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NASEO
National Association of State Energy Officials

Petroleum Shortage Emergency Response, Fuel Diversity, and Planning

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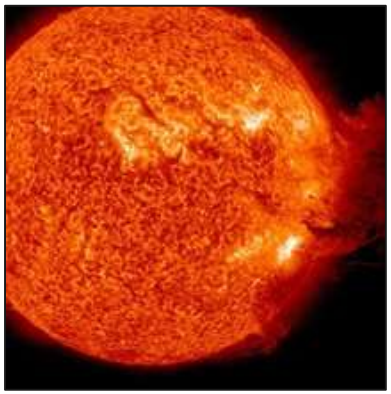
Preparedness and Resiliency

- **Plan and Respond** to events that disrupt energy supply and assure a rapid return to normal conditions. This is a coordinated effort involving the private energy sector's response, augmented by local, state and federal government as needed.

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



Energy Assurance Planning Framework

- Executive Summary and Management Guide to the Plan
- Introduction and purpose of the document(s)
- Summary description of the state's energy used and expenditures
- Description of events that have caused energy shortages, the state's response, and the risk of future events
- State agencies and their roles and responsibilities (include organizational charts) and relationship with federal, regional and local authorities
- Linkage and coordination with:
  - other states and federal response plans
  - Local government plans
  - private sector/energy sector plans

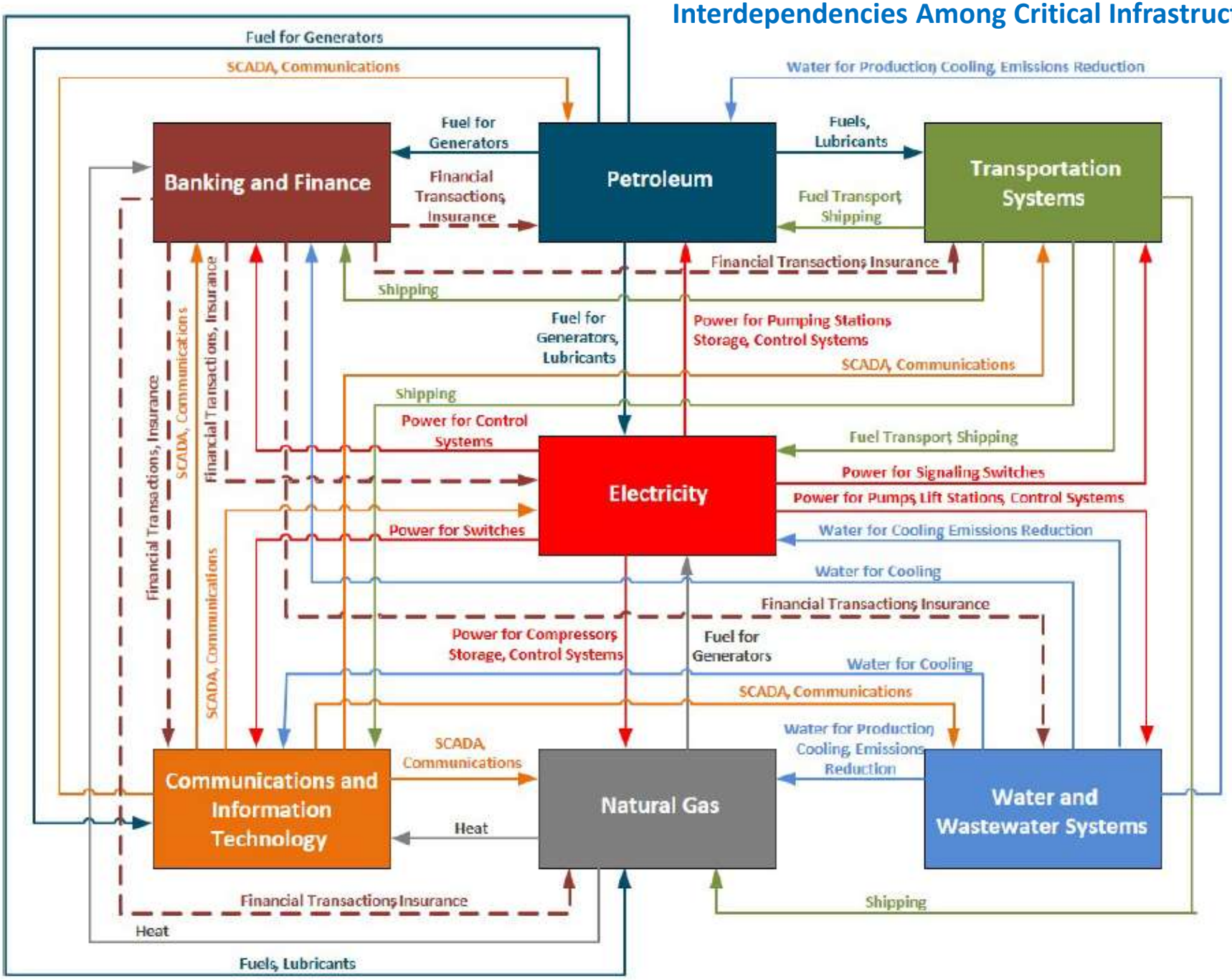
Energy Assurance Planning Framework (cont'd)

- **Energy Emergency Response Plans**
  - Natural gas including local distribution companies (LDC) and interstate pipelines
  - Electricity including LDC, transmission, independent system operators, and energy resources used to generate electricity
  - Petroleum for transportation and heating (include ethanol, biodiesel, and other alternative fuels) – *Note this might be a separate supporting document*

- **State Plan for Enhancing Resilience and Protecting Critical Energy Infrastructure**
  - Energy infrastructure risk assessments
  - Mitigating vulnerabilities, threats and hazards and enhancing resiliency

The risk of a disruption due to a cyber-attack should be addressed as part of the plan for each energy resource and sector or may be part of a separate planning document

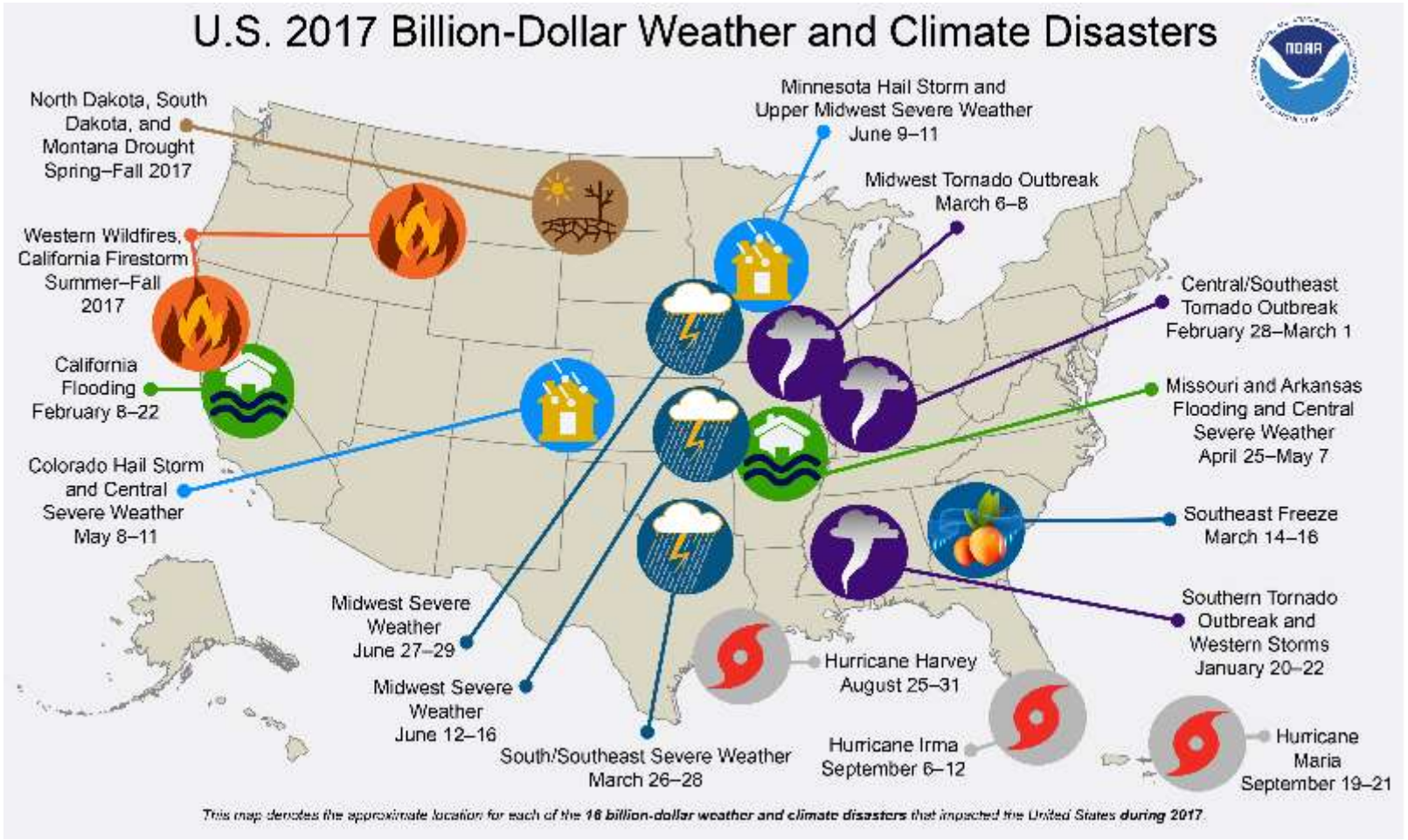
Interdependencies Among Critical Infrastructure



Risks to the Petroleum and Liquid Fuels Supply Sector

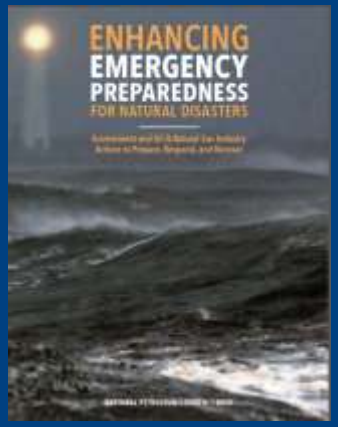
- **Clear Path IV Exercise held April 2016 in Portland, Oregon** examined the consequences and response to a major earthquake caused by the Cascadia subduction zone and resulting tsunami. This would have catastrophic impacts on petroleum infrastructure in Oregon and Washington State.
- **Western Regional Coordination Meeting held September 2016 in Sacramento, California** explored contingencies for managing petroleum shortages. Workshop discussions identified the importance of developing plans that could be implemented in a regionally consistent way to facilitate response and implementation.
- **FEMA workshops held Summer 2016 in the Midwest on a long-term power outage** allowed states to examine the consequences of a power outage that could more than a month. The availability of petroleum supplies for response and recovery was a concern of participants.
- **Liberty Eclipse Exercise held December 2016 in Newport, Rhode Island** examined the impact of a cyberattack that caused a large-scale power outage along the East Coast. Under the exercise scenario, the power outage persisted even when steps had been taken that were believed to have restored power. Under this scenario many East Coast refineries shut down, and in areas without power, access to fuel became limited.
- **Clear Path V Exercise held June 2017 in Houston, Texas** explored the impact of a Category 3 Hurricane making land fall near Houston. All of the refineries in Houston, Galveston, and Port Arthur shut down before land fall and following the storm 3.8 million customers were with out power in Texas and Louisiana.
- **Hurricanes Harvey, Irma, and Maria in September 2017!**

In 2017, there were 16 weather disasters in the U.S. that cost of over $300 billion dollars and caused 362 deaths



Source: National Oceanic and Atmospheric Administration's National Centers for Environmental Information. U.S. Billion-Dollar Weather and Climate Disasters: Overview. https://www.ncdc.noaa.gov/billions/. Accessed on January 29, 2018.

"States should increase engagement with the oil and natural gas industry in their energy assurance plans, and industry members should assist the states in such efforts." This point was echoed in the NPC 2016 Emergency Preparedness Addendum. *The NASEO Guidance should further this dialogue between states and petroleum industry partners*.



Source: National Petroleum Council (NPC) Report Emergency Planning and Preparedness: Enhancing Emergency Preparedness for Natural Disasters

See: http://www.npc.org/reports/epandp.html

Petroleum Shortage Response

Gasoline, Diesel Fuel, #2 Heating Oil, Propane, Ethanol, Biodiesel, Other

- **Vital first steps in the decision-making**
  - Assess the consequences, severity and duration of the disruption to determine the appropriate level of response
  - Know location, capacity and throughput of petroleum infrastructure and points of contact in each company
  - Monitor petroleum supply, demand and prices
  - Take preparation steps in advance of emergencies that can be anticipated (e.g. hurricanes) and which allows time resupply plans to be put in place so that states are being proactive rather than reactive
  - In a developing or worsening situation, it may require an ad hoc response to events and problems from local government, energy consumer or suppliers. The State Emergency Operations Center (SEOC) and Emergency Support Function (ESF) 12 (Energy), if activated can response to these types of events on an as-needed basis

- **Taking Actions: Specific response programs and measures**
  - Assure essential public safety needs are met working with the petroleum industry
  - Remove regulatory barriers to fuel resupply (waivers)
  - Inform the public on the severity and extent of the damage and how to moderate demand and conserve supply as needed through public information outreach
  - Respond to specific serious consequences and interdependencies impacts

Petroleum Shortage Response Plans Structure and Contents

A. Dates and Linkages to Other Plans
B. Organizational Changes
C. Historical Petroleum Shortages and Local, State, and Federal Responses
D. State Agencies' Roles and Responsibilities and Concept of Operations Plans

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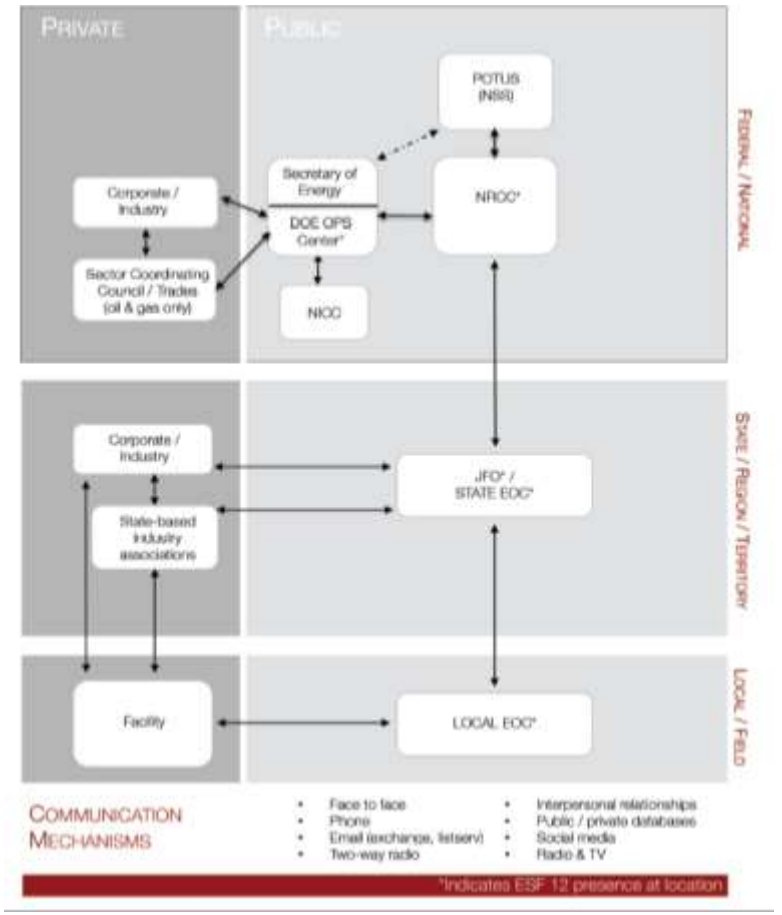
E. Coordination and Information Sharing Mechanisms (Private sector and internal and external government and energy emergency assurance coordinators)
F. State Petroleum Infrastructure and Supply Chains
G. Data and Methods for Monitoring Petroleum Supply, Demand, and Prices
H. State Petroleum Risk Assessments (Vulnerabilities, Consequences, Threats)

Information Sharing and State Energy Emergency Assurance Coordinators (EEAC)

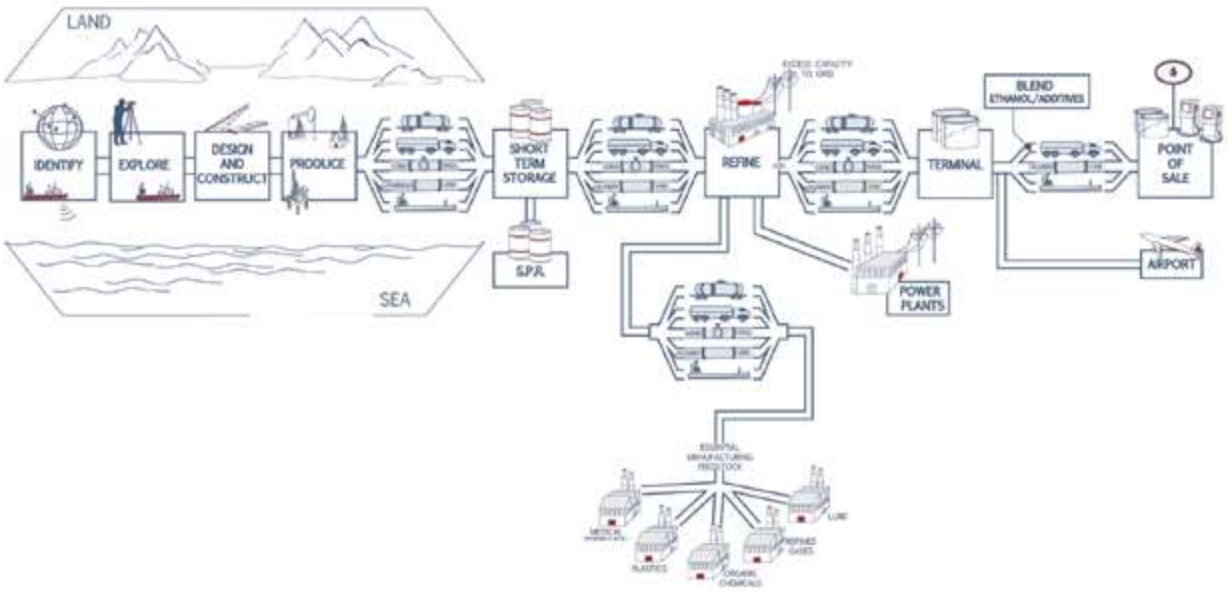
- Points of contact for states, DOE and industry in event of an energy emergency to share information
- Provide assessment, notification, news and updates on actions taken and situation reporting
- Primary and secondary contact for each sector (petroleum, electricity, natural gas) from each state
- Established in 1996 and an updated and MOU was signed by the Secretary of Energy in February 2016 and formally expanded to include NASEO, NARUC, NGA and NEMA

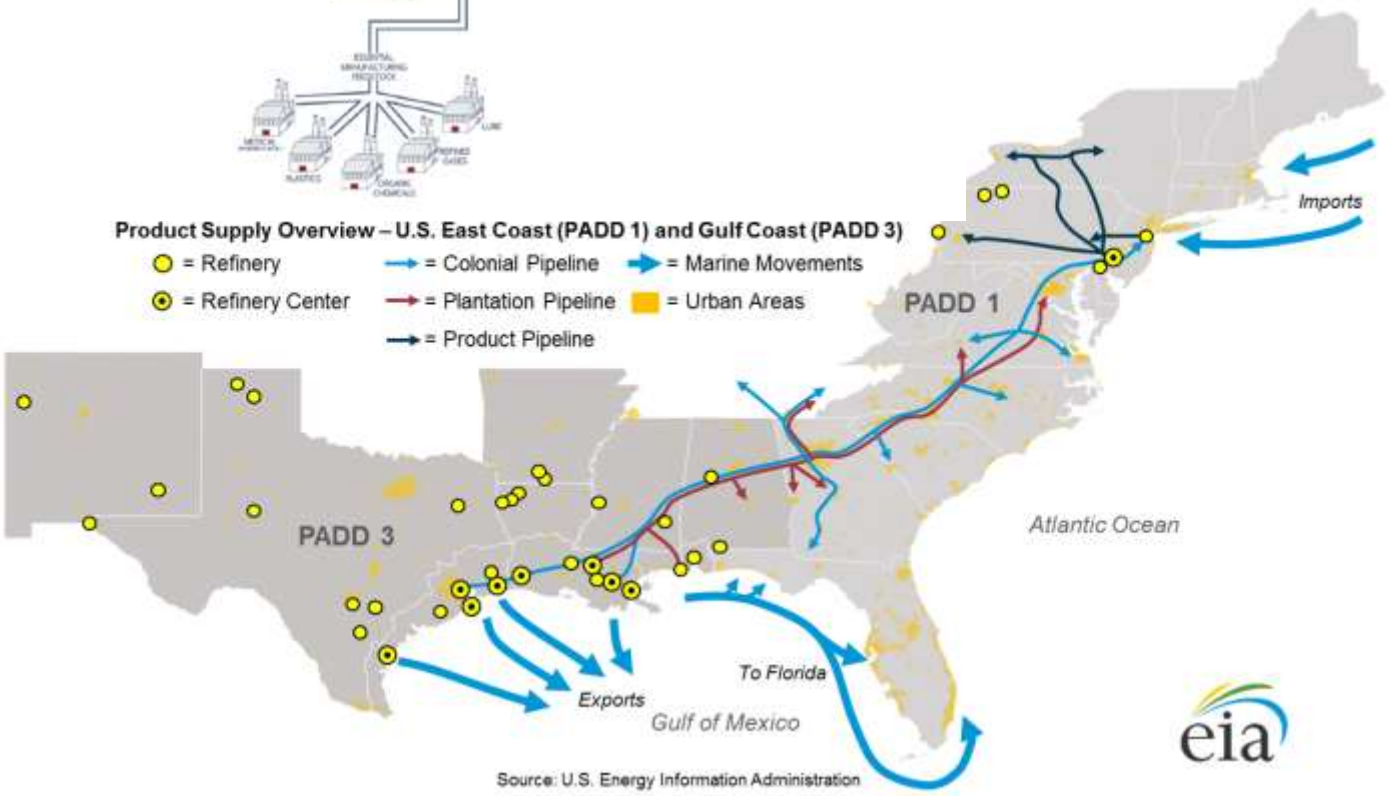
For more information see:
www.naseo.org/eeac

FIGURE. 3 ESF 12 OIL AND GAS INFORMATION FLOW: INDUSTRY PERSPECTIVE



Understanding State and Regional Petroleum Infrastructure and Supply Chains is Essential



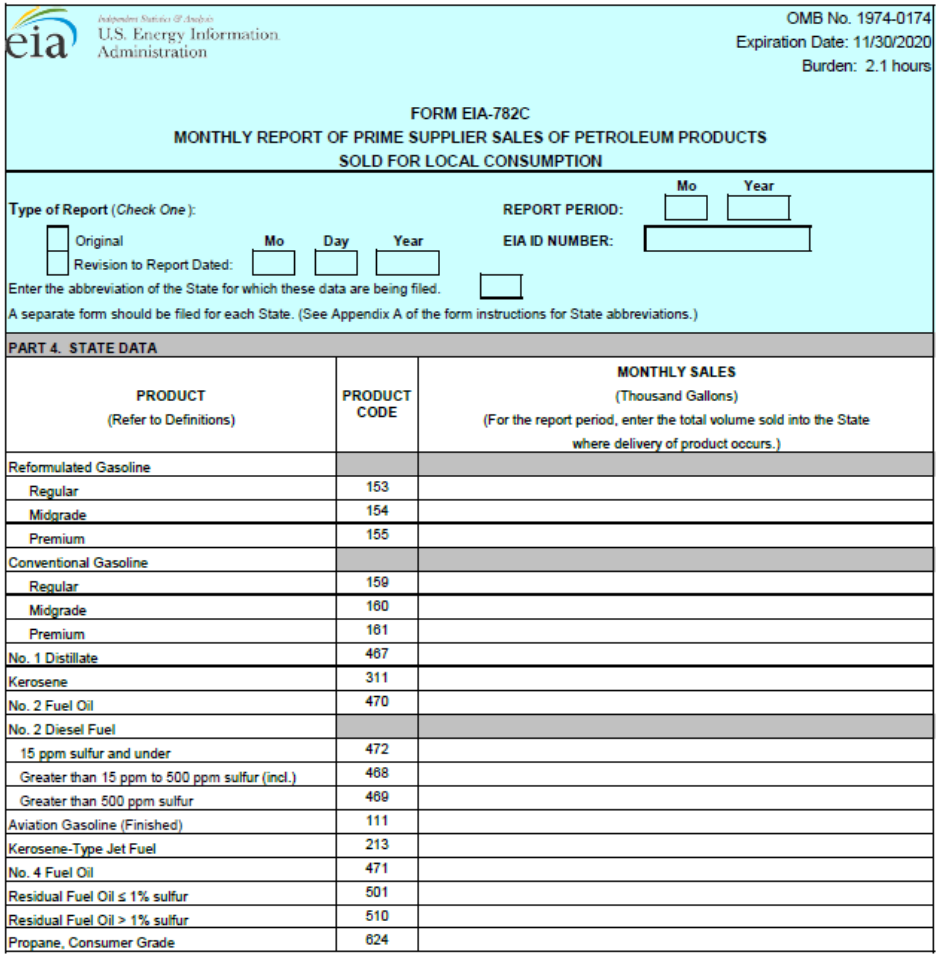


Monitoring Petroleum Supply, Demand, and Prices

State Heating Oil and Propane Program
Heating Oil 22 states Propane 38 states

You need to keep on top of what is going on in petroleum markets

Prime Suppliers Monthly Report EIA 782c



eia Independent Statistics & Analysis
U.S. Energy Information Administration

OMB No. 1974-0174
Expiration Date: 11/30/2020
Burden: 2.1 hours

FORM EIA-782C
MONTHLY REPORT OF PRIME SUPPLIER SALES OF PETROLEUM PRODUCTS SOLD FOR LOCAL CONSUMPTION

Type of Report (*Check One*): ☐ Original ☐ Revision to Report Dated: Mo Day Year

REPORT PERIOD: Mo Year

EIA ID NUMBER:

Enter the abbreviation of the State for which these data are being filed. ☐

A separate form should be filed for each State. (See Appendix A of the form instructions for State abbreviations.)

PART 4. STATE DATA

PRODUCT (Refer to Definitions)	PRODUCT CODE	MONTHLY SALES (Thousand Gallons) (For the report period, enter the total volume sold into the State where delivery of product occurs.)
Reformulated Gasoline		
Regular	153	
Midgrade	154	
Premium	155	
Conventional Gasoline		
Regular	159	
Midgrade	160	
Premium	161	
No. 1 Distillate	467	
Kerosene	311	
No. 2 Fuel Oil	470	
No. 2 Diesel Fuel		
15 ppm sulfur and under	472	
Greater than 15 ppm to 500 ppm sulfur (incl.)	468	
Greater than 500 ppm sulfur	469	
Aviation Gasoline (Finished)	111	
Kerosene-Type Jet Fuel	213	
No. 4 Fuel Oil	471	
Residual Fuel Oil ≤ 1% sulfur	501	
Residual Fuel Oil > 1% sulfur	510	
Propane, Consumer Grade	624	

Form Instructions

- The U.S. Energy Information Administration (EIA) Form EIA-782C, "Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption," is used to collect data on the sales of selected petroleum products by prime suppliers delivered into States for local consumption. The data are to analyze, model and forecast petroleum product consumption by State.

- The State Energy Offices are vitally interested in receiving information identical to that contained on the EIA-782C. To ensure consistent reporting, respondents may provide a duplicate of each Form EIA-782C directly to the appropriate State office. Information provided to State Energy Offices is not subject to federal regulations governing disclosure of company level data described in Section 8. Contact your State Energy Office for details on their data confidentiality policies and regulations.

State Petroleum Risk Assessments

1. Consequences

- If something happens, what are the human and economic impacts to society?

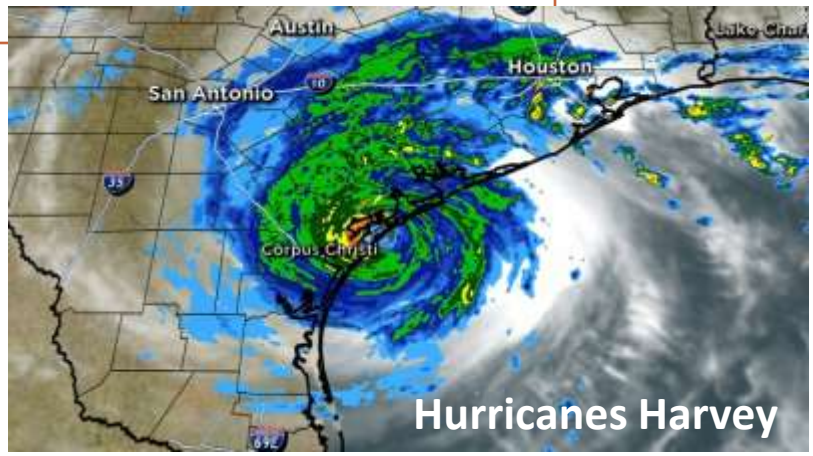
2. Threats/Hazards

- What can happen?
- What is the frequency/probability?

3. Vulnerabilities

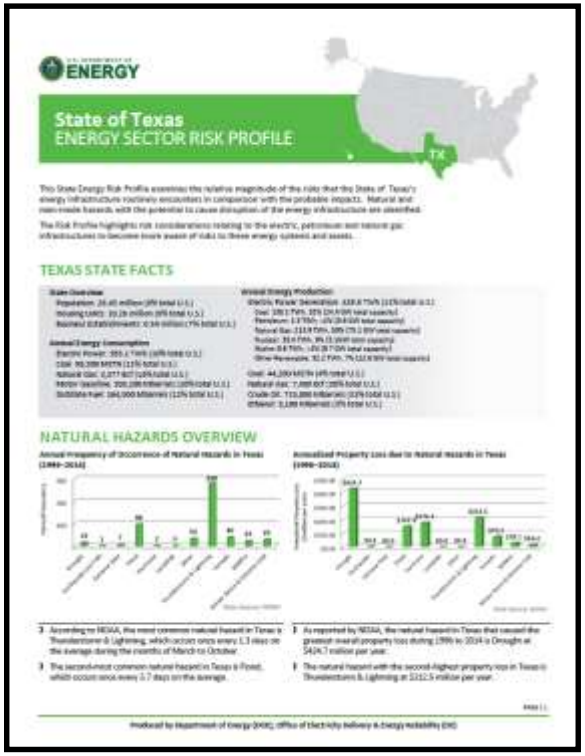
- What are the weak links in the energy supply chain and infrastructure?
- Are components antiquated/old and failure prone? Are there infrastructure co-locations or bottlenecks?
- Why is it critical?

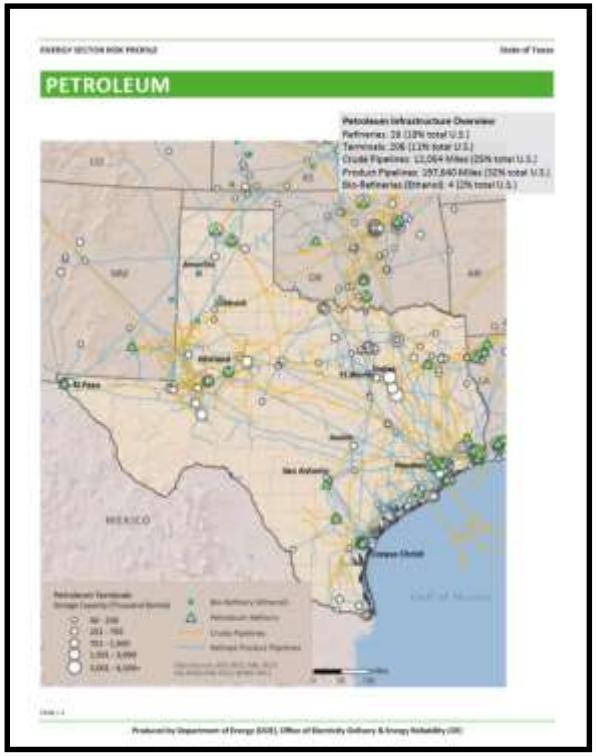
Hurricanes Harvey, Irma, and Maria total Cost = $265 Billion and 251 deaths

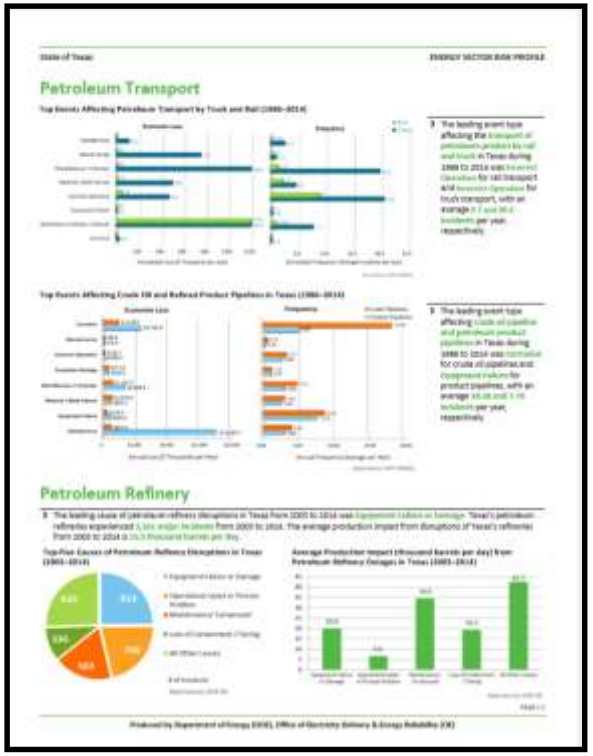


State Energy Risk Profiles

- The profiles examine the relative magnitude of the risks that each state's energy infrastructure routinely encounters in comparison with the probable impacts. The profiles address natural and man-made hazards with the potential to cause disruption of the electric, petroleum, and natural gas infrastructures.







Developed by the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability (http://www.energy.gov/oe/state-energy-risk-assessment-initiative-state-energy-risk-profiles)

Response Programs and Measures

Tools in the Tool Box

- The guidance on specific actions are grouped into Programs and Measures and further broken down by state and federal/state.
  - Program guidance is more specific and detailed and includes a consistent format using the NASEO Planning Framework. The intent of the action, legal authorities, implementation steps, draft executive orders ,and in some cases, draft rules and forms are provided. Programs are also more common actions seen in many state plans but lack the detail.
  - Measures are not described in the same level of detail as programs. If a state wishes to further develop the actions identified as measures to include in their plan it is suggested they be developed in the same level of detail as seen in the program descriptions .
- These action are all very situational dependent and should only be used to address the specific conditions they are designed to address.
- Some programs and measures should only be used in very consequential, large scale disasters and events that would take longer to recover from. These are either actions to help the petroleum sector facilitate its responses or actions that would be used when the petroleum sector asked for governmental assistance.

Federal/State Response Programs

Waivers of the FMCSA Safety Regulations	Emergency action under the Federal Motor Carrier Safety Regulations (FMCSR) is automatically triggered under a declared state emergency. This waives the FMCSA safety rules which include limit on the number of hours a driver can operate. This allows drivers to make more fuel deliveries and fuel can be transported over longer distances to help elevate the shortage.
Waivers of Environmental Fuel Specifications	The U.S. Environmental Protection Agency (EPA) and most states have requirements on gasoline and diesel fuel specifications that are designed to limit emissions. Waiving certain fuel specifications can increase overall supply and will allow supplies to be distributed in areas where the product may not normally be used.
Use of Alternative Fuel Vehicles Programs	States and local governments that have a significant number of alternative fuel vehicles (AFVs) in their fleets may have an opportunity to maximize the use of these vehicles during shortages of gasoline and diesel fuel. States could consider a number of options around prioritizing AFV usage and alternative fuel procurement during petroleum shortages.
Minimum Purchase and Odd-Even Purchase Programs	A minimum purchase plan is designed to help reduce long lines at retail gas stations, and typically involve requiring motorists to purchase a minimum amount of gasoline or diesel. This can be done either as a voluntary or mandatory measure. As an alternative or in addition, an odd-even plan could be implemented, where motorists can purchase gas every other day depending on their license plate numbers.
Petroleum Priorities for Essential Services Programs	This priority end-user program would require petroleum suppliers to provide sufficient liquid fuels to meet the needs of critical end-users such as first responders: law enforcement, fire, and emergency medical services, and any other essential service providers determined by the state or other legal authorities. This would only be used in the more serious, longer term shortages.
State Petroleum Set-Aside Programs for Bulk Purchases	State petroleum set-aside programs require each major oil company supplying the state to reserve (set-aside) a fixed percentage of petroleum products that are projected to be delivered to the state for final consumption each month. This set-aside would then be allocated for emergency needs to suppliers and in turn customers in amounts designated by the state agency administering the program. This would only be used in the most serious longer term shortages.

Severity
Less

More

State Measures

State Weight Limits Waivers for Petroleum Tanker Trucks	The maximum gross weight limit that states must enforce on the federal Interstate Highway System is 80,000 pounds, unless a lower weight is derived from the bridge formula, or a higher weight is grandfathered. However, governors under emergency declaration may have the authority to waive weight limits for petroleum tanker trucks. Such measures would only apply on a state-by-state basis, and should trucks have to go out of state for fuel supplies, they would be subject to weight limits in the states through which they would need to pass. The plan should identify ways that relevant stakeholders will receive information about waivers on a timely basis.
Retail Gas Station Priorities for Essential Services	In recent years some state and local governments have become more reliant, or entirely reliant, on retail gas stations to meet their needs. Prioritizing gas station supplies for essential services may help ensure that essential public service needs supplied by retail gas stations can be met during a serious fuel shortage.
Emergency Generators and Transfer Switches for Retail Gas Stations	Several states have implemented programs for ensuring there is adequate gasoline supply along evacuation routes and for response and recovery from power outages. The options typically address either prewiring gas stations to be able to accept generators if there is a power outage or programs that would install on-site generators or provide a cache of generators to deploy to select retail locations.
Contractual Provisions for Fuel Supplies in an Emergency	Prior to any disruption, states may wish to consider training critical user organizations about the issues and techniques related to balancing price and secured contracting, since some organizations opt to reduce the price of fuel through spot contracts instead of relying on a contract, which may leave them vulnerable during shortages when spot-contract vendors are unable to acquire fuel in the market. States may also want to explore developing contracts that have provisions for additional emergency fuel supplies emergencies during a fuel shortage.
Expand State Fuel Storage and Strategic Reserves	A number of states have bulk fuel storage locations that are used to refuel state vehicles. States may wish to consider creating bulk storage locations for petroleum-based fuels, or expanding capacity at existing storage locations to have additional fuel available in case of a shortage. The State of New York has established gasoline and distillate fuel emergency reserves.

Federal Response Measures

- Internal Revenue Service Dyed Diesel Fuel Excise Tax Waiver
- Waivers Jones Act which prohibits any foreign vessels from transporting goods between U.S. ports.
- Federal Energy Regulatory Commission orders directing priority propane and liquid fuels pipeline shipments
- Pipeline and Hazardous Materials Safety Administration special permits to modify regulatory compliance
- Federal Petroleum Product Reserves
  - Northeast Gasoline Supply Reserve – 420 million gallons
  - Northeast Home Heating Oil Reserve – 42 million gallons
- Emergency Fuel from the Defense Logistics Agency

Petroleum Shortage Response Plans

- **Reducing Demand and Conserving Supply**
  - Flexible work schedules and telecommuting
  - Ridesharing/vanpooling programs
  - Increased use of alternative fuel vehicles
  - Programs to increase the use of mass transit
  - Improved vehicle maintenance
  - Public information emergency conservations actions
  - Home energy saving recommendations (propane, fuel oil)
- **Public Information Programs, and the use of social media**

The Benefits of Improved Planning

- Plans which can be implemented more quickly and effectively
- State and private sector coordination is enhanced
- Multi-state coordination and consistency of response actions function better when disasters cross multiple state lines
- Improves the effectiveness of the response by making it easier for petroleum suppliers to implement programs and measures and allow supply to more quickly return to normal when disruptions occur across state lines
- Contributes to petroleum sector resiliency

In Conclusion:

Key Points to Remember

1. It is important to know the state's critical energy infrastructure and its capacity and throughput.
2. It is important to know energy infrastructure in other regions that are important to your state's energy supply.
3. State agency roles and responsibilities for critical energy infrastructure need to be understood and coordinated.
4. State and industry points of contacts need to be updated annually.
5. Update energy assurance plans every 2 to 3 years or when major organizational changes occur
6. Conduct regular training and exercises
7. Work with the private sectors on state energy plans that promote resiliency through energy efficiency, renewables energy and smart grid that contribute to a more diverse, reliable and resilient energy infrastructure.

Thank you!

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Phone 517-580-7626

References and Further Reading

- Quadrennial Energy Review (QER) -- Transforming U.S. Energy Infrastructures in a Time of Rapid Change: The First Installment of the QER. See: http://energy.gov/epsa/quadrennial-energy-review-qer For a video summary see: https://www.youtube.com/watch?v=IIXsel0-goY
- National Petroleum Council (NPC) "Enhancing Emergency Preparedness for Natural Disasters" (December 2014) See: http://www.npc.org/
- National Infrastructure Protection Plan 2013, Partnering for Critical Infrastructure Security and Resilience and Supplements – U.S. Department of Homeland Security http://www.dhs.gov/national-infrastructure-protection-plan
- Energy Sector Specific Plan 2015: https://www.dhs.gov/sites/default/files/publications/nipp-ssp-energy-2015-508.pdf
- State and Regional Energy Risk Profiles The profiles provide a state by state summary of both natural and man-made hazards with the potential to cause disruption of the electric, petroleum, and natural gas infrastructures. http://www.energy.gov/oe/state-energy-risk-assessment-initiative-state-energy-risk-profiles

References and Further Reading (Cont'd)

- The Business Blackout Report Lloyds of London and the University of Cambridge's Centre for Risk Studies. https://www.lloyds.com/~/media/files/news%20and%20insight/risk%20insight/2015/business%20blackout/business%20blackout20150708.pdf
- Michigan Public Service Commission's Report on August 14, 2003 Blackout http://www.michigan.gov/mpsc/0,1607,7-159-16370_17060-80766--,00.html
- Emergency Situation Reports by U.S. Department of Energy provides daily updates on the energy sector impacts from emergency events, See: http://www.oe.netl.doe.gov/emergency_sit_rpt.aspx
- Cybersecurity A Primer for State , Utility Regulators Version 3.0. January 2017, National Association of Regulatory Utility Commissioners, see https://pubs.naruc.org/pub/66D17AE4-A46F-B543-58EF-68B04E8B180F

References and Further Reading (Cont'd)

- **Understanding Energy Infrastructure and Supply Chains**
  - Energy Explained Your Guide to Understanding Energy – Energy Information Administration. See: http://www.eia.gov/energyexplained/
  - Appendix G – Hydrocarbon Liquids Supply Chain, and Appendix H -- Natural Gas and Natural Gas Liquids Supply Chains , NPC Enhancing Emergency Preparedness for Natural Disasters" See: http://www.npc.org/
  - United States Electricity Industry Primer -- Department of Energy, Office of Electricity Delivery and Energy Reliability. See: www.naseo.org/Data/Sites/1/documents/committees/energysecurity/documents/united-states-electricity-industry-primer.pdf
  - Energy Primer -- a Handbook of Energy Market Basics - Federal Energy Regulatory Commission. See: http://www.ferc.gov/market-oversight/guide/energy-primer.pdf