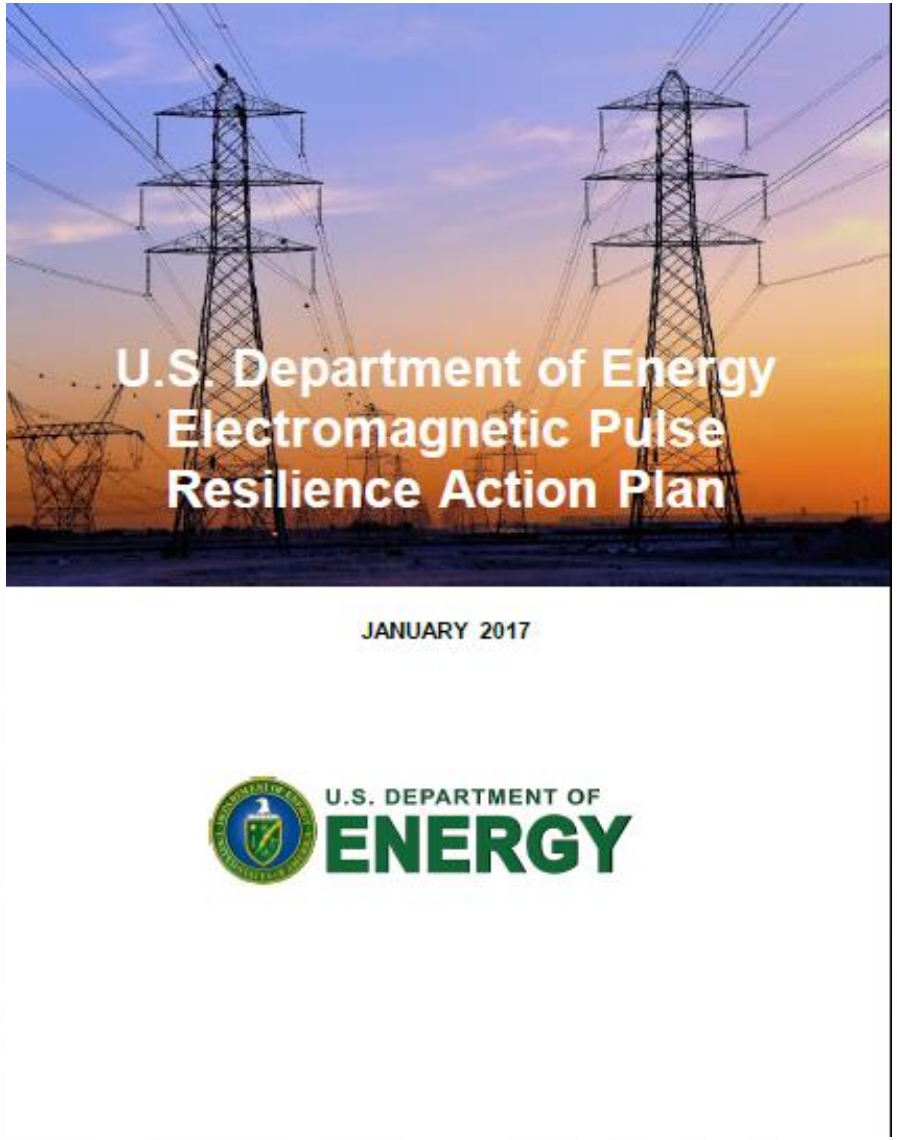
December 22th, 2016
Version 1.0

Developed by the
National Coordinating Center for Communications (NCC)
National Cybersecurity & Communications Integration Center (NCCIC)
Arlington, Virginia

UNCLASSIFIED

REFERENCES

- U. S. Department of Energy Electromagnetic Pulse Resilience Action Plan (January 2017)



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