NASEO
National Association of State Energy Officials

# Energy Assurance

## Energy Assurance and Interdependency Workshop

**Fairmont Hotel, Washington D.C. ♦ December 2-3, 2013**

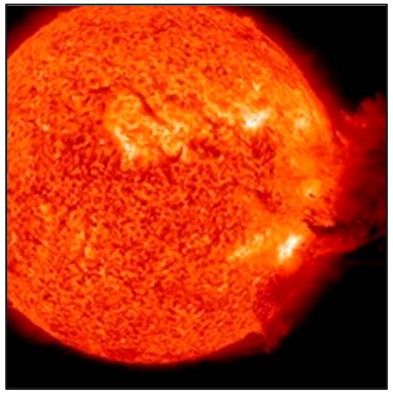
Jeffrey R. Pillon, Director, Energy Assurance Programs
National Association of State Energy Officials

# *Energy Assurance is the Capability to:*

- **Plan and Respond** to events that disrupt energy supply and assuring a rapid return to normal conditions. This is a coordinated effort involving the private energy sector's response, augmented by Local, State and Federal governments as needed; and

- **Mitigate Risks** through policies, programs and investments that provide for a more secure and resilient energy infrastructure that also reduces interdependencies impacts.
  - *Where risk is a function of consequences, vulnerabilities and threats.*



# State & Local Energy Assurance Program

- **ARRA Grant Awards (issued in 2009 and 2010) to 48 States, 2 Territories, 43 Cities**

- **Activities:**
  - Develop new or update existing State Energy Assurance Plans
  - Create State-level expertise on Smart Grid systems, cyber security, interdependencies, and communications
  - Develop processes for tracking energy supply disruptions
  - Conduct energy emergency exercises
  - Revise State policies, procedures and practices

- **Benefits for States and Cities:**
  - New or updated energy assurance plans
  - Improved coordination across State agencies, among States, and regions
  - Improved recovery and restoration capabilities and response times

http://energy.gov/oe/services/energy-assurance/emergency-preparedness/state-and-local-energy-assurance-planning

# *Energy Assurance Plans*

## *Common planning elements*

- Description of energy sources, infrastructure, distribution, system capacity, utilization, flows and end uses
- Organizational roles, responsibilities and legal authorities
- Emergency communications procedures (internal and external)
- Methods for tracking supply disruption and historical events
- Contingency plans for responding to petroleum, natural gas and electrical shortages
- Energy Infrastructure risk and vulnerability assessments
- Policies, programs and regulations that contribute to the security and resiliency of energy infrastructure and reduce risks

# *Consequence*

- Consequence analysis should address both direct and indirect effects of any hazards including: natural disaster, infrastructure failure, pandemic, cyber or terrorist attack or other disruptive events.
- Under the National Infrastructure Protection Plan, the U.S. Department of Homeland Security works with Sector Specific Agencies and security partners to examine the inherent characteristics of assets, systems, or networks to identify "worst-case" consequences.
- Consequences for the national-level comparative risk assessment can be divided into four main categories:
  - Human impact, fatalities and injuries
  - Economic impacts, primary/secondary
  - Impact on public confidence
  - Impact on government capability

Coffeyville Refinery Kansas July 2007

# *Examples of Risk Management for Cybersecurity*

*Risk is a function of:*

**[Consequence x Vulnerability x Threat]**

- Loss of revenue
- Economic losses
- Public safety
- Physical damage
- Loss of confidence
- Decline in stock value
- Interdependencies operational (customers/suppliers)
- Interdependencies cascading, etc.

- Modification of data in transit
- Zero day vulnerability exploits
- Denial of service attacks
- Theft of information
- Spoofing
- Sniffing
- Human engineering

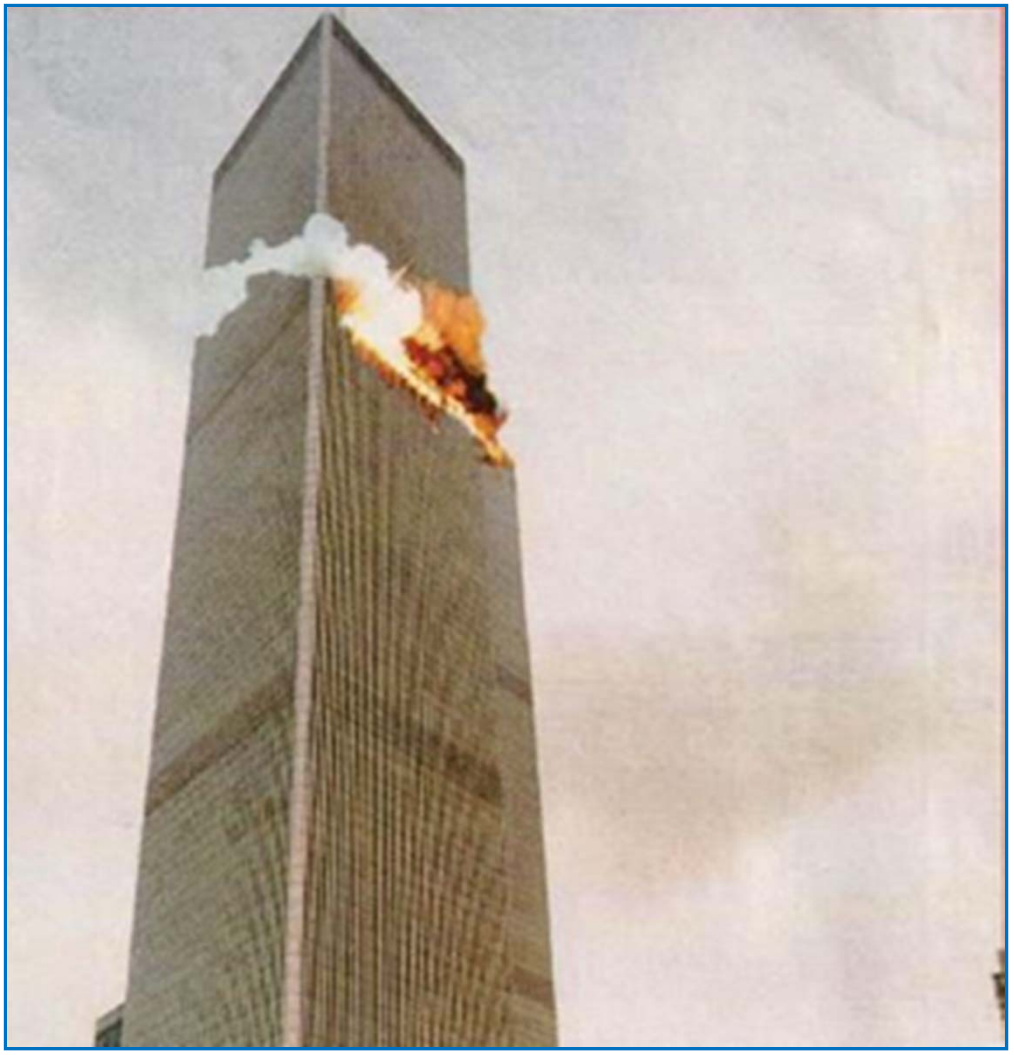
- User Errors
- Equipment Failure
- Malicious Actors
- Viruses/worms
- Natural hazards
  - Hurricanes
  - Floods
  - Sever Storms
  - Earthquakes
  - Solar Flairs
  - Pandemics
  - Etc.

***For those who said we could have never envisioned the events of 9/11***

The World Trade Center (WTC) suffered it first serious bomb damage on February 26, 1993.

This fictional photo was published in a magazine in December 1993 and seems to show an explosion that might be caused by an aircraft flying into the WTC.

After the 1993 bombing the Port Authority spent $100 million to make physical, structural, and technological improvement to the WTC and enhanced its fire safety plan.



# *Why Invest in Reliability and Resilience?*

## To reduce human and economic consequences

- Weather-related power outages are estimated to have cost the U.S. economy an inflation-adjusted annual average of $18 - $33 billion.
- Since 1980, the United States has sustained 144 weather disasters whose damage costs reached, or exceeded, $1 billion and seven of the ten costliest storms in U.S. history occurred between 2004 and 2012.
- Annual costs fluctuate significantly and are greatest in the years of major storms such as Hurricane Ike in 2008, a year in which cost estimates range from $40 - $75 billion, and Superstorm Sandy in 2012, a year in which cost estimates range from $27 - $52 billion.

*The Economic Benefits of Increasing Electric Grid Resilience to Weather Outages*, The White House Council of Economic Advisers and the U.S. Department of Energy, August 12, 2013

http://energy.gov/articles/white-house-council-economic-advisers-and-energy-department-release-new-report-resiliency

# Private Sector Investments in Energy Infrastructure


*Enbridge Pipeline Replacement Project*
*$1.6 billion in Indiana and Michigan*

*Marathon Refinery, Detroit MI*
*Expanded Capacity at a cost of $2.2 billion in 2012*

# *Interdependencies in State Energy Assurance Plans*

- Final State Energy Assurance Plans have been submitted to the U.S. Department of Energy.
- NASEO assisted States in developing their plans by providing guides and frameworks, conducted webinars and conference call on various planning issues, provided direct technical assistance and reviewed plans to identify well developed, unique and innovative planning elements.
- 80% of the State Energy Assurance Plans reviewed to date have references the importance of considering interdependencies in the planning process and response plans.
- Nine of the plans had specific sections or discussions on interdependencies and relationships. Other plans discussed interdependencies as a reoccurring theme that appeared in various sections of the plan.
- The discussion of interdependencies was frequently associated with the analysis of risk and vulnerabilities which is important to both energy emergency response plans and plans for investments in a secure and resilient energy infrastructure.

# *North Carolina Energy Assurance Plan (August 2013)*

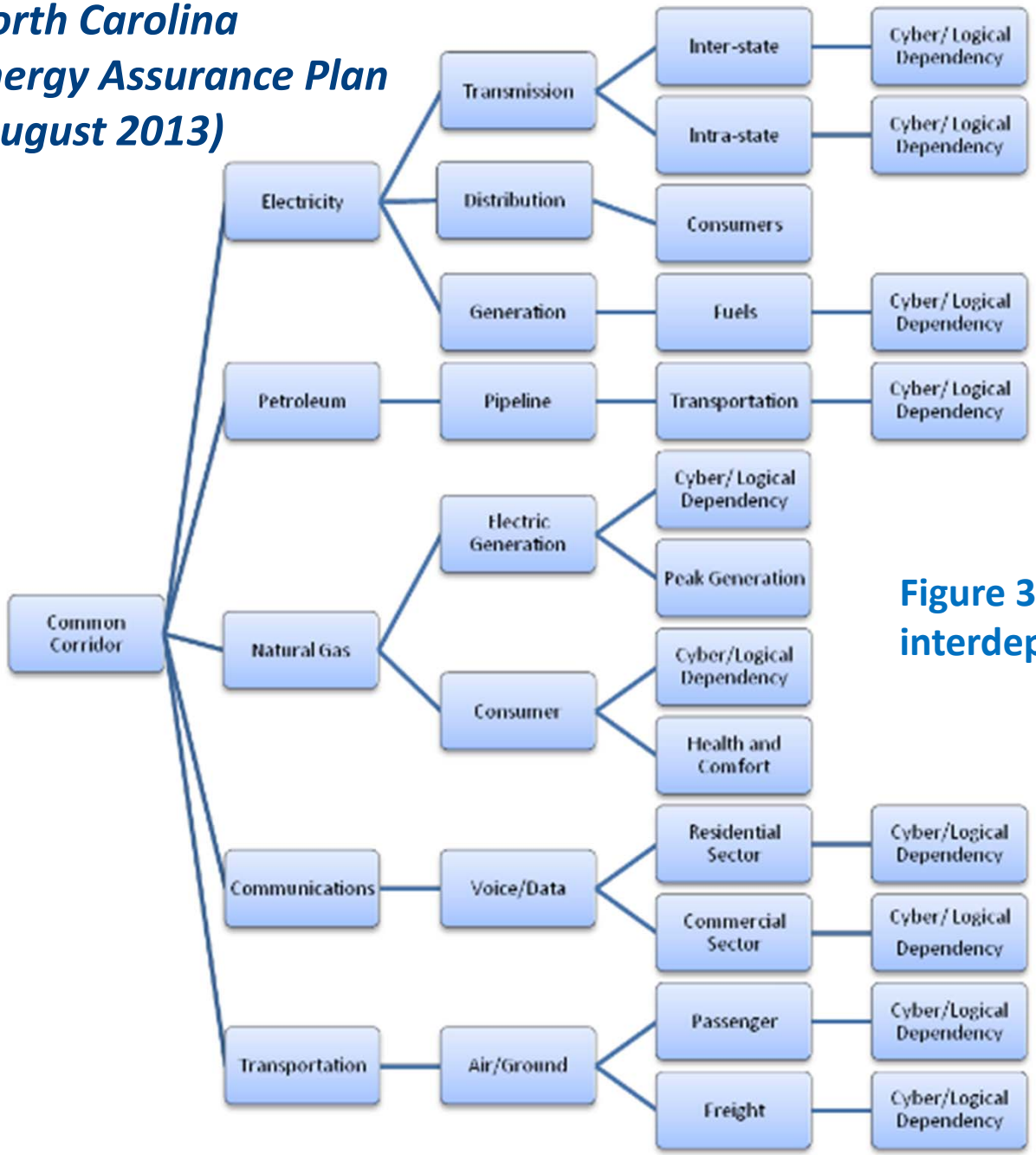
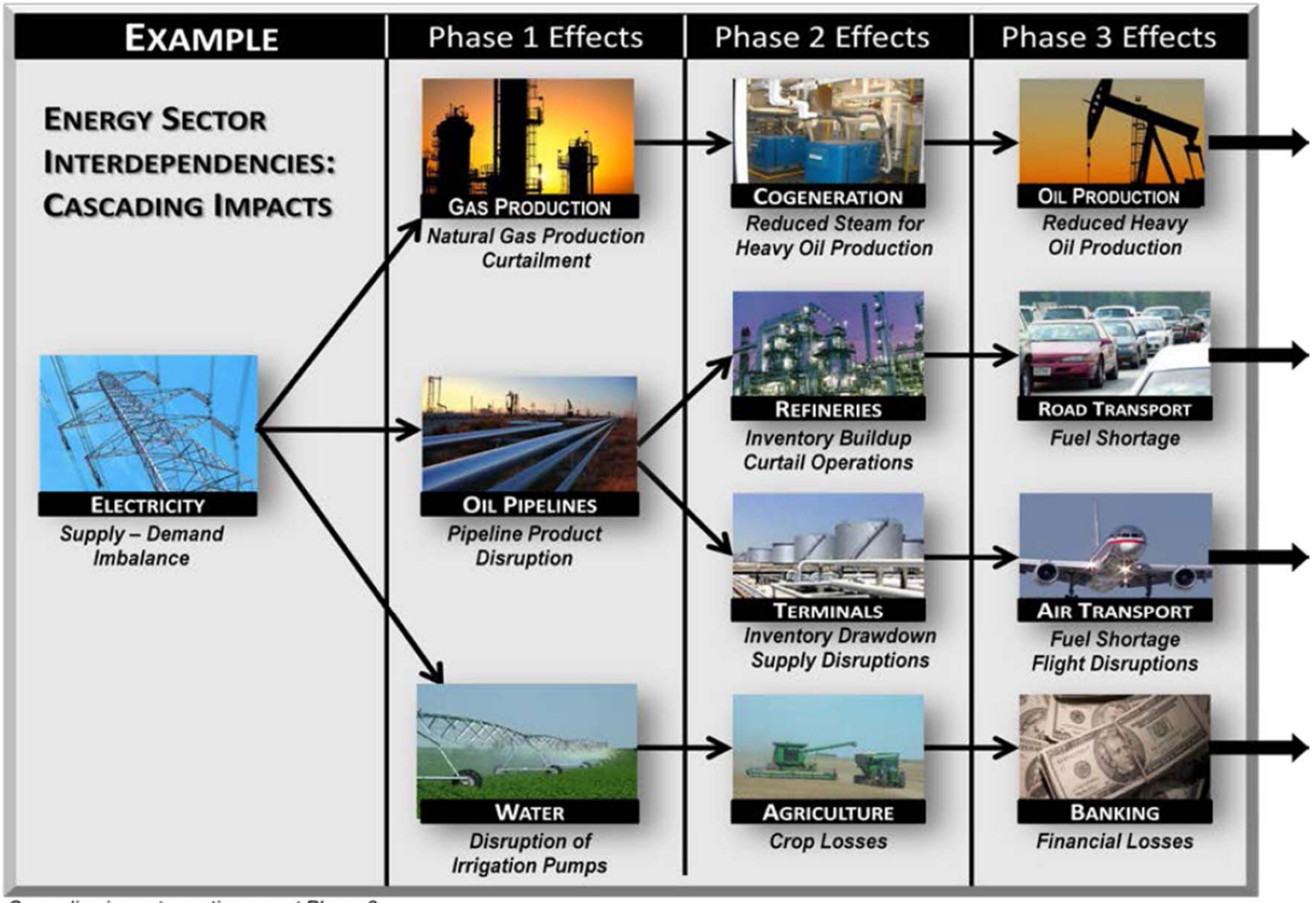



**Figure 3-1 Geographic interdependencies**

# Oregon State Energy Assurance Plan (August 2012)

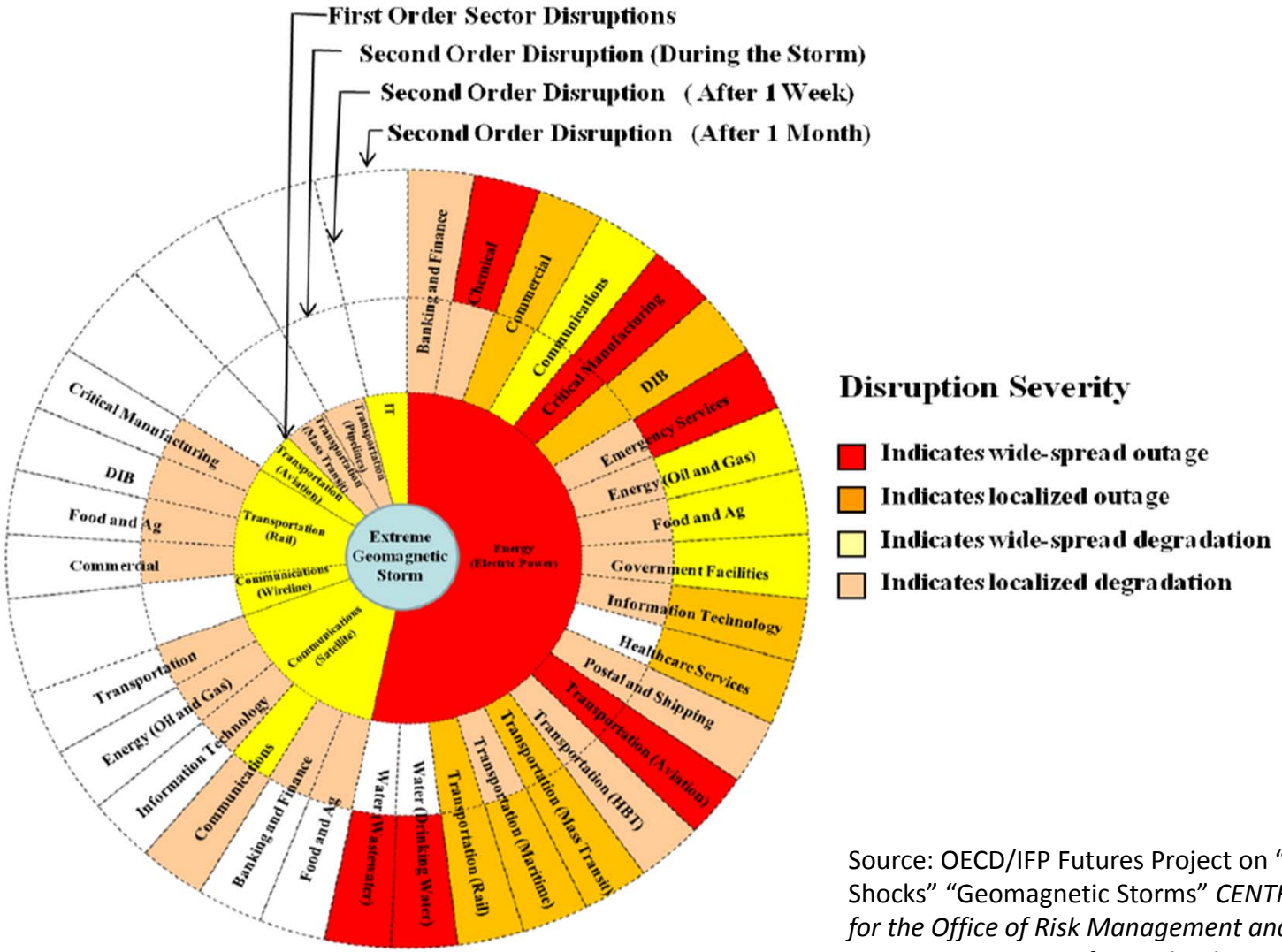
FIGURE 5




*Cascading impacts continue past Phase 3.*

# *Colorado Energy Assurance Emergency Plan (June 2012)*

## Figure IX-52 Power Interdependencies with Other Critical Infrastructures




Source: OECD/IFP Futures Project on "Future Global Shocks" "Geomagnetic Storms" *CENTRA Technology, Inc., for the Office of Risk Management and Analysis, United States Department of Homeland Security.* http://www.oecd.org/governance/risk/46891645.pdf

# *Earthquake Risk Study for Oregon's Critical Energy Infrastructure Hub*

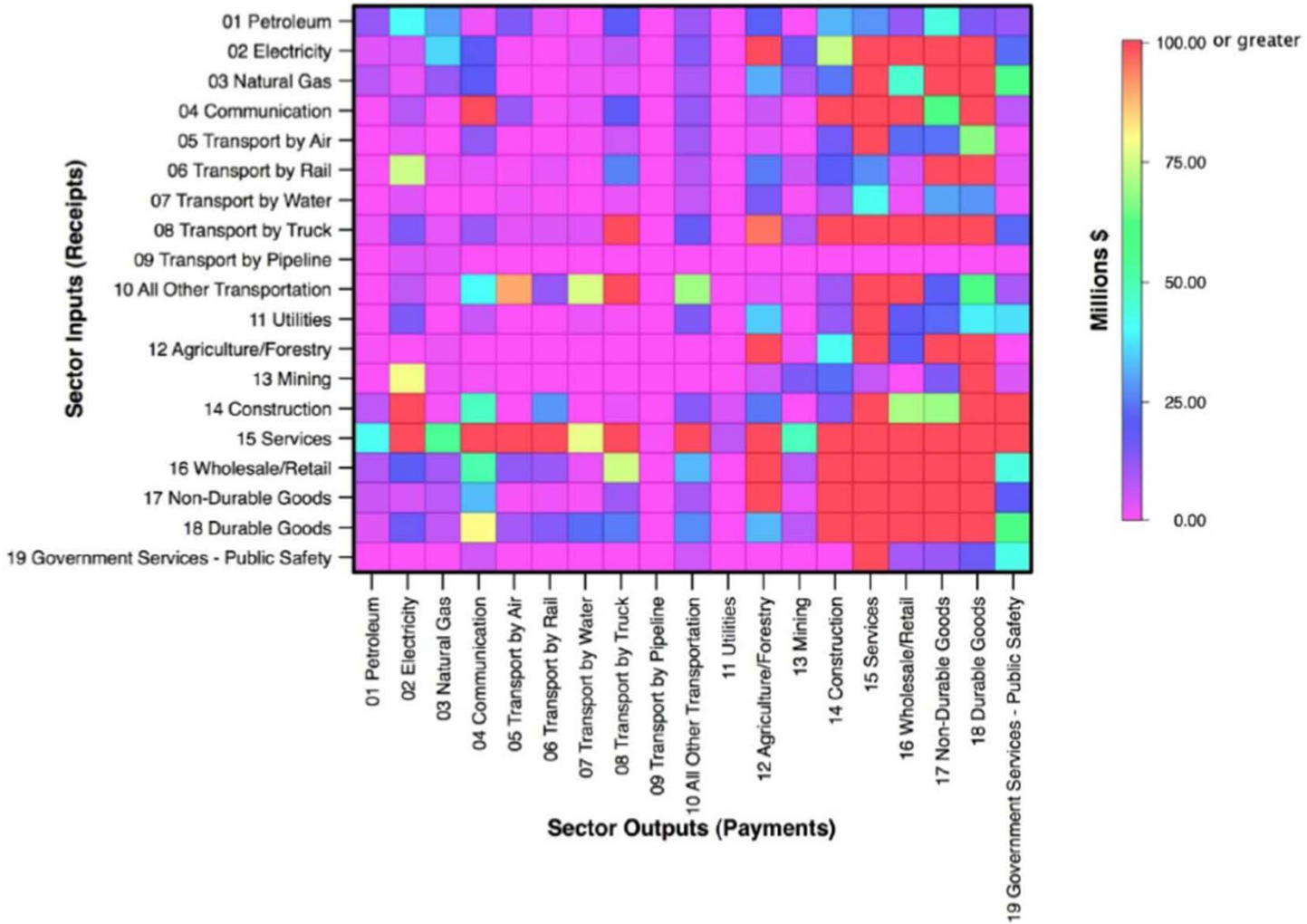
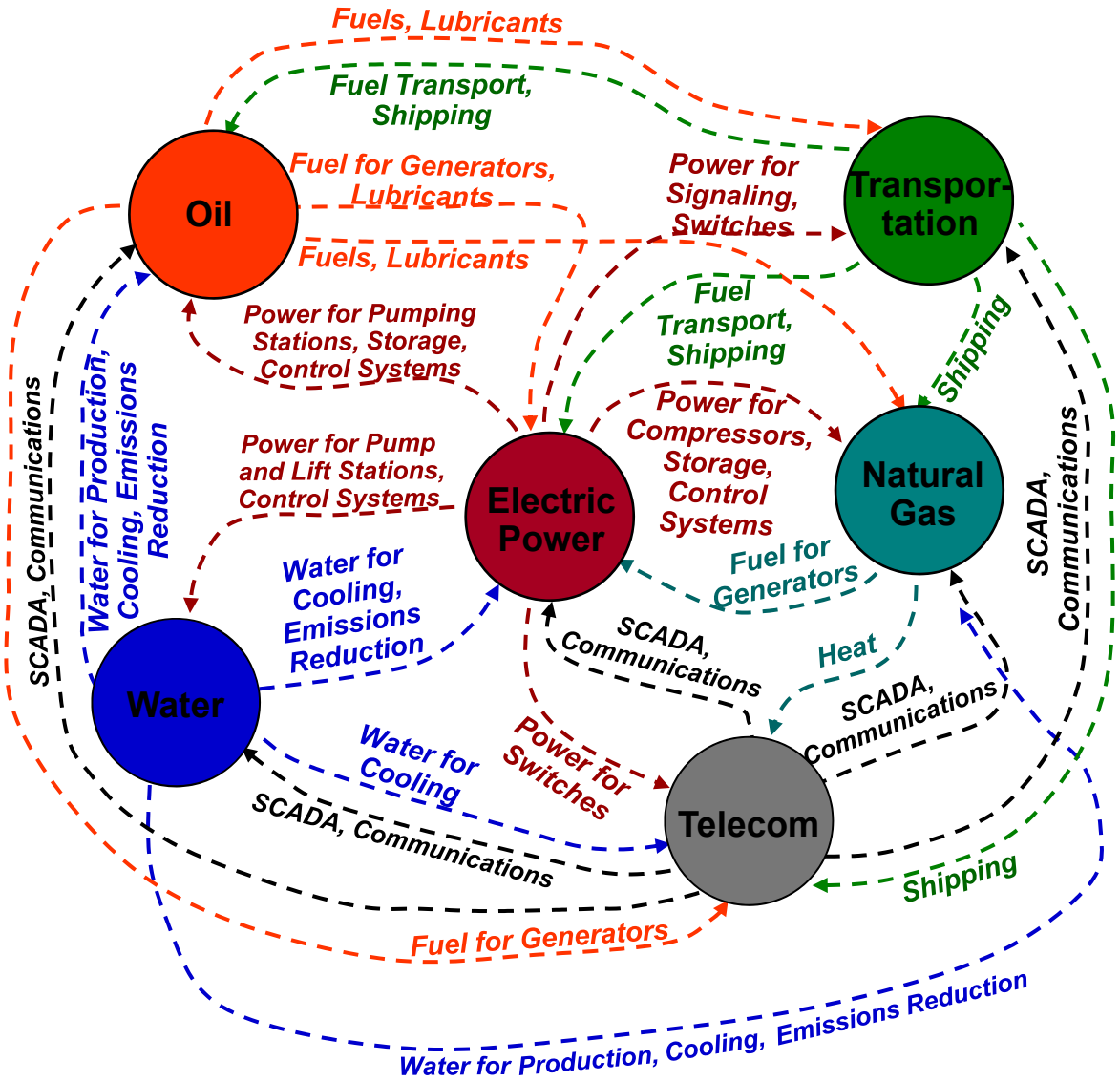
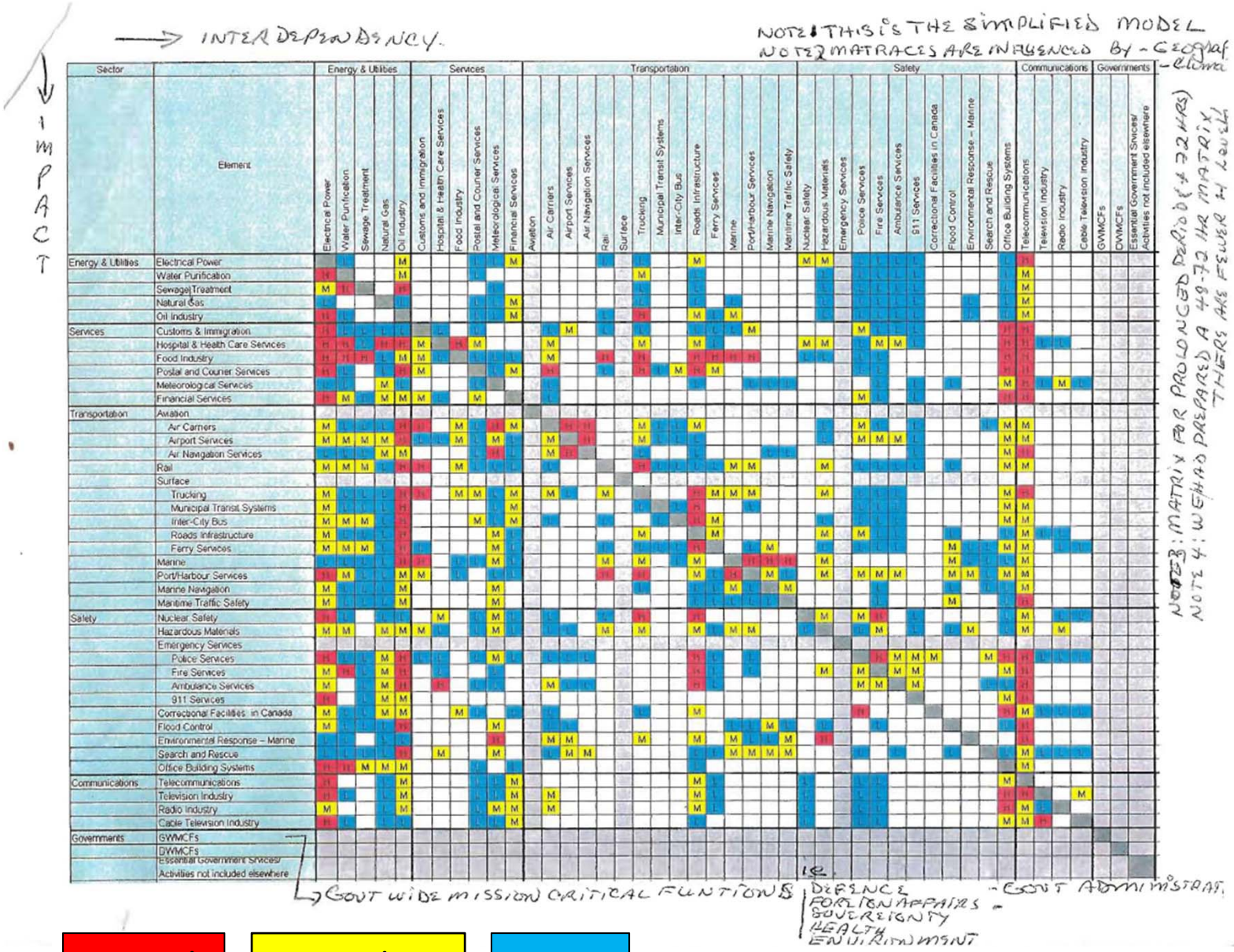



Figure A1. Visual representation of the input-output table of Table A2. Hotter colors (red, orange) indicate higher dollar value. Red indicates $100 million or greater.

# Texas Energy Assurance Plan (November 2012)






H = High

M=Medium

L= Low

# *Resiliency and Risk Reduction*

## How do we address interdependencies?

- By retaining the institutional knowledge and capability to identify interdependencies within the energy sector and across the other sectors and recognize how they change over time.
- By assuring effective and rapid emergency response plans that help to more quickly return to normal or near normal conditions and that in turn reduces consequences both human and economic impacts. Understanding Interdependencies allows for better sequencing of priorities restoration efforts.
- By make longer term energy infrastructure investments, and pursuing policies and programs that enhances resiliency, and security and mitigate risks and potentially provide additional benefits.

# *National Infrastructure Advisory Council Report on Regional Resilience*

## Recommendations

1. Form partnerships with **senior executives** from the lifeline sectors.
2. Identify or develop **regional, public-private, cross-sector partnerships**, led by senior executives.
3. Designate **the energy, communications, water, and transportation sectors as lifeline sectors** and direct all agencies to recognize the priority of these sectors and the individuality of regions.
4. Integrate social media into public alert and warning systems and work with state and local government partners to **develop social media training programs and information sharing capabilities to inform response**.
5. Develop **solutions to site access, waiver, and permit barriers** during disaster response.
6. Create a **strong value proposition for investment in resilient lifeline infrastructures** and accelerate the adoption of innovative technologies in major infrastructure projects.

*Source: Strengthening Regional Resilience through National, Regional, and Sector Partnerships,* Report and Recommendations, November 21, 2013

On the microscale, making an up-front investment in safeguards that mitigate risk and consequences is far more cost-effective than paying for response and recovery after a foreseeable hazard. On the macro scale, a society's level of resilience contributes to its global competitiveness."

**—Dr. Stephen Flynn**

Founding co-director of the George J. Kostas Research Institute for Homeland Security at Northeastern University (Flynn and Burke 2011)

# Thank you!

Jeff Pillon, Director, Energy Assurance Program
jpillon@naseo.org * Phone 517-580-7626

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