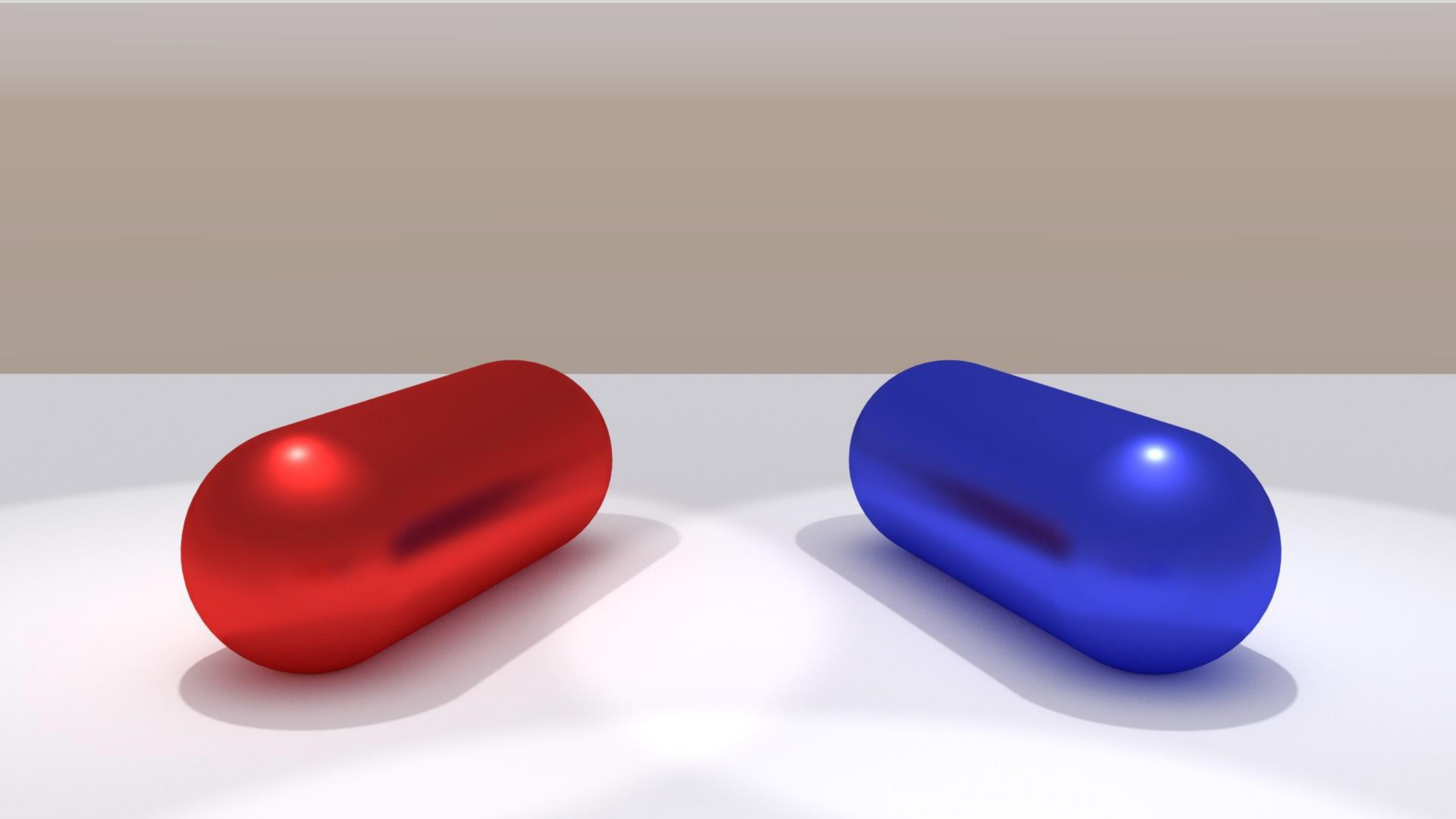
Briefing to the Nebraska Association of County Officials

Secure-the-Grid Coalition

Honorary Co-Chairmen: Newt Gingrich & R. James Woolsey

Co-Directors Tommy Waller & Doug Ellsworth



Lambert's Rule of Human Condition

THE TRAPS:

- Failure of imagination …
- Inability to suspend disbelief …
- "Whistling past the graveyard" …
- Misplaced confidence …

Lambert's Rule of Human Condition

THE TRAPS:

- Failure of imagination …
- Inability to suspend disbelief …
- "Whistling past the graveyard" …
- Misplaced confidence …
- Belief that ***"SOMEONE"*** is doing ***"SOMETHING"***

Local and County Readiness is Indispensable to Survivability of U.S. Critical Infrastructure

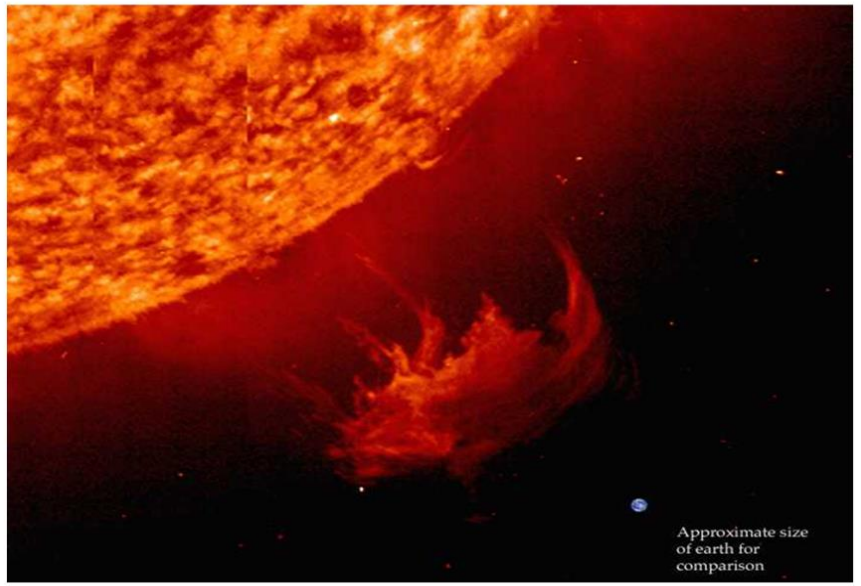
- Threat review
- Earnest efforts at federal-level have been frustrated – Why?
- Readiness at county level – example
- Readiness at multi-state level – thought experiment
- Opportunity for unexpected future growth and prosperity for Nebraskans

THREAT REVIEW

MULTIPLE THREATS

Physical

Cyber



HEMP

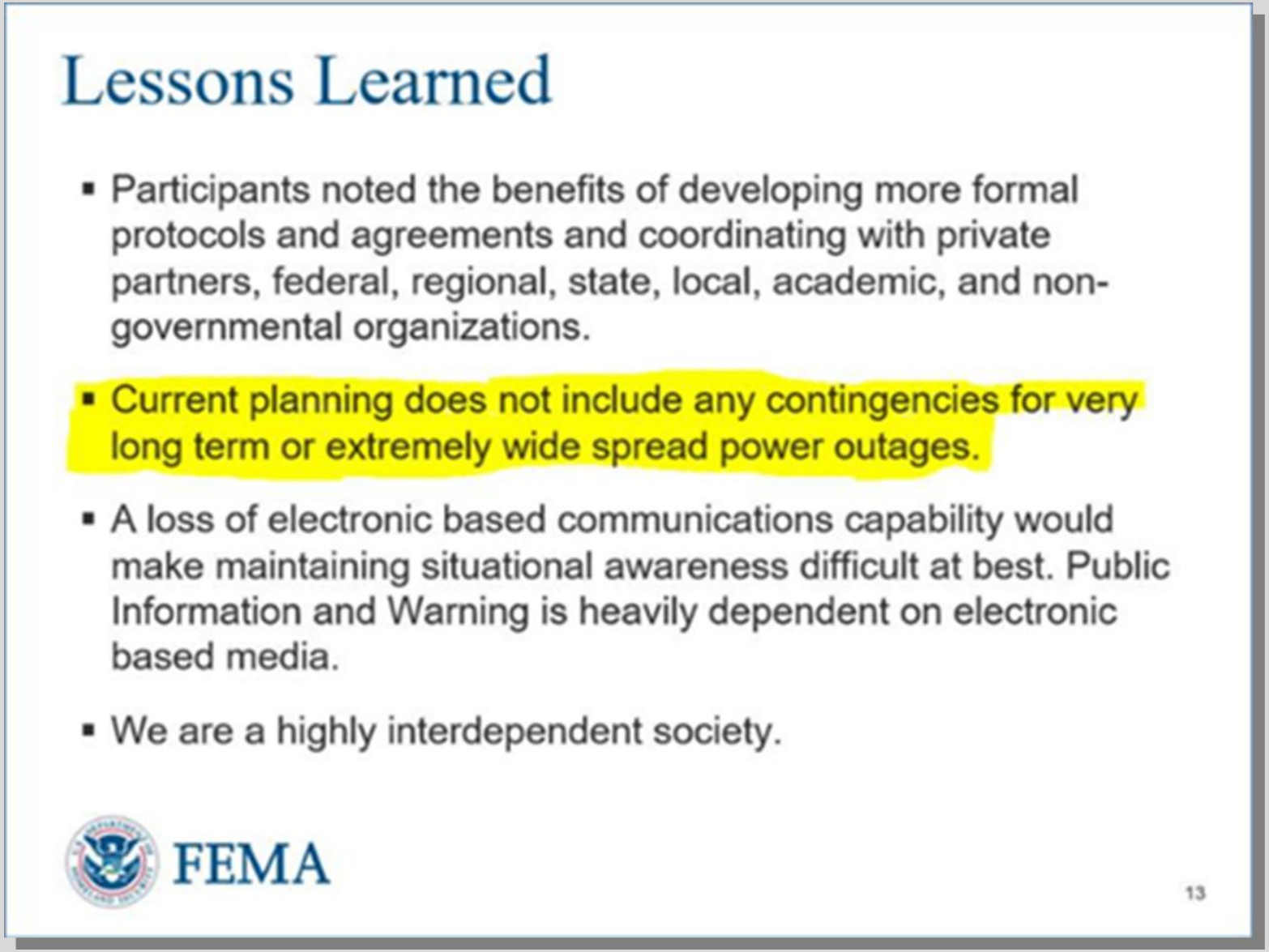
Solar

FEMA Has NO PLAN

FEMA presentation from

National Preparedness Symposium

(May 24, 2018)



GRID DOWN POWER UP

2-minute trailer of **Grid Down Power Up**

https://www.youtube.com/watch?v=8JExHPzh_VE

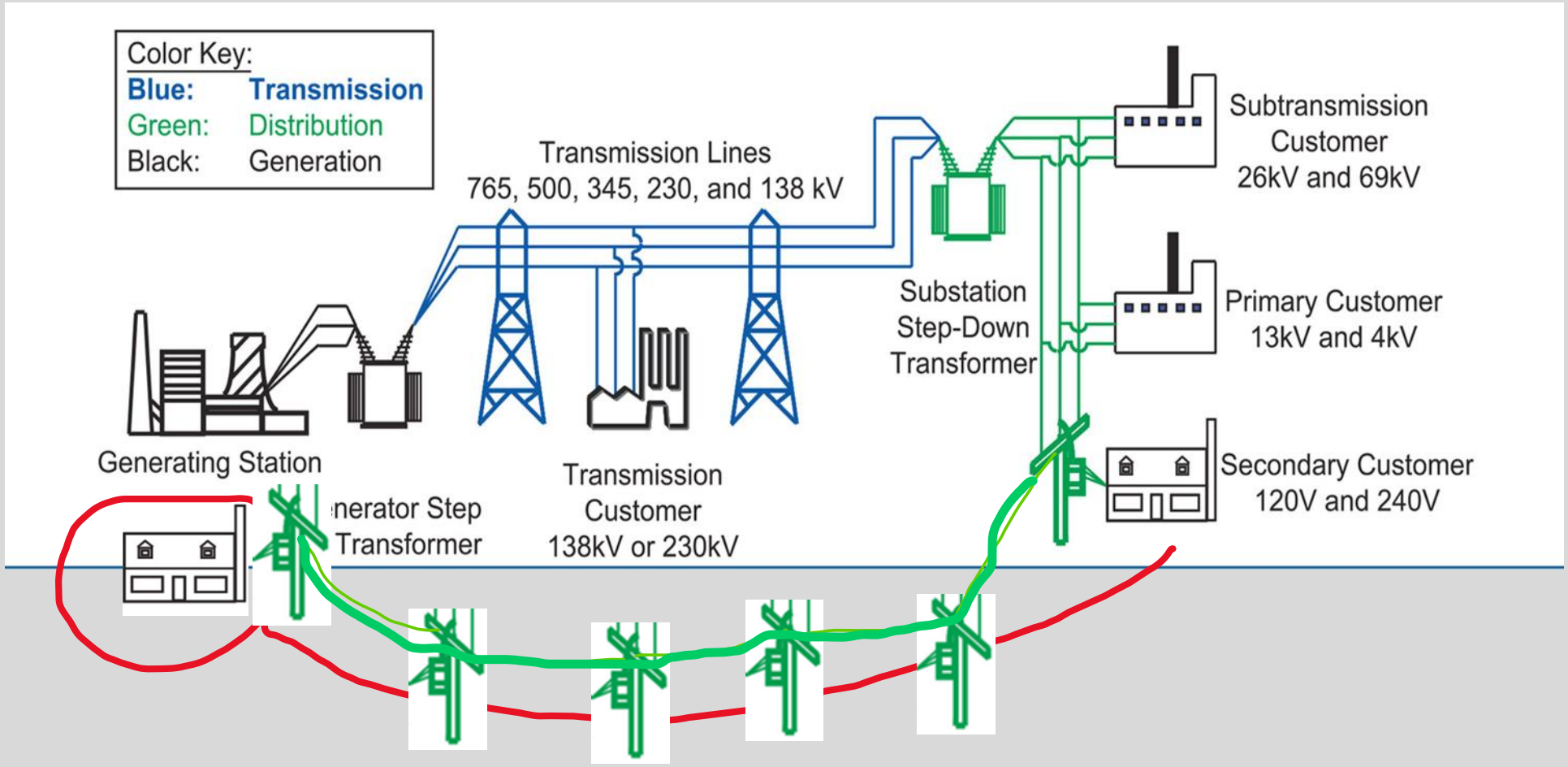
YouTube Channel:

https://www.youtube.com/@griddownpowerup

Full Movie - - FREE on the "honor system"

www.GridDownMovie.com/demo

Password: _____



Generation === Transmission === Distribution

FEDERAL REGULATORY JUGGERNAUT

BLACKOUT AUG 2003

Why Do Federal Efforts Fail?
"Regulatory Capture"
Power Industry is "Self-Regulating"

- History of FERC-NERC & Energy Policy Act of 2005
  - To deal with Blackout of 2003 – Tree limb in Ohio – 55 mln people in Eastern U.S.
- FERC Given Added Responsibilities Over "Interstate Grid" "BPS"
  - (Individual State PUCs handle "Distribution Grid")
    - (Nebraska: 150+ entities, EACH with own Board of Directors)
- FERC to Name Electric Reliability Organization (ERO)
  - North American Electric Reliability Corporation (NERC)
    - Pre-existing Trade Association – Advances Interests of Electric Power Industry

RESULTS of
Energy Policy of Energy Policy Act of 2005?

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"Regulatory Capture"
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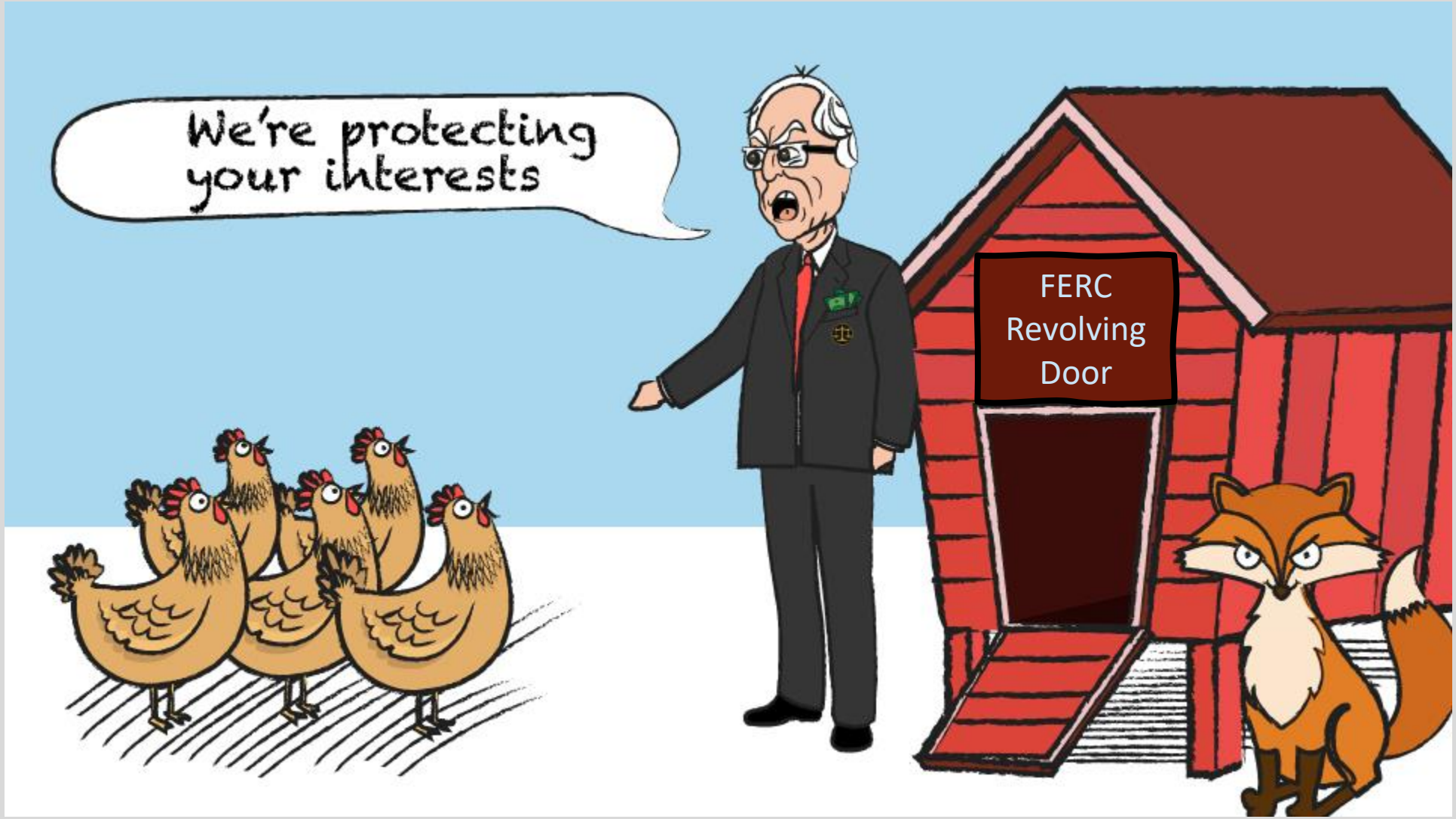
ALMOST 10 YEARS to Arrive at Standard for Foliage Management – TRIMMING TREE LIMBS!

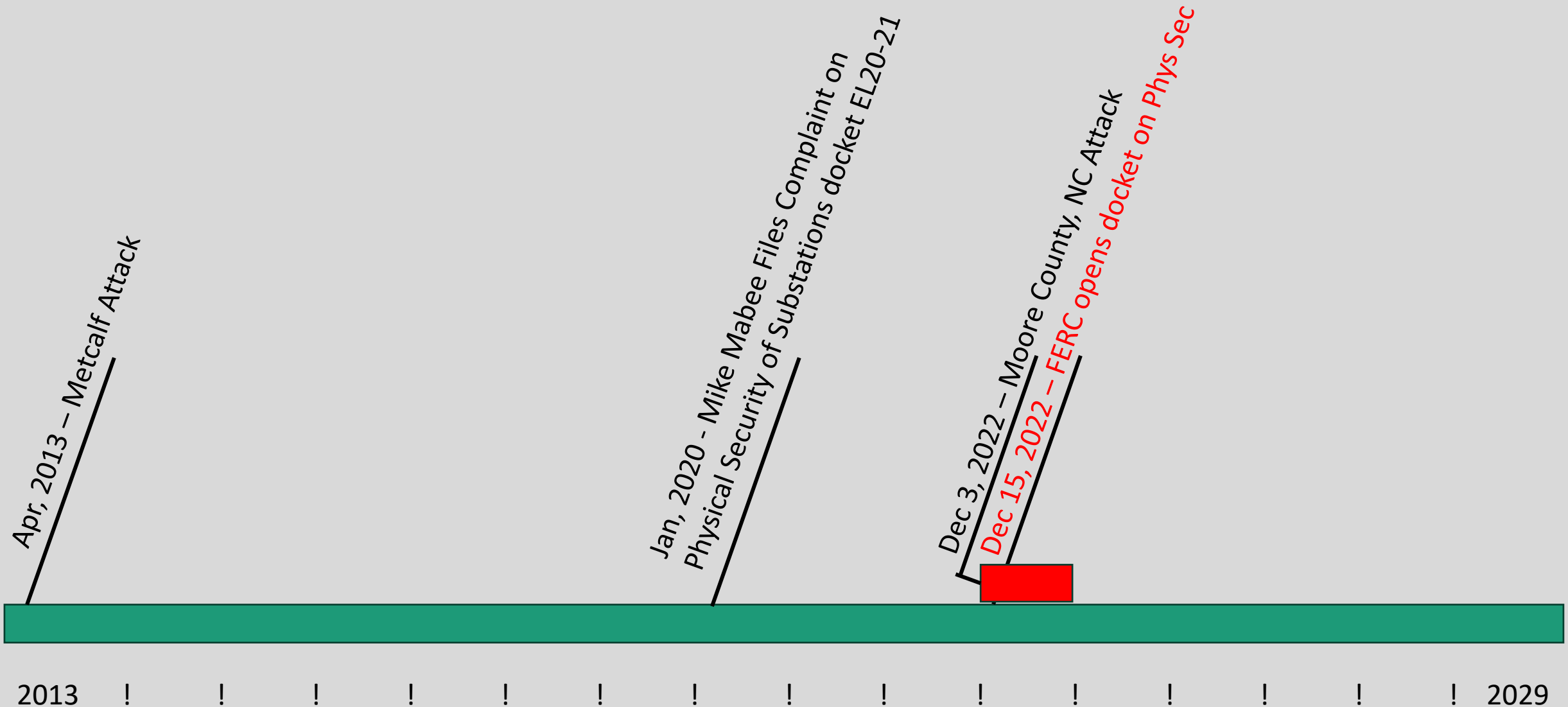
“Regulatory Capture” Defined

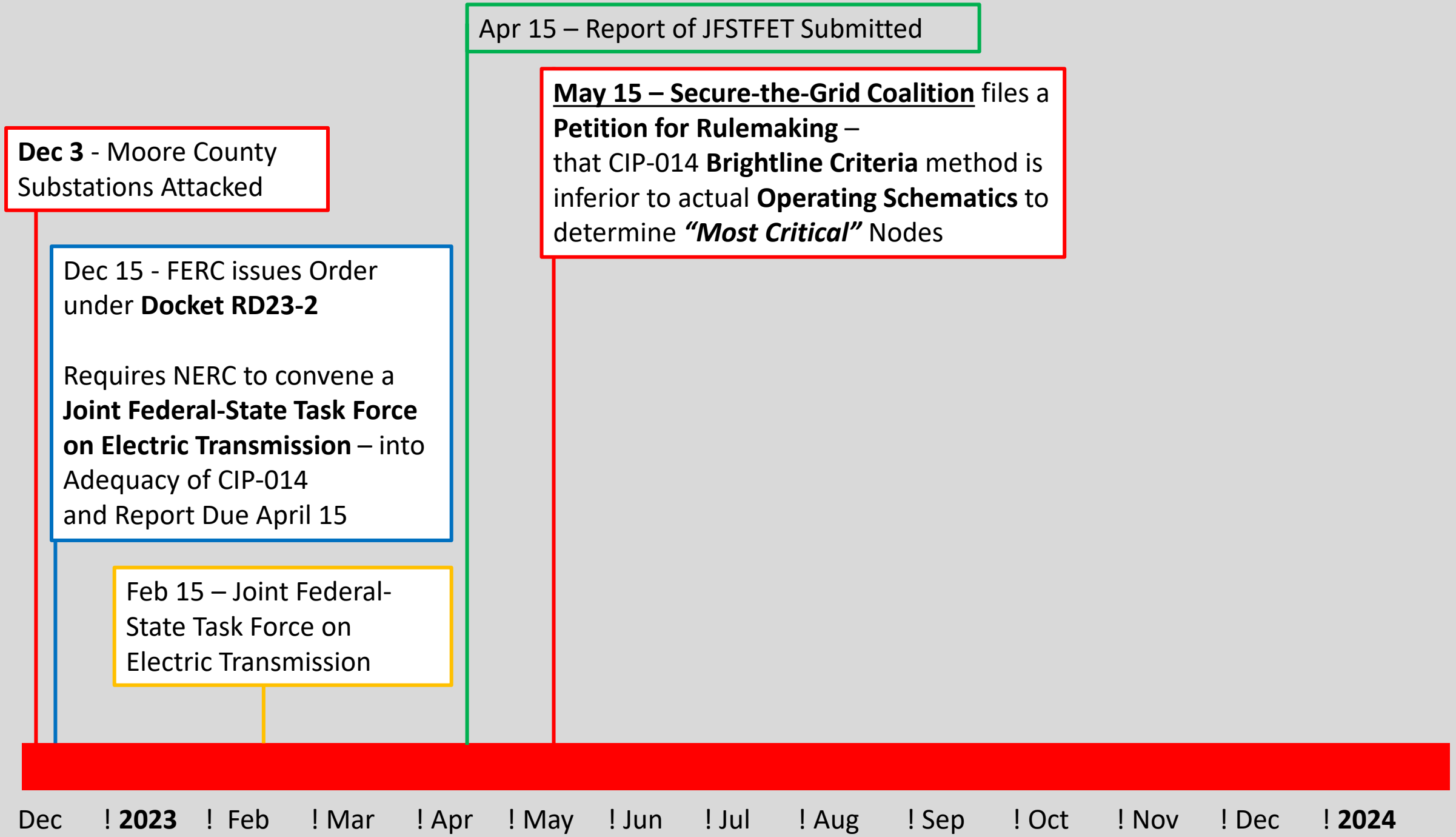


Physical Frailties

- Metcalf Substation
- CIP-014
- Mike Mabee’s Complaint over 3 years ago
- Moore County, NC (and others)
- FERC opens docket into adequacy of CIP-014
- STG Coalition files Petition for Rulemaking & Motion to Intervene
- FERC opens EL23-69 to grant the STG Petition for Rulemaking
- FERC Notice of Joint Technical Conference
- Baltimore Sophisticated

TIMELINE – Physical Protections of Substations

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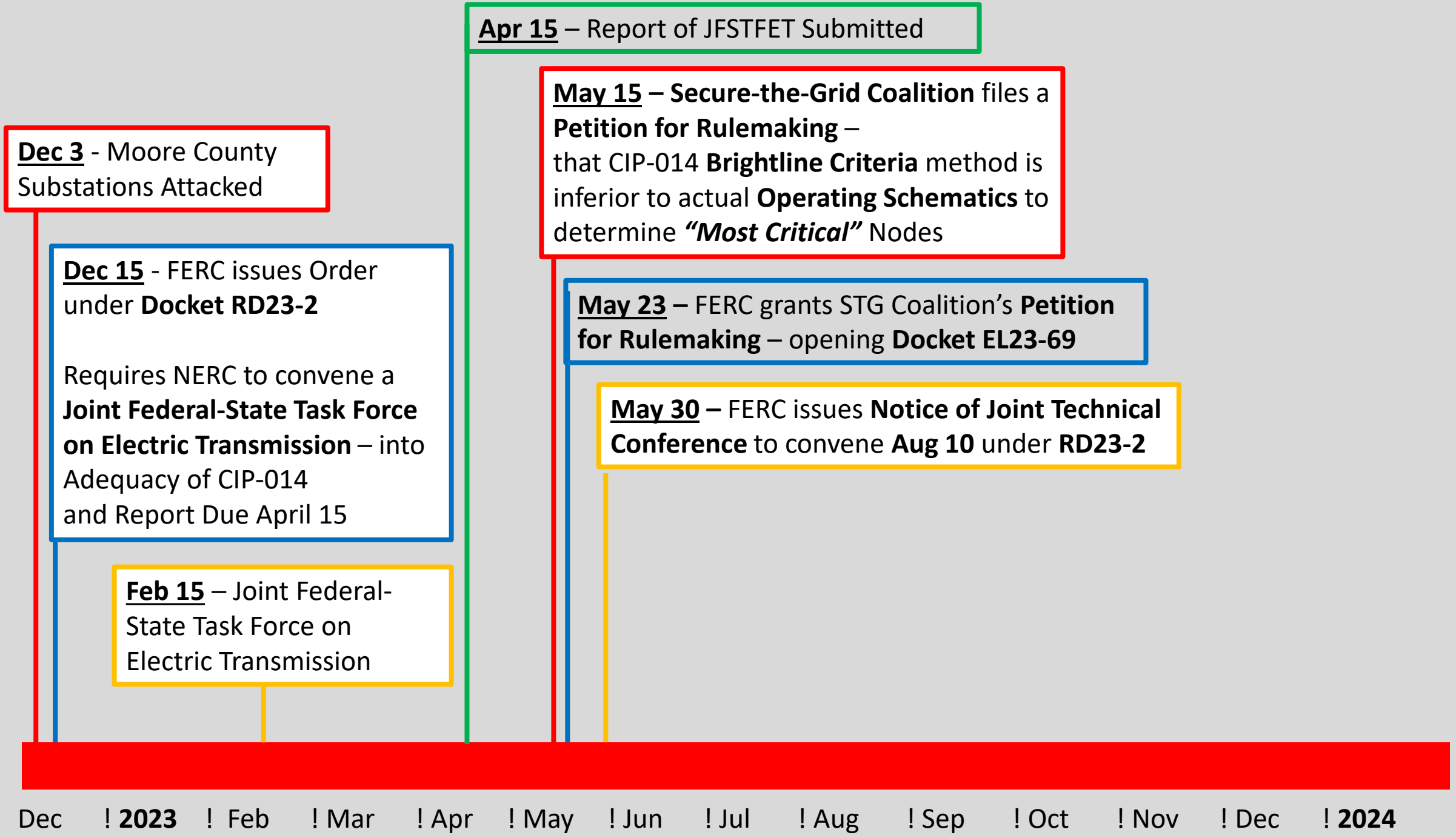
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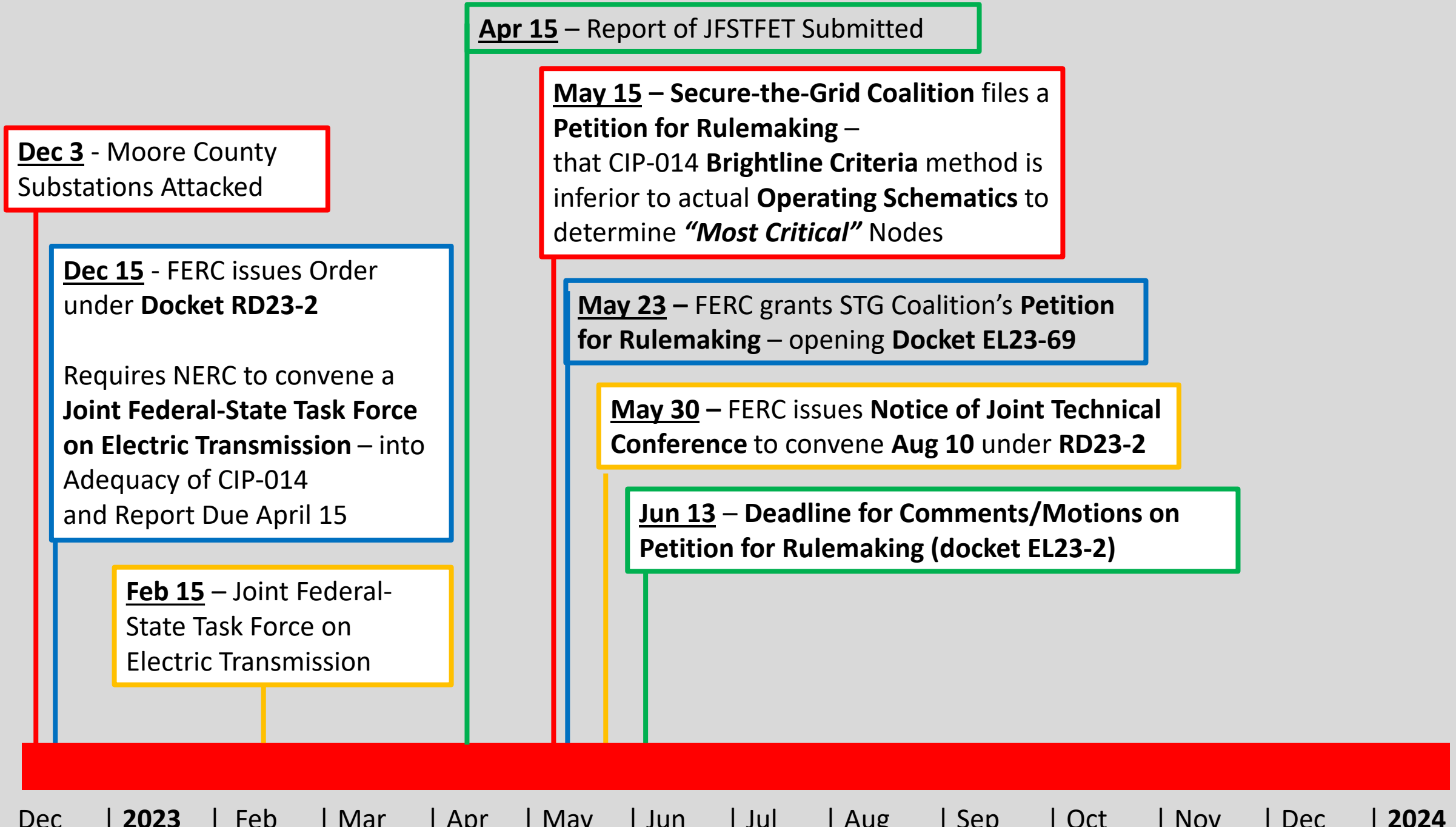
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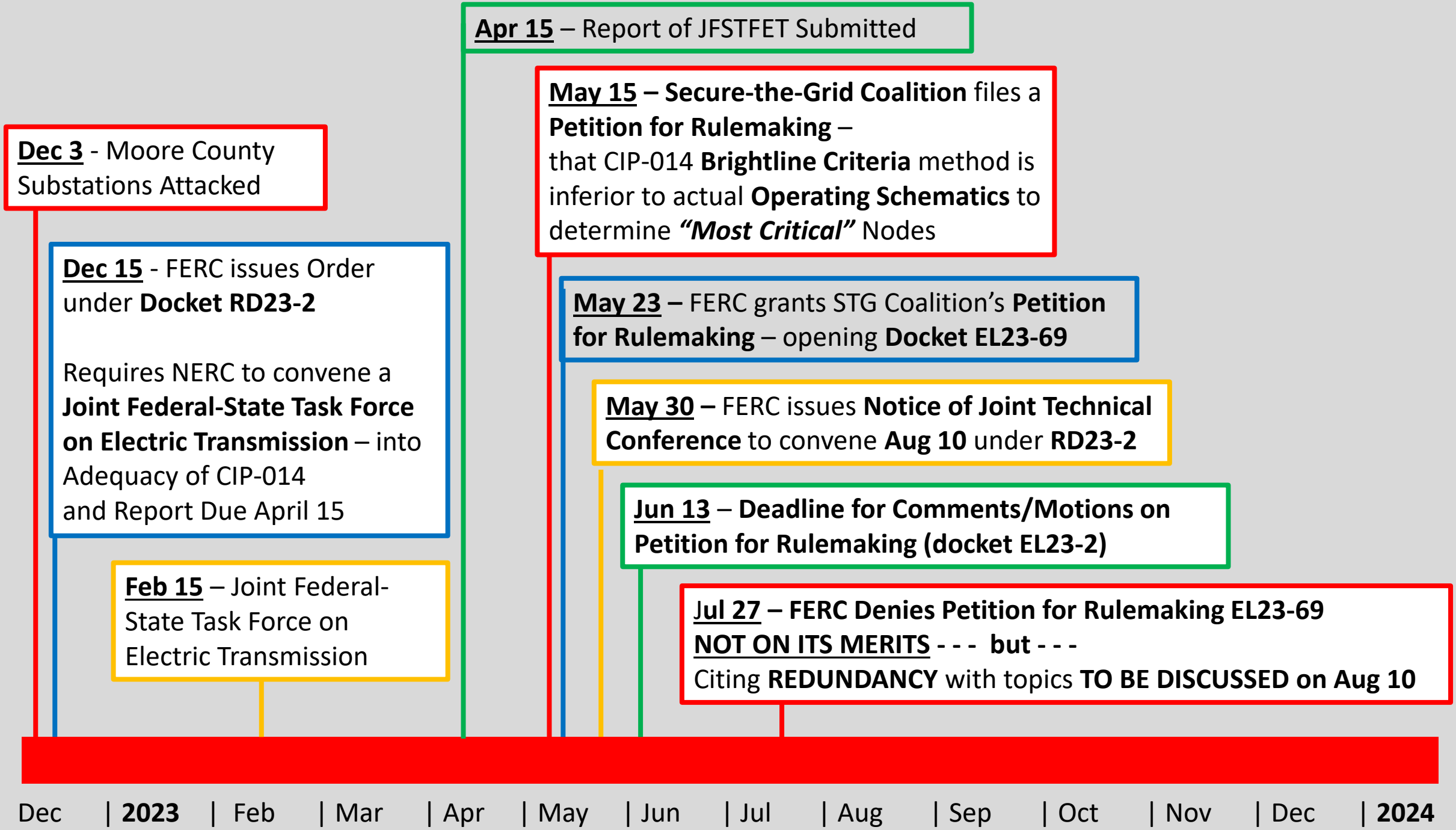
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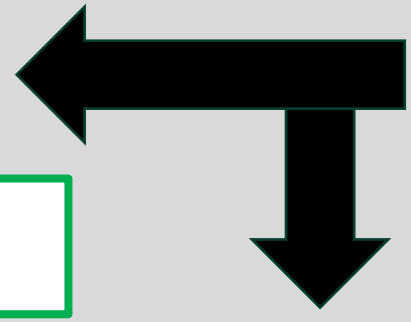
DOES EVERYONE SEE WHAT HAPPENED HERE?



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NERC on AURORA

Congressional Subcommittee considers citing NERC and NERC President and CEO Richard Sergel with Contempt of Congress for making false and misleading statements during testimony regarding AURORA.

IMPLICATIONS OF CYBER VULNERABILITIES ON THE RESILIENCE AND SECURITY OF THE ELECTRIC GRID

HEARING

BEFORE THE

SUBCOMMITTEE ON EMERGING THREATS, CYBERSECURITY, AND SCIENCE AND TECHNOLOGY

OF THE

COMMITTEE ON HOMELAND SECURITY
HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

MAY 21, 2008

Serial No. 110–117

Printed for the use of the Committee on Homeland Security

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DHS FOIA Mistake -

- On January 12th, 2010 Google publicly revealed that they were the victim of a “highly sophisticated and targeted attack on their corporate infrastructure originating from China that resulted in the theft of intellectual property from Google.”1

Google was not the only company affected by this attack; at the time Google notified over 30 other companies of infection by this malware.

In the time since then, further investigations have uncovered that over one hundred companies may have been targeted, although it’s difficult to ascertain how closely related these attackers are to Google’s assailants.

- **Northrop Grumman, Yahoo, Dow Chemical, Exxon-Mobil, Morgan Stanley, tens of others...**

Dubbed “Aurora”

DHS FOIA Mistake -

- **The Elements Necessary for an Attack**
  - **Programmable Digital Relay**
    - **Or other device that controls the breaker**
  - **High-Speed Breakers**
  - **Access (front panel, modem, Internet, wireless, or SCADA)**
  - **Laptop/Desktop Computer**
- **Knowledge Necessary:**
  - **Power Engineering (attack planning and device setting skills)**
  - **Hacking Skills (exploit the relay and conduct the attack)**
- **Time Required to Conduct the Attack (after gaining access):**
  - **Less than one minute**
  - **No additional software is introduced**
  - **Uses the internal settings of the imbedded relay software**

Programmable Digital Relay

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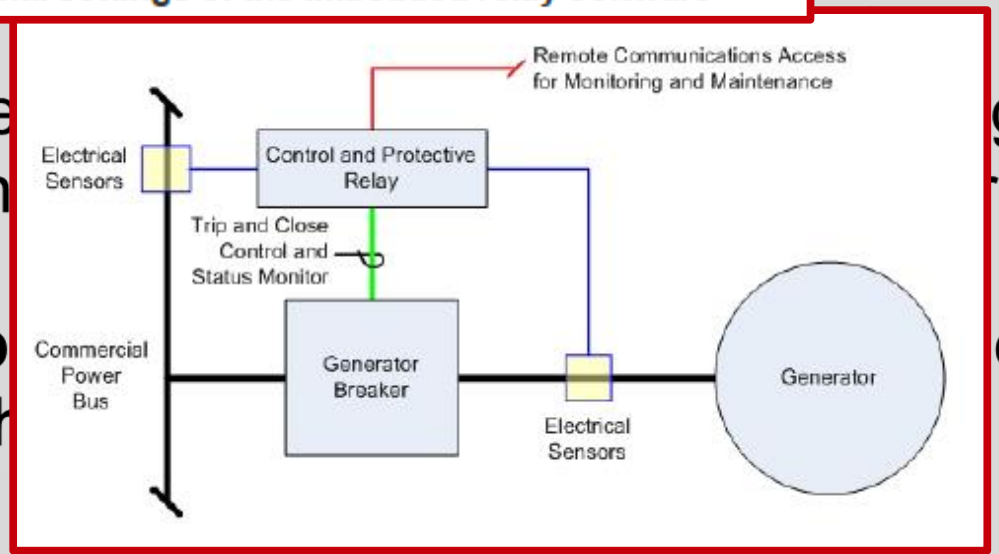

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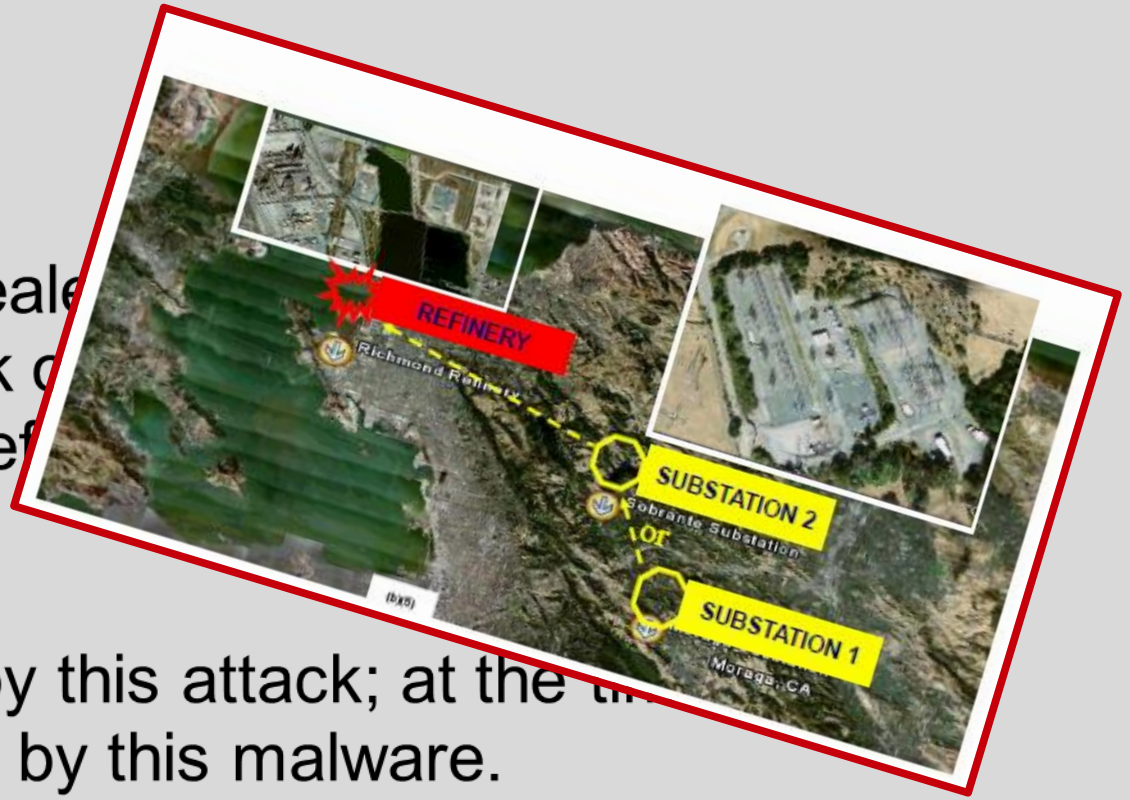

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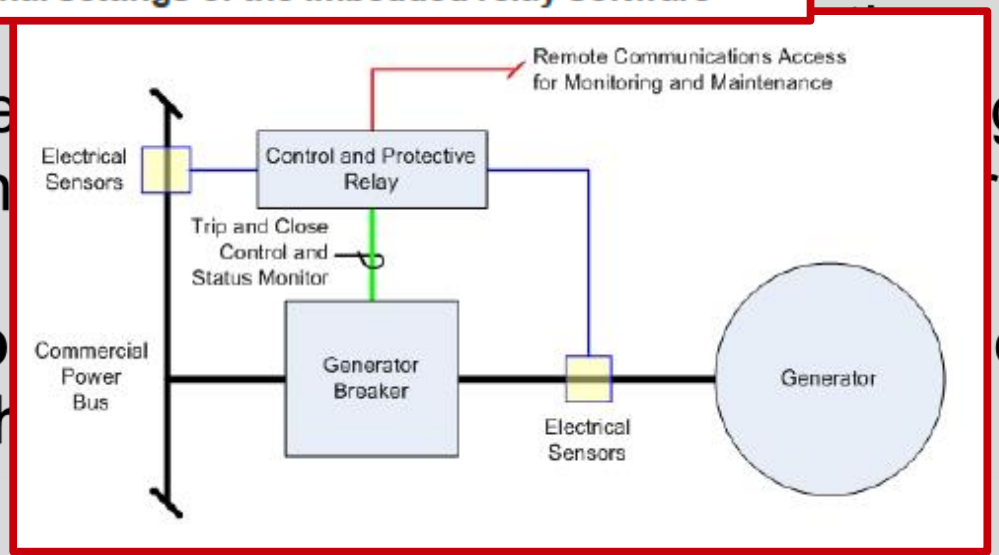

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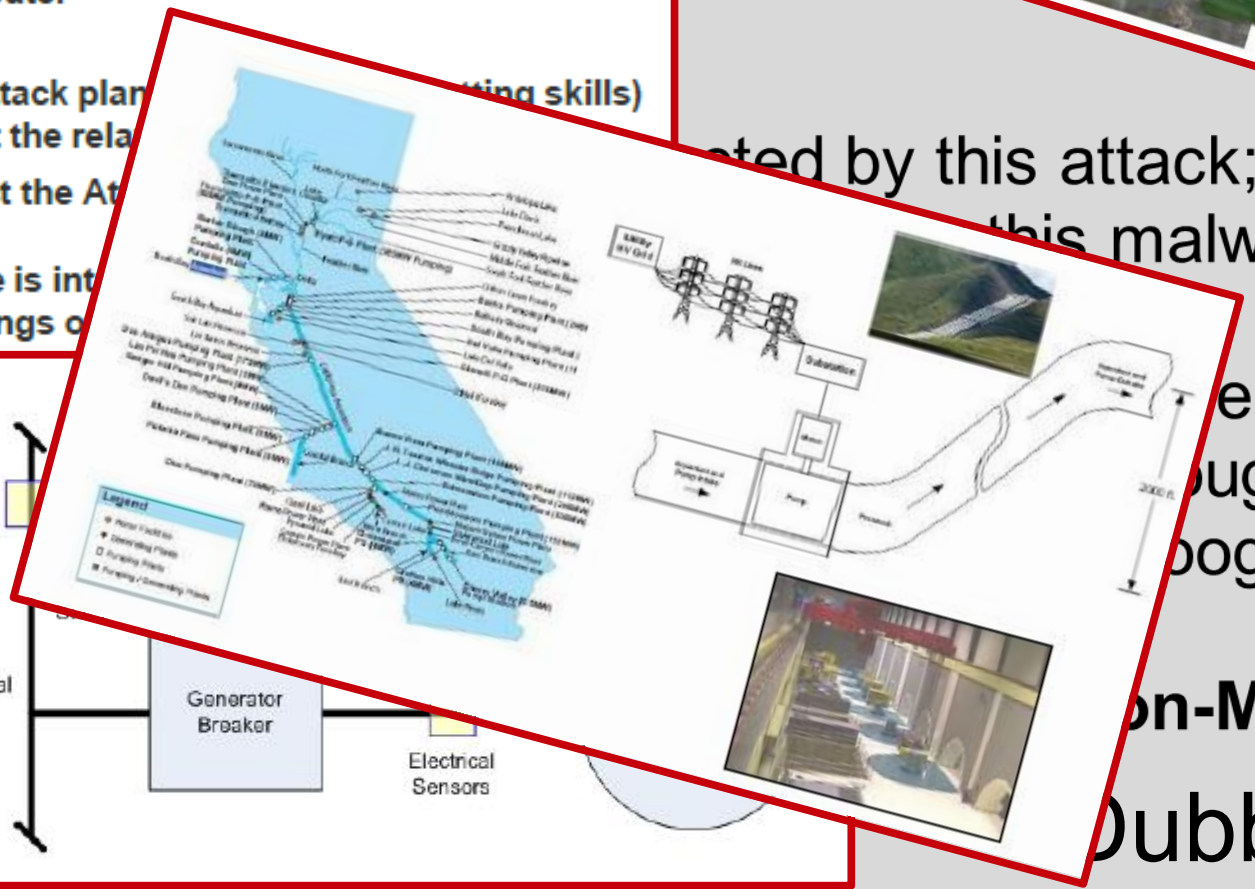

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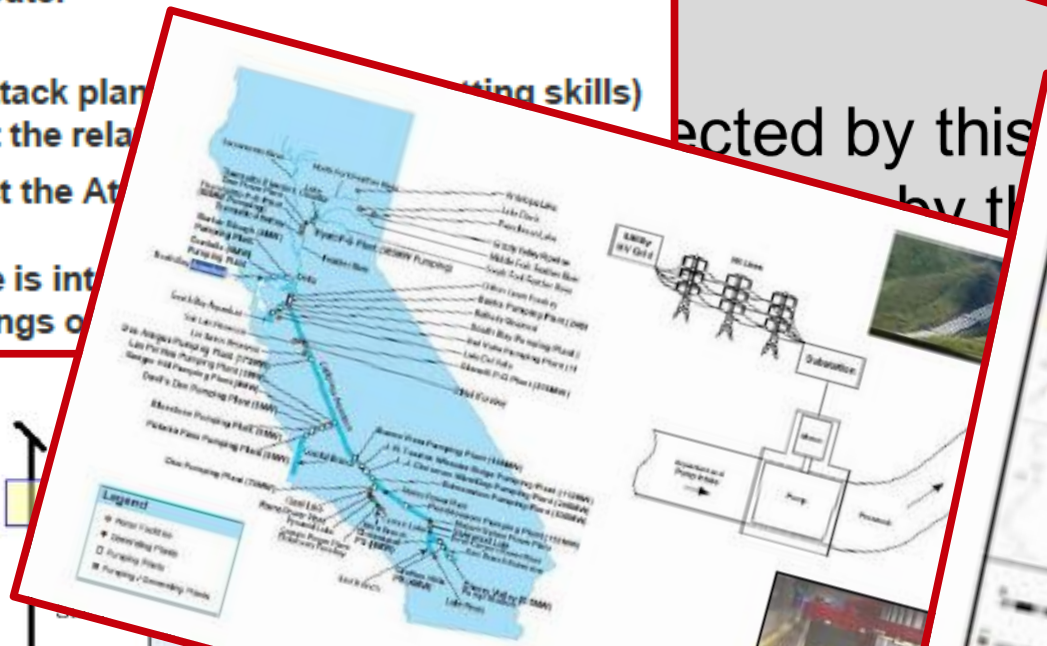

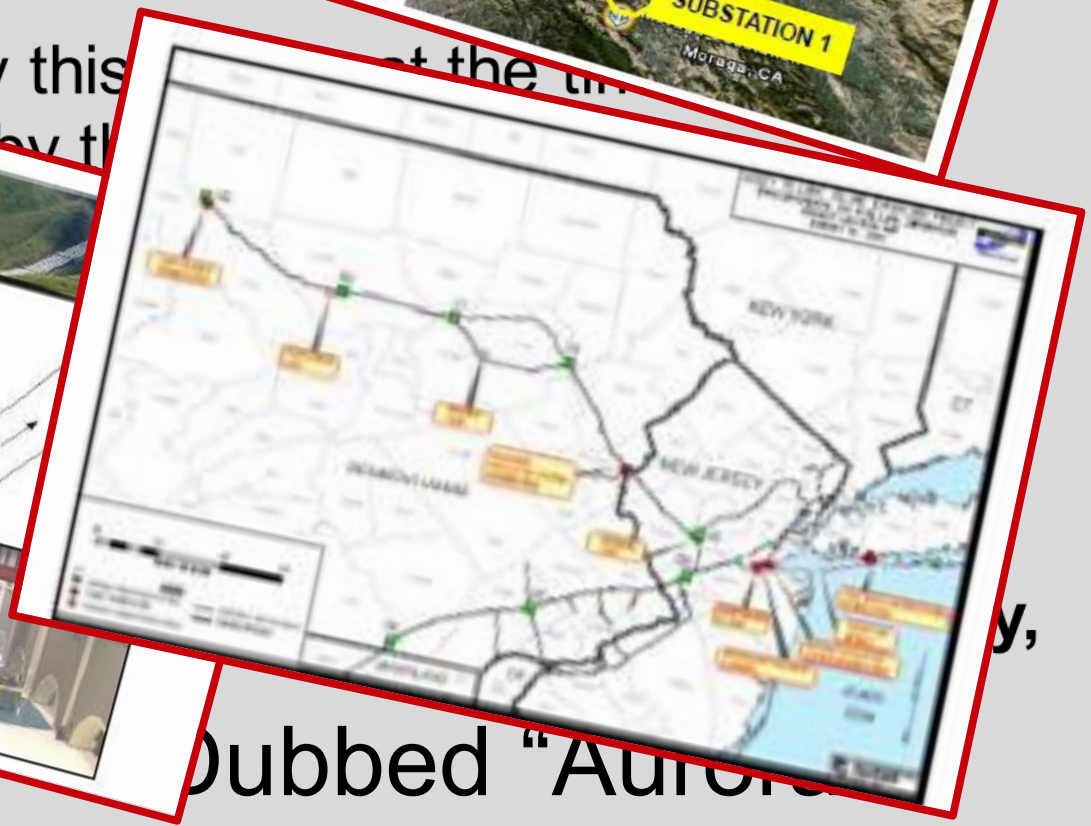

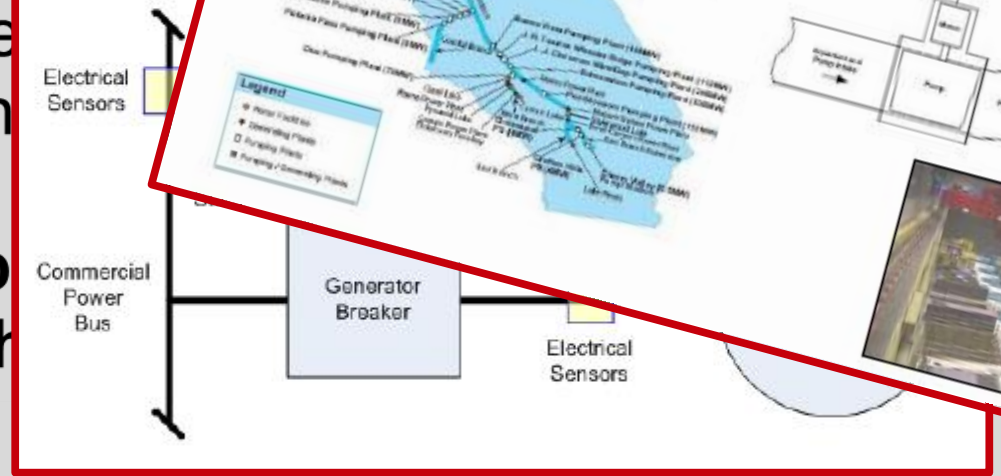

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IF THERE IS TIME . . .

ASK ME ABOUT THE CURRENT CYBER ATTACKS AGAINST INFRASTRUCTURE - WATER

COUNTY READINESS – EXAMPLE:

WALDO COUNTY MAINE

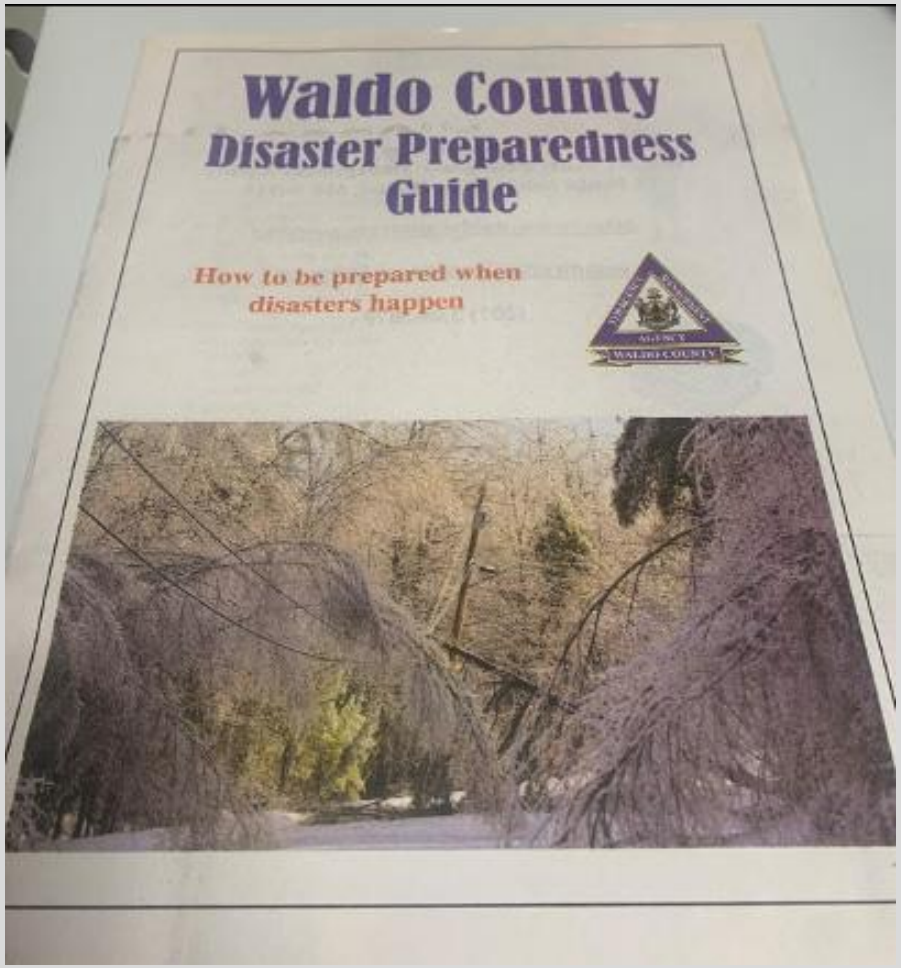

SolArk
SolArk
SolArk


IS-NRMP-C0
PolyPhaser


QUICK
OATS


WALDO COUNTY
Mobile Command Post


THIS IS A UNIT OF
YOUR CIVIL DEFENSE


Waldo County
Disaster Preparedness
Guide
How to be prepared when
disasters happen


WALDO-COUNTY-AMATEUR
MAINE
RADIO ASSOC.
Welcomes you at
1930 hrs. 1st. Monday
each month

Behind this bullet-resistant enclosure are - - -

GARBAGE DUMPSTERS

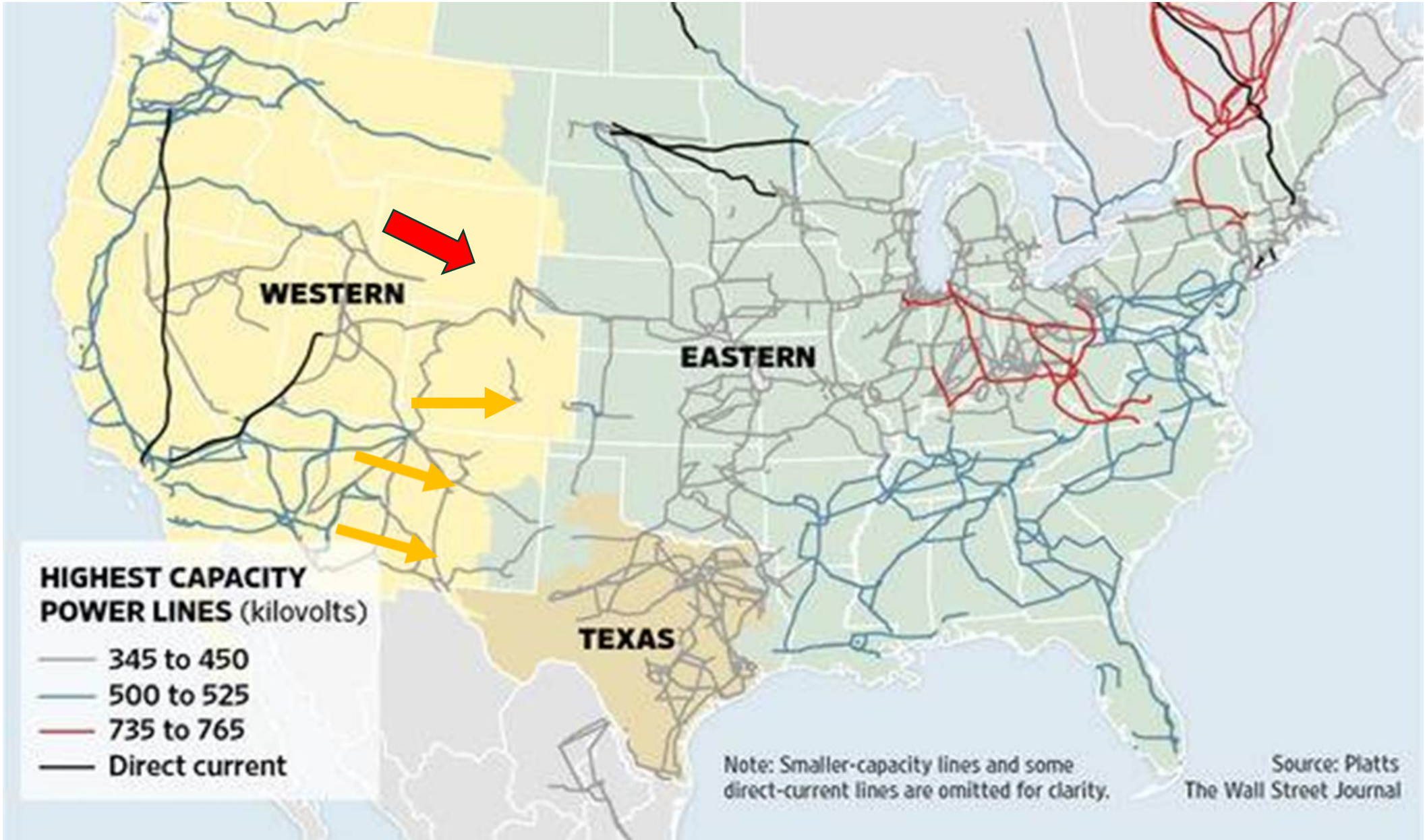
In Columbus

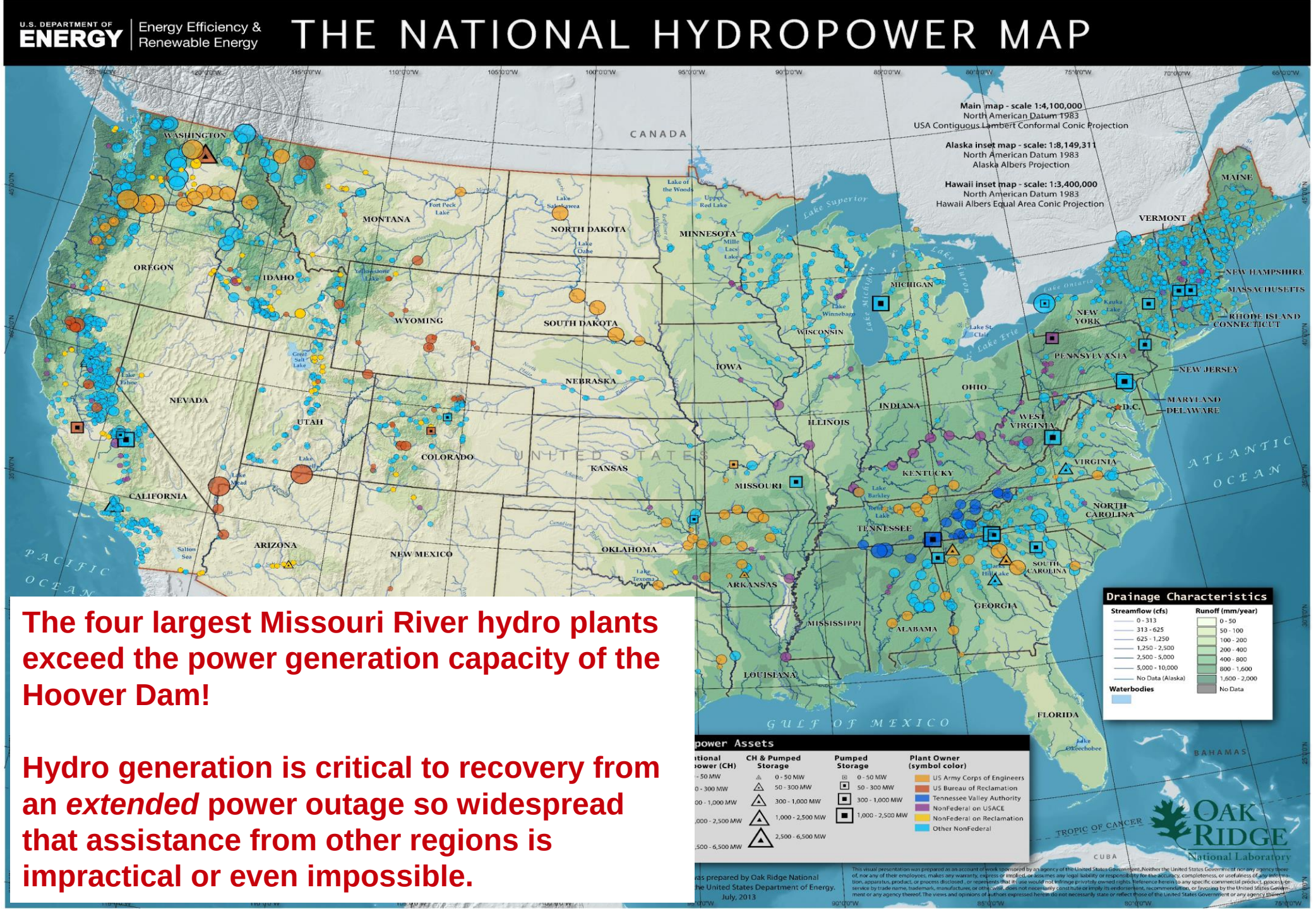
MULTI-STATE READINESS

&

THE IMPORTANCE OF DIESEL FUEL

This map illustrates why Nebraska is critical to the Nation's Bulk Electric Power System. Nebraska is the ONLY state that provides the MAJOR 345kV (or higher) gateway between the Eastern and Western Interconnections. Other mapping systems specifying 345kV and higher confirm this.

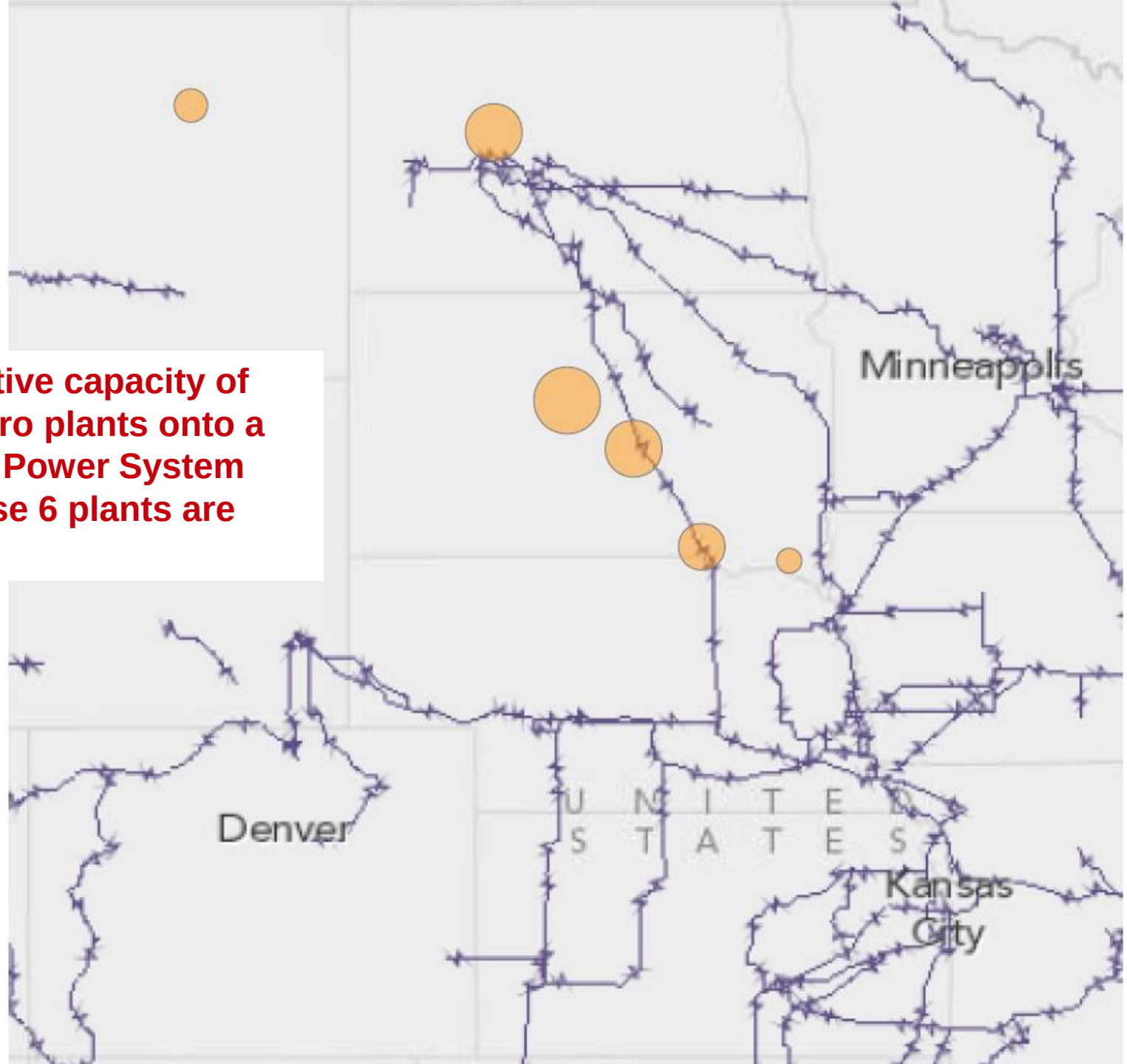


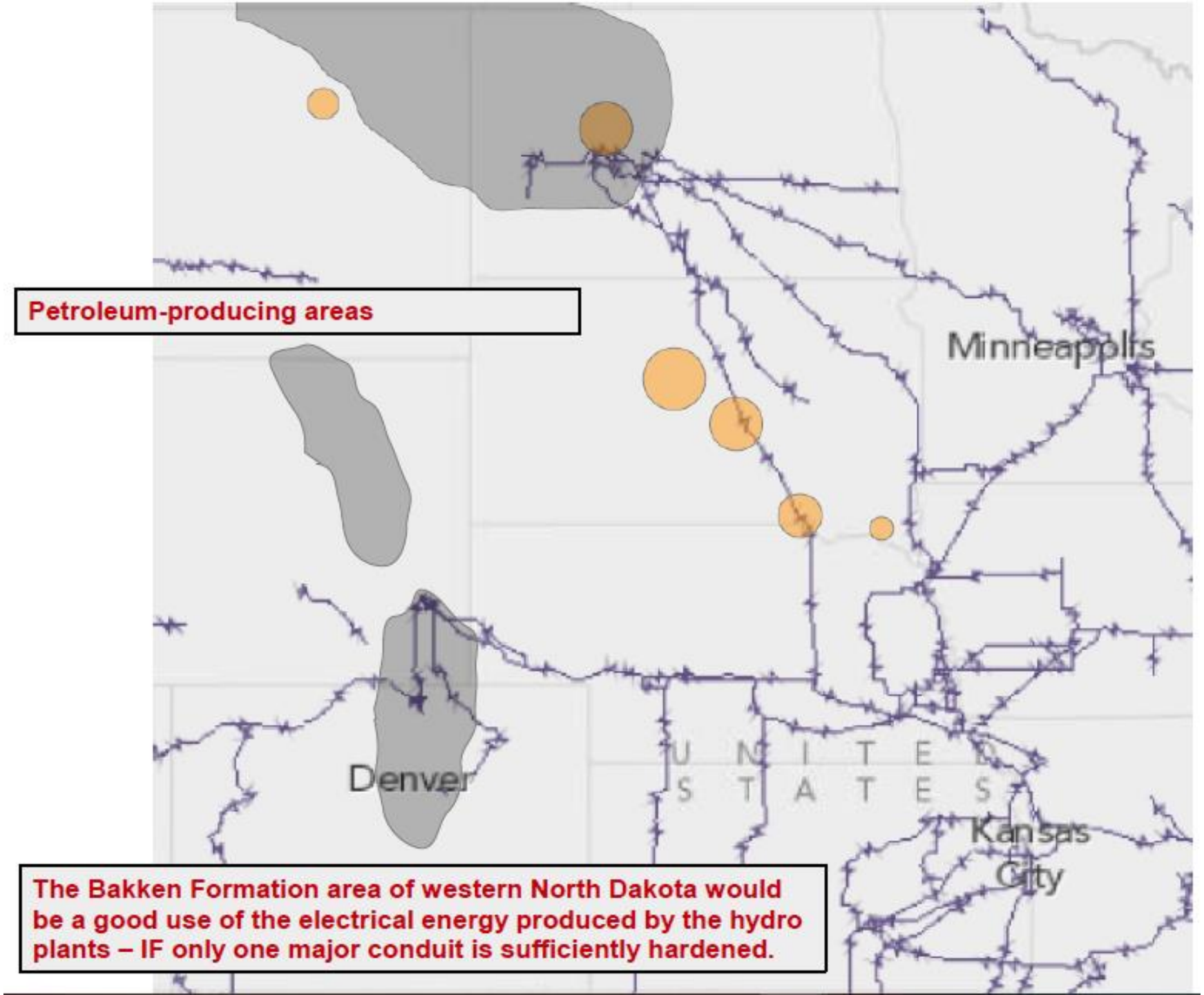


The four largest Missouri River hydro plants exceed the power generation capacity of the Hoover Dam!

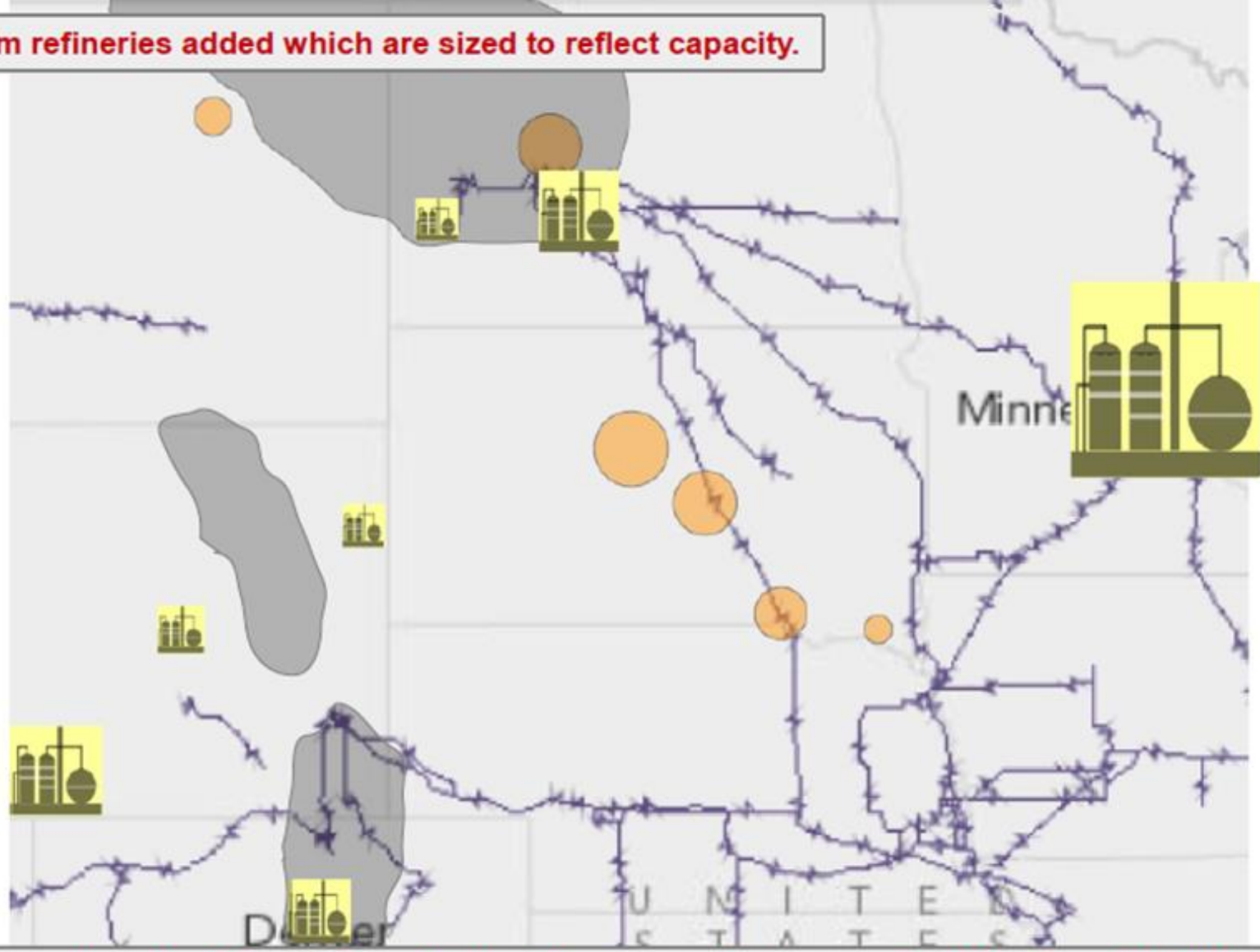
Hydro generation is critical to recovery from an *extended* power outage so widespread that assistance from other regions is impractical or even impossible.

This map layers the relative capacity of the 6 Missouri River hydro plants onto a map of the Bulk Electric Power System (345kV and higher). These 6 plants are operated by the USACE.



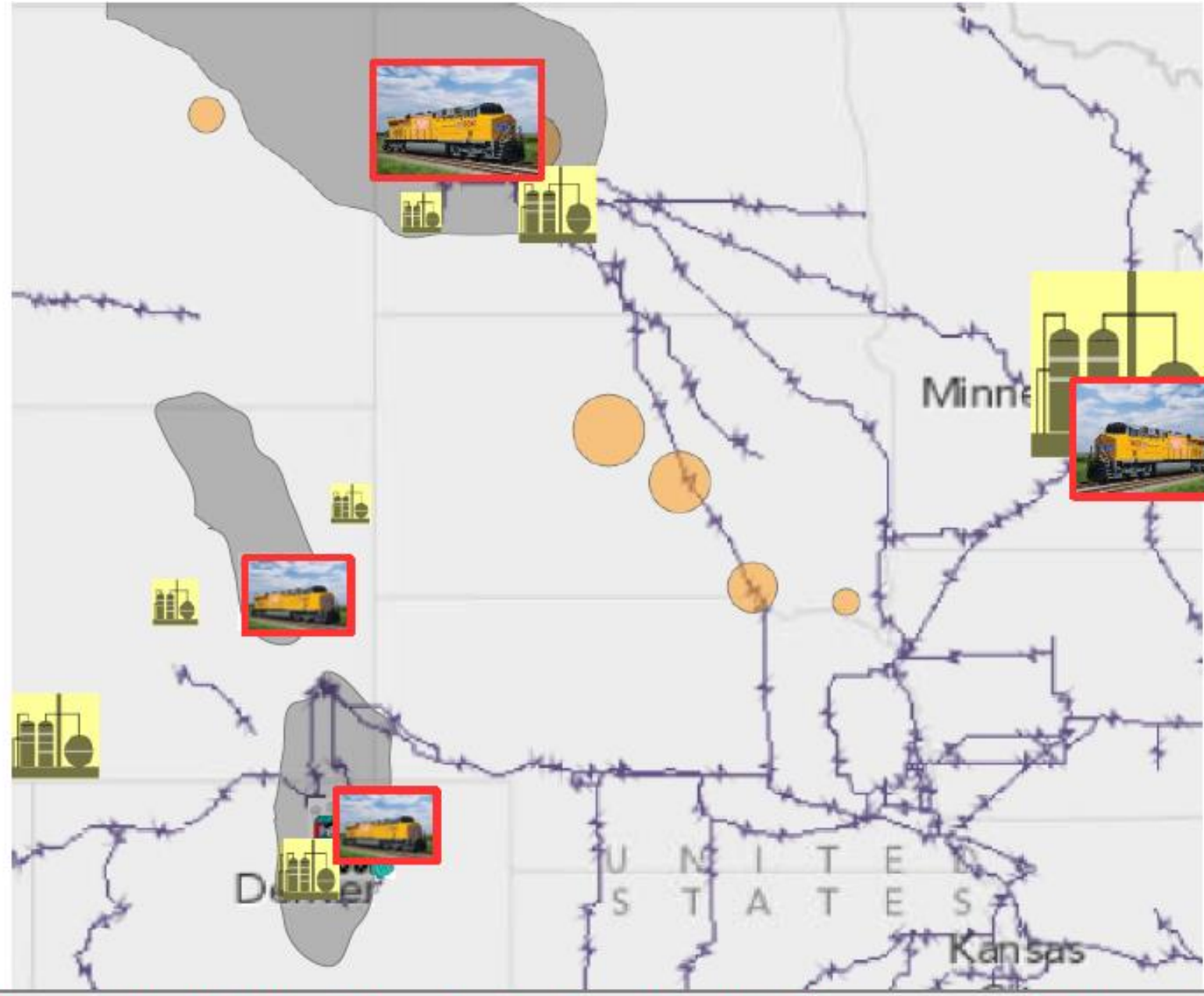

Petroleum-producing areas
Minneapolis
Denver
U N I T E D
S T A T E S
Kansas
City
The Bakken Formation area of western North Dakota would be a good use of the electrical energy produced by the hydro plants – IF only one major conduit is sufficiently hardened.

Petroleum refineries added which are sized to reflect capacity.



Existing supplies of petroleum-based fuels will soon run dry in an extended outage. It will be necessary to transport fuels almost immediately for emergency generators – especially for operating and even de-commissioned nuclear power plants in order to keep spent fuel rods cool.

Extra-High Voltage line between North Dakota and St. Paul Minnesota should be hardened. Actually two refineries in the St. Paul area, one of which has very large capacity – rivaling Gulf States'.



This adds specialized rail depots for petroleum-based liquids. There are several of these in each area, numbers represented by size of the locomotive image. The eastern-facing locomotives are for loading, and the western-facing locomotive in St. Paul represents unloading depots.

PROSPERITY FOR NEBRASKA

OR THE FIRST STATE TO ACCEPT

Let’s Go Fission!

Steve Curtis’ plan for state to be first to accept nuclear “waste” which is slightly used nuclear fuel
Carter Admin called it waste and it stuck w the anti-nuclear crowd – that is changing its stripes.

- **$10 trillion at .01 per kWh!!**
- **270 years of CLEAN power generation**
  - **Too Cheap to Meter – flat rate plans – use all you want like cell phone service**
- **$50 billion fund – collected from ratepayers of utilities that had nuclear in generation mix.**
  - **40 years - - Still no solution – til now!**
  - **A goodly portion of that $50 Bln would go to AGREEING STATE**
  - **Also, FIRST STATE likely to become home to a coveted NATIONAL LABORATORY**
- **BEGIN WITH FAST REACTOR TECHNOLOGY – NOT NEW IN PRACTICE: EBR II in Idaho**
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  - **SAFETY**
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IS ANYONE THINKING REDUCTION OF STATE PROPERTY TAXES?

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ED TO SITE

Resulted in Executive Order 13865 on May 1, 2019
Codified into law by Congress – NDAA 2020

Secure the Grid Coalition

Thanks

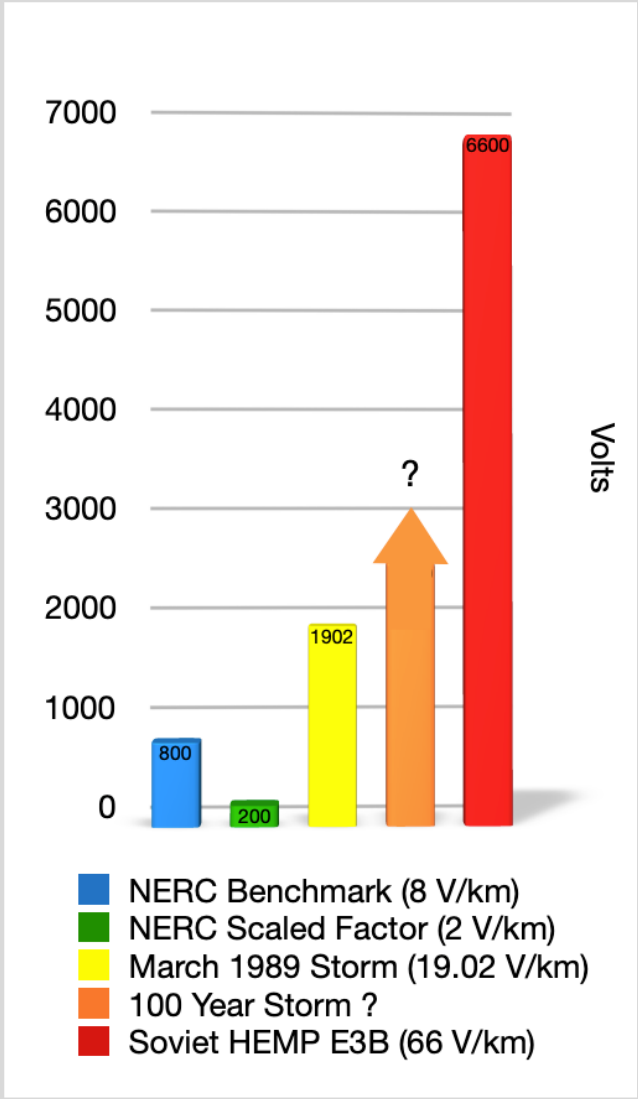
Nebraska Association of County Officials

For The Opportunity to Share

YOUR Emails Appreciated:

doug.ellsworth@usapact.org

Virginia / D.C. Area 49 deg geomagnetic latitude



A Visual Aid: The graph shows the comparison between the current GMD protection standard and real-world data by applying the different levels (V/km) of induced currents to a 100km transmission line (average length of U.S. transmission lines).
(Note that the voltage level is proportional to the length of the conductor. Thus induced voltages could be much higher than levels noted here since many transmission lines are longer than 100km)

In this case we use an example utility in the Virginia /Washington D.C. area. (a geomagnetic latitude of 49deg). The utility would take the “benchmark” of 8 V/km, and apply the “scaling factor” (ref. NERC instruction, page 29, TPL-007-4 – Transmission System Planned Performance for Geomagnetic Disturbance Events) to determine a protection level of 2 V/km. Contrast this with real-world data collected during the March 1989 Solar Storm (considered a “40-year” solar storm).

The NERC standard is supposed to bound levels possible for a 100-yr solar storm.
We include an unknown bar for the 100-year solar storm since the last time that occurred (1859 Carrington event) we have no ground voltage or current measurements.
Finally, we provide another example of real-world data collected by the Soviets in the 1962 “K-test” of high-altitude electromagnetic pulse (HEMP) effects over what is now considered Kazakhstan. The Soviet tests produced an electric field of 66 V/km (HEMP E3).
For this reason, the Congressional EMP Commission recommended protecting the grid to a level of 85 V/km to guard against both solar weather and HEMP E3. We concur with that recommendation.

- EL21-99 Chinese Transformers
  - Motion of Complainant Requesting FERC Take Official Notice October 13, 2023
  - Aug 26, 2021 by Mabee
  - EO 13920 – Chinese Xfmrs banned – May 1, 2020
  - Jan 2021 EO 13920 nullified
  - Oct 18, 2023 – Mabee requests FERC take Official Notice of additional Chinese Xfmrs
    - From January 1, 2006 through August 30, 2023., the U.S. has imported a total of 432 transformers over 10,000 kVA from China. Of these, 351 exceed 100,000 kVA.
    - The U.S. continues to import large transformers from China in 2023.
- Executive Order EO 13865 – Electromagnetic Pulse – May, 2019
  - Codified into law by NDAA 2020
  - Nov 14, 2023 – Secure-the-Grid Coalition files FOIA with DHS & NGB

Flower Power
In Our
Nation's Capitol

Mike Swearingen’s most recent article chiding FERC on CIP-014