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REGULATORY CHALLENGES TO BUILDING A MORE RESILIENT TRANSMISSION SYSTEM

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August 1, 2018

Agenda: Resiliency Risk and the Benefits of Investing to Address that Risk

- Understanding the resiliency risk to the transmission system today from cyber and physical attacks
- The characteristics of a more resilient transmission system
- Regulatory barriers to developing resilient transmission systems in current transmission planning requirements
- The value that a more resilient transmission system provides to utilities and ratepayers

Understanding the Reality of the Risk

- Critical high voltage substations exist throughout the US
  - Higher-voltage development increases this risk
  - CIP-014 development and implementation pursuant to Section 215 of the Federal Power Act underscores this risk
- Loss of an entire high voltage substation can have catastrophic regional consequences
  - Economic
  - Health & safety
  - Security

Assume the Loss of Multiple Substations

- Types of attacks
  - Cybersecurity attacks (EMS or networked substations)
  - Physical attacks on lines, transformers, control houses
- Why we must assume attacks will be successful
  - Some inherent risks cannot be mitigated adequately
  - The identity of these substations is not well-protected
  - Recovery time still in days or weeks
- Expert analyses suggest little reason for confidence

The Utility Will Always Be Blamed

Law Enforcement	• Role: Investigate criminal actions, identify perpetrators, seek arrests • FBI, DOJ, State & Local Police
National Security	• Role: Identify threats, prevent or end attacks, recommend protective measures • NSA, DOD, DHS
Sector-Specific Agencies	• Role: Provide expertise, assessments, coordination on responses • DOE for the Energy Sector

Key Laws for Government Action on Resilence

Statutory

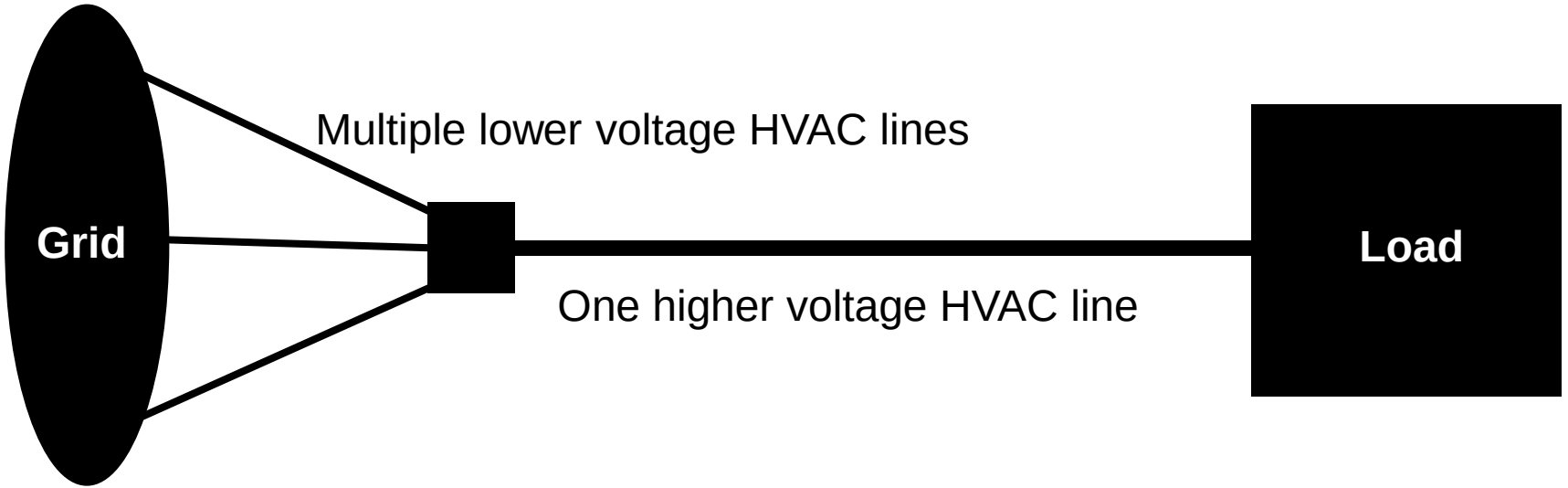
- Computer Fraud and Abuse Act (CFAA) (18 U.S.C. 1030)
- Wiretap Act (18 U.S.C. 2511(1)(a))
- Various state computer crime laws
- Federal terrorism laws

Non-Statutory

- Presidential Policy Directive 21 (Critical Infrastructure Security and Resilience)
- National Infrastructure Protection Plan 2013
- Executive Order 13800 (Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure)
- Executive Order 13636 (Improving Critical Infrastructure Cybersecurity)

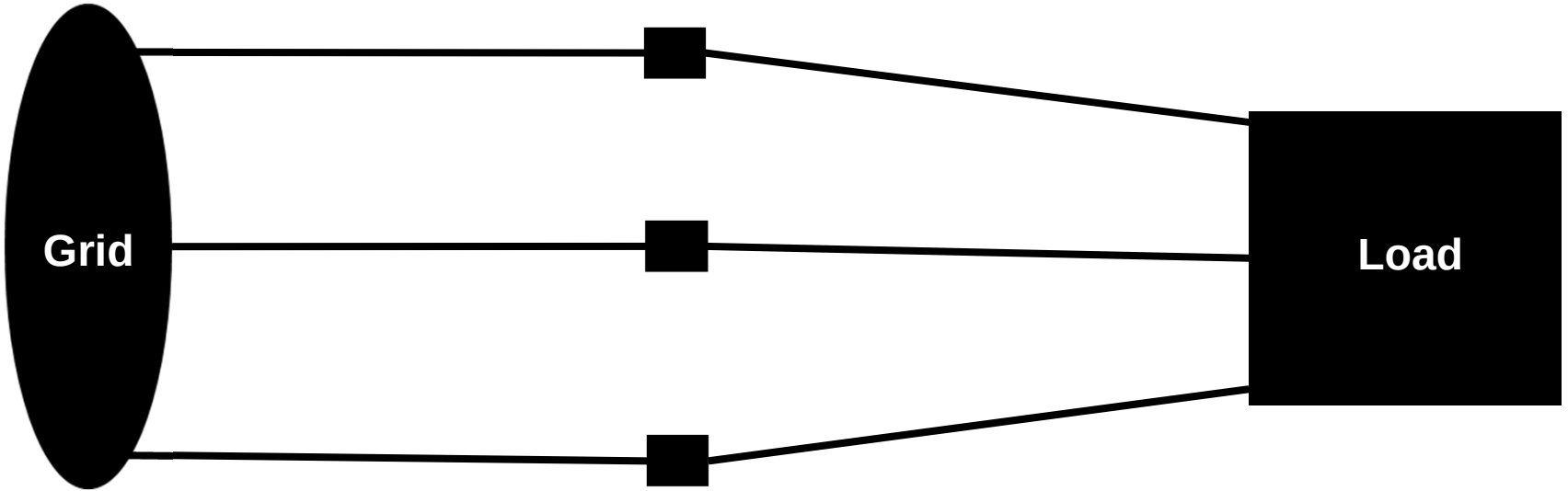
What Does a Vulnerable Grid Look Like?

More "efficient" by relying on fewer, more critical facilities



What Does a Resilient Grid Look Like?

Less “efficient,” but fewer critical facilities



Multiple lower-voltage HVAC lines all the way

Æsop and the "Bundle of Sticks"

A certain Father had a family of Sons, who were forever quarreling among themselves. No words he could say did the least good, so he cast about in his mind for some very striking example that should make them see that discord would lead them to misfortune.

One day when the quarreling had been much more violent than usual and each of the Sons was moping in a surly manner, he asked one of them to bring him a bundle of sticks. Then handing the bundle to each of his Sons in turn he told them to try to break it. But although each one tried his best, none was able to do so.

The Father then untied the bundle and gave the sticks to his Sons to break one by one. This they did very easily.

(Library of Congress, read.gov/Aesop)

Challenges to Resilient Transmission Development

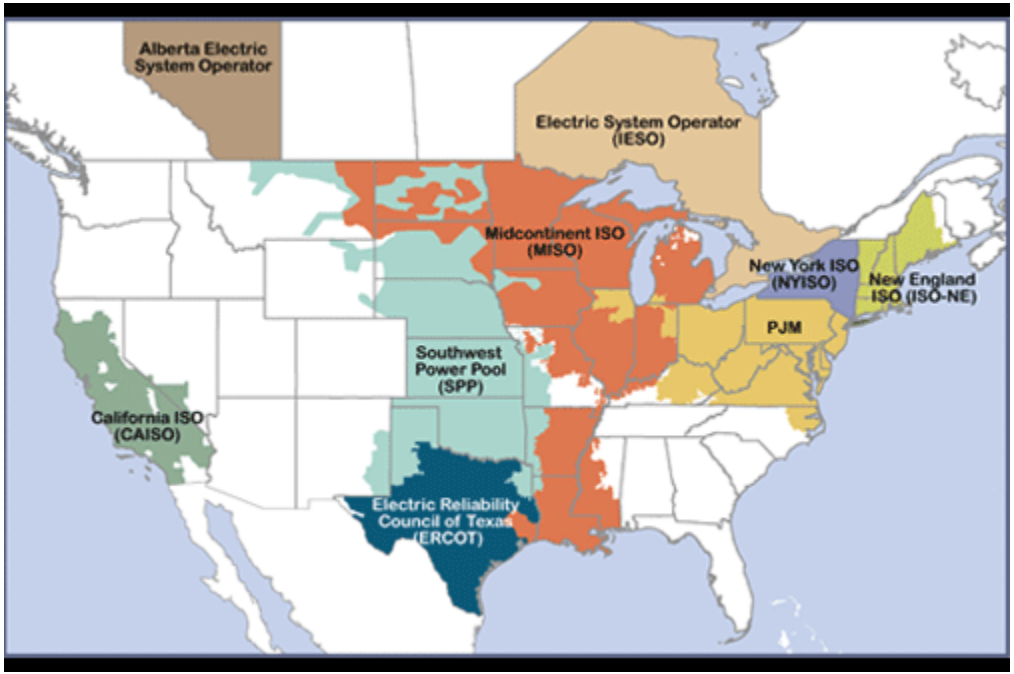
State Regulation	Siting, permitting, land use, environmental
	Rate recovery and the Averch-Johnson effect
	More transmission density will require more distribution
Federal Regulation	Limited existing transmission incentives/nothing for resiliency
	Open prudency question (benefits not easy to quantify)
	Security risks in regulatory proceedings
Tariffs	Gaps in existing transmission planning criteria
	Existing proposal evaluation criteria focus on price
	No objective criteria for measuring resilience

Resiliency Planning in Existing RTOs and ISOs

Grid Resiliency and Resilience Pricing, 162 FERC 61,012 (2018)

- Submissions by each FERC-Jurisdictional ISO/RTO

Resiliency is, in some manner, assessed. But the effect on actual transmission planning remains vague, at best.



Value of Resiliency to Utilities and Ratepayers

Ratepayers and other Stakeholders

- Reduced likelihood of catastrophic outages from attacks
- Outages likely to be less frequent and of shorter duration

Utilities

- Capital investment = higher rate base
- Development through facility expansion and upgrades
- Greater system reliability & less political risk

Biography

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Stephen M. Spina represents electric utilities and other electric industry participants before the Federal Energy Regulatory Commission (FERC) in restructuring, market investigations, and Federal Power Act regulatory matters. He advises electric utilities on issues relating to market pricing, transmission, reliability standards compliance (including cybersecurity standards), rate matters, and participation in regional transmission organizations, including capacity and energy market issues. In connection with cybersecurity, Stephen is an active member in the firm's crisis management practice. His work also extends to audits and investigations before FERC's Office of Enforcement, as well as enforcement and audit proceedings involving the North American Electric Reliability Corporation.

Biography

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As the US energy business continues to evolve, Arjun Prasad Ramadevanahalli represents key industry participants in regulatory, transactional, and litigation matters, including investigations and enforcement proceedings. Arjun represents electric power, natural gas, and other energy industry participants before the Federal Energy Regulatory Commission (FERC), the US Commodity Futures Trading Commission (CFTC), and the North American Electric Reliability Corporation (NERC). When necessary, his representations extend to court appeals.

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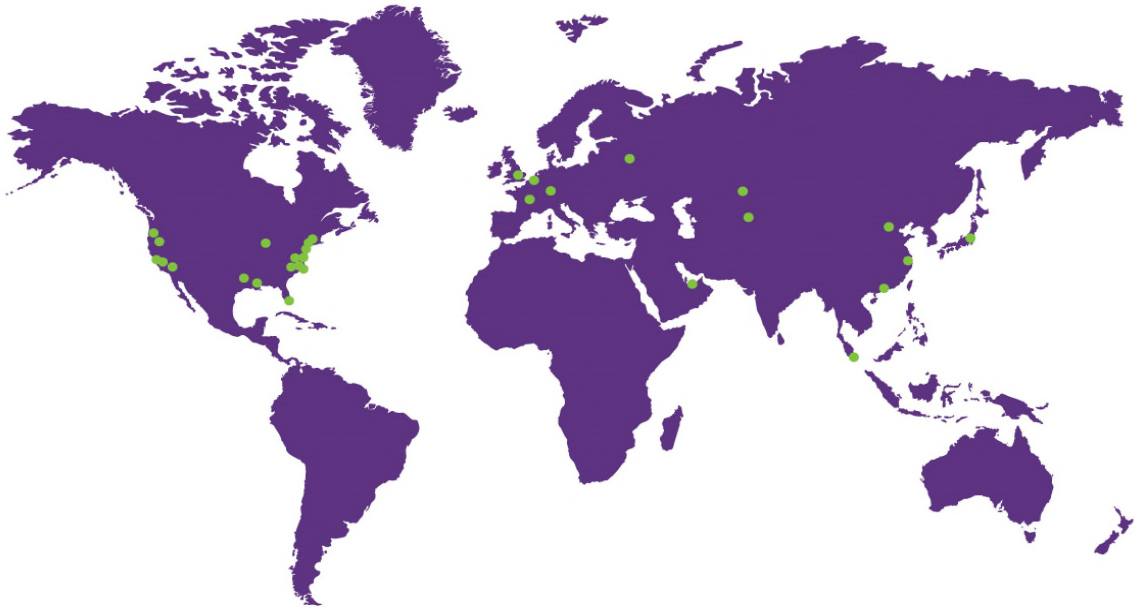

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