PROTECTING THE NATION’S ENERGY INFRASTRUCTURE

Do you know your State’s risks?

National Conference of State Legislators

Legislative Summit Taskforce on Energy Supply
Protecting energy infrastructure requires:

- Knowing the specific threats and hazards affecting infrastructure to protect against
- Prioritizing resources available for infrastructure protection and resilience based on the likelihood of occurrence and potential consequences of threats and hazards

**Risk assessment** can help decision makers better understand threats, hazards, vulnerabilities, and consequences and make more informed decisions on how to best protect energy infrastructure and assets.
A growing awareness of the ever-emerging threats and hazards to energy systems and infrastructure

The interdependent nature of energy and other lifeline infrastructures

The complex challenge of information and data sharing and coordination among federal, state and local agencies, asset owners and operators, and the private sector

Limited resources (staff, budget, and time) for development of risk assessment processes and capabilities at State level

Improving States’ understanding of risk assessment and energy system requirements and capabilities enables States to prepare for, mitigate against, respond to and recover from energy system disruptions.
Key Goals and Objectives:

- Increase States’ awareness of energy infrastructure risk considerations to better prepare them to make more informed decisions

- Provide a suite of scalable, easily-applied analytical tools, methods, and processes to enable States to better assess risks to energy systems and assets

Objectives:

- Determine State energy risk assessment needs
- Assess current practices in State-level energy risk analysis
- Engage with key stakeholders (across entire risk analysis development cycle) to enhance information sharing and collaboration
INITIATIVE ACCOMPLISHMENTS AND UPDATES

- **State Energy Risk Assessment Working Group**
  - Creation of a risk assessment and analysis taxonomy
  - Energy risk projections for the 2015 hurricane season
    - DOE- NASEO Webinar
  - NGA Threat Hazard Identification Risk Assessment (THIRA) Survey
    - Showed that many States have used THIRA but that more detailed risk assessment capabilities are also desired
  - Continued input/feedback on State risk assessment needs

- **State Energy Risk Profiles**
  - Profiles present most common threats and outages impacting energy infrastructure
  - Prepared for all 50 States and District of Columbia

- **State Energy Risk Assessment Workshop**
  - Denver, CO – April 28-29, 2015

- **Outreach to State Agencies and Association members**
  - Upcoming Summer and Fall Meetings
Profiles include:

- Information on State energy facts
- Overview of hazards and economic property loss
- Causes of disruptions and outages by energy sector
- Infrastructure maps
- List of data sources and references used to create the profiles

**WHAT NATURAL DISASTERS CAUSE THE MOST DAMAGE?**

- Data from NOAA Storm Events Database analyzed for 1986 to 2014.
- Above ranking reflects the significance of extreme weather events, such as:
  - The Great Flood of 1993 and the 2011 Mississippi River floods (Midwest).
  - Hurricanes Ivan, Katrina, Rita, etc. in the Gulf Coast (Gulf Coast).
  - Hail storms in Colorado and Wyoming (Rocky Mountains).
  - California wildfires of October 2007 (West Coast).
What hazards pose the greatest threats to the electric transmission grid?

- Each region appears to be vulnerable to different hazards.
- Greatest impact to the East Coast and Gulf Coast due to hurricanes.
- The Midwest is subject to extreme weather such as storm and high winds.
- Transmission line faults or overloads most-significant threat in the Rocky Mountains and Plains and West Coast, due to major transmission paths with high congestion.
90% of customer outage-minutes are due to events which affect local distribution systems.

Weather are the predominating events for East and Gulf Coasts.

In the Midwest, most power outages are caused by damage from trees.

Faulty equipment / human error tops the list for the Rocky Mountain and West Coast regions.

“Unknown” events include those with “multiple initiating” causes.

Outages are also caused by vehicles accidents.
WHAT ARE THE MAJOR THREATS TO PETROLEUM TRANSPORT?

Outside Force damage results from some external force such as excavation activities (“third-party” damage).

Natural Force Damage occurs as a result of naturally occurring events such as flooding, earthquakes, and lightning.

Collision / Rollover is a vehicle accident in which a vehicle tips over onto its side or roof.

Miscellaneous / Unknown denotes incidents in which the cause is unknown or has multiple causes (e.g., Incorrect Operation and Corrosion).
Similar causes for petroleum refinery disruption observed throughout the U.S.

The U.S. Gulf Coast has some of the world's most sophisticated refineries – contains much equipment that can fail

A turnaround is a planned break in production so that maintenance may be performed - most refineries go through a turnaround every three to five years
Outside Force damage is generally the primary cause of disruption to the natural gas pipeline network.

Natural Forces such as flooding and lightning is also a major cause.

Corrosion of natural gas pipelines is less of a concern compared with petroleum pipelines.
Held April 2015 in Denver, CO

Topics Covered:

- Risk frameworks and approaches
- Methods for predicting electrical outages and analyzing petroleum data
- Grid threats and cyber-security considerations
- Demonstrations of “best of breed” risk assessment tools and methods available for States and localities
- Federal risk assessment tools such as DHS’ Threat and Hazard Identification and Risk Assessment (THIRA) and the Regional Resiliency Assessment Program (RRAP)
- Facilitated open discussion among attendees regarding needs and challenges for State-level energy risk assessment
Key Takeaways:

- Better detail, resolution, and access to data, definitions, and tools is needed
- Better collaboration and information sharing is needed
- Resources are scarce with which to implement risk assessment
- More case studies and real-world examples are needed
- More risk assessment education and training opportunities are needed
- Greater communication of risk between stakeholders and decision makers and the public is needed

http://www.naseo.org/risk-assessment-workshop
**NEXT STEPS**

- Organize additional webinars and presentations for State Energy Risk Assessment Working Group and N-group members
- Provide additional risk assessment resources and information to stakeholders based on feedback provided at workshop
- Develop a Risk Tool Kit
- Engage energy infrastructure decision makers more directly and help facilitate risk communications among policy makers, State energy offices, utility commissions, and emergency management/homeland security agencies.
- Continued engagement with respective energy infrastructure stakeholders
What are the biggest challenges to protecting energy infrastructure in your State?

What infrastructure issues are of highest priority in your State?
  - How was it determined to make them high priority?

How has risk assessment been utilized in your State?

Is consideration of risk used when making decisions on energy infrastructure protection and resilience in your State?

What would be most helpful to legislators, in your State, to increase awareness of risk assessment considerations relating to energy infrastructure?
THANK YOU!

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