

**NASEO** National  
Association

of State Energy Officials

ENERGY'S WASHINGTON VOICE



# State Energy Assurance Guidelines

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## **ACKNOWLEDGEMENTS**

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Development of these state guidelines was made possible by the ongoing support of the U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability (OE) and its Offices of Infrastructure Security and Energy Restoration (ISER). We acknowledge the leadership of the Department of Energy in working with states and local government to help us be better prepared.

It is the responsibility of local, state and the federal governments to be prepared to respond to a serious disruption in energy supply. Good planning also requires a positive on-going operational relationship with the energy industries so that by working together, consequences can be minimized and recovery expedited. We must also work to strengthen our energy infrastructure to assure that it is protected and can better withstand the full range of hazards, from deliberate attacks to the impacts of hurricanes and other natural disasters. As states work to implement the National Infrastructure Protection Plan it will be critical to assure that the vitally important energy sector is fully integrated into this important effort.

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## **Executive Summary**

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The State Energy Assurance Guidelines were developed by the National Association of State Energy Officials (NASEO) under the direction of the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability (OE). The guidelines have integrated the lessons learned from responding to energy emergencies over the years, and discussions at a number of conferences, exercises and meetings at which the OE defined its primary role in mitigating energy emergencies, defining the components of critical energy infrastructure, and taking a lead in the protection of our nation's energy assets.

OE recognizes the major role states play in protecting energy assets within and beyond their borders, as well as the states' central role in responding to energy shortages, disruptions, and emergencies. OE has facilitated state energy emergency planning by providing guidance on state energy emergency preparedness plans and sponsoring energy emergency training. This manual is a component of this ongoing support.

These guidelines are thorough, but not definitive. They encompass many topics that states may wish to consider incorporating into their plans. Foremost among these topics is how energy assurance relates to traditional energy shortage mitigation planning and response and the emergence and need to protect critical energy infrastructure.

The guidelines comprise the states' overall role in energy assurance, including organizing and building response mechanisms; coordination with stakeholders; operating within the federal emergency support function structure; planning response strategies; profiling energy use and vulnerability; and identifying fuel-related response measures. Extensive appendices further detail several topics and include relevant federal statutes, energy supply monitoring, and other useful information for state energy emergency assurance planning.

In the final analysis, these guidelines are intended to serve as a yardstick to which states plans can be compared and improved. Each state possesses a unique set of energy infrastructure, energy usage patterns and the energy supply network designed to service these needs. These guidelines offer direction, but cannot substitute for the effort required to assemble state-specific information, address state-specific organizational and strategic needs, and plan for events that may affect public welfare and safety.

## **I. Introduction**

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During any given year, states and territories face a variety of energy supply disruptions. Where these disruptions are limited in scope, and addressed quickly by energy providers, they are barely newsworthy. If, however, these disruptions extend over wide areas and last more than several hours, they may become “energy emergencies” requiring the intervention of government emergency responders. Disruptions can result from many factors including: spikes in demand during peak energy use, unanticipated power plant or refinery shutdowns, transmission system congestion, and natural disasters.

This document has two purposes. First, it provides state energy and emergency officials with a standard set of guidelines for understanding and reviewing how their jurisdictions respond to energy outages. With this knowledge, officials will also be able to review, and improve, the components of their energy emergency plans. These guidelines are a compilation of information from many state energy and emergency officials who have experienced and responded to energy emergencies. In brief, the guidelines:

- ◆ Describe organizational relationships and responsibilities within a state should be coordinated;
- ◆ List state actions that will ease the impacts of short-term energy disruptions;
- ◆ Recommend long-term strategies and options for dealing with sustained disruptions or outages;
- ◆ Identify information that states need to know about specific fuels as well as pertinent government and industry contacts;
- ◆ Identify steps that state and territory officials can take to work with industry to minimize and resolve the impacts of an energy supply disruption; and
- ◆ Describe public information and crisis communication plans.

One of the primary challenges in energy emergency preparedness is to meet the needs and concerns of all affected parties while the objectives and policies being considered are assessed in light of their mutual impacts. These guidelines are intended to assist planners with identifying the key elements needed to craft a workable preparedness plan while avoiding potential conflicts among stakeholders. Additionally, these guidelines should assist officials with establishing priorities for various services and functions and helping to mitigate the impact of any energy shortage on society.

The second purpose of this document is to address the protection of critical energy infrastructure. Critical Infrastructure Protection (CIP) is the shared responsibility of the private sector, local and state governments, and the federal government to protect the nation’s critical infrastructure. The Homeland Security Act, and the subsequent Presidential strategies on CIP, defined what must be done to protect the nation’s infrastructure. Many experts believe that America remains largely unprepared to prevent and respond to a catastrophic terrorist attack—despite all the work that has been accomplished since 9/11/01. Many fear that a future attack could result in even greater casualties and more widespread disruption to American lives and the economy.

"Critical" infrastructures are those that, if disrupted, would significantly impact public health and safety, the economy, and/or national security. Any prolonged interruption of the supply of basic energy - whether it is electricity, natural gas, or petroleum products - would do considerable harm to the U.S. economy and the American people. No single government agency, industry group, or company can secure the energy infrastructure. Collaboration at all levels is essential for securing an interdependent infrastructure that is owned, operated, hosted, and regulated by many entities, all of which have limited resources and expertise for infrastructure protection. Voluntary partnerships help leverage resources, facilitate the useful exchange of security-related information, and maximize the effectiveness of infrastructure protection efforts. The U.S. Department of Energy (DOE) is working to coordinate CIP efforts in the energy sector and with private, federal, state, and local partners.

CIP includes proactive measures for protecting physical and cyber systems so vital to the operations of the United States that their incapacity or destruction will seriously weaken national security, economic stability, or public safety. CIP methods and resources deter or prevent attacks against critical infrastructures by people (e.g., terrorists, other criminals, hackers, etc.), by nature (e.g., hurricanes, tornadoes, earthquakes, floods, etc.), and by hazardous materials accidents involving nuclear, biological, or chemical substances. The U.S. is in the process of identifying and prioritizing the most critical assets in each sector of the economy and developing sustainable programs to protect these assets.<sup>1</sup>

### ***Organization of the Guidelines***

In recognition of assurance planning as a dynamic process, this document outlines and details information for assessing, updating and revising all current state and territory energy emergency plans. These guidelines tie concerns for the protection of critical infrastructure and concepts of energy assurance with the traditional energy emergency response planning undertaken by state energy offices, energy restoration responsibilities supported by public utility commissions, and state and local emergency plans.<sup>2</sup>

This document is designed to guide the user through the logical steps suggested for reviewing the effectiveness of a state plan. Thus, it does not necessarily outline how a particular state plan should be written. The intent of the guidelines is to provide states with strategies for addressing such items as: how to identify an energy emergency, what questions to ask, what resources to access, a general order of response and other useful outlining and ordering issues pertaining to plan development.

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<sup>1</sup> NARUC Ad Hoc Committee On Critical Infrastructure Technical Briefs. *Paper 1: Issue Paper on Critical Infrastructure Protection*. April 2005. The federal and state roles in critical infrastructure protection are introduced and explored, with a special focus on the role of the state agencies and public utility commissions. <http://www.naruc.org/displaycommon.cfm?an=1&subarticlenbr=404>

<sup>2</sup> NARUC Ad Hoc Committee On Critical Infrastructure Technical Briefs. *Paper 6: Critical Infrastructure Information Sharing Rules: Model Protocols for States*. April 2005. The paper discusses both federal and state actions to date regarding the sharing of critical infrastructure information and provides a framework for future cooperation and efforts to harmonize information sharing among state commissions, the FERC and the Department of Homeland Security. <http://www.naruc.org/displaycommon.cfm?an=1&subarticlenbr=404>

Organizational information is followed by several sections that discuss suggested plan elements such as a vulnerability assessment, energy profile, response measures, public information and energy supply monitoring. Appendices with additional detail follow the main text of the guidelines.

The major sections of this document include:

- I. Introduction
- II. Energy Assurance Considerations
- III. Define and Clarify Organizational Relationships and Responsibilities
- IV. Principal Strategies for Managing Energy Shortages
- V. Response Measures
- VI. Public Information
- VII. Conclusion
- VIII. Appendices

### ***The Nature of Energy Assurance Planning***

The concept of energy assurance has evolved significantly since the early 1970's. During the era of embargoes, federal and state energy emergency planners focused on petroleum shortages. Electricity and natural gas contingencies have addressed shortage and the response planning process, typically as part of the regulation of electric and gas utilities. Some states also considered integrating energy efficiency/assurance options into their plans. Since the September 11, 2001 attack on the nation, both federal and state governments have placed greater emphasis on assurance and included within it the need to address the protection of energy infrastructure.

Any energy emergency planning effort should be based on good data acquisition and information management. However, the response to an energy shortage – no matter how it is caused – is as much an art as it is a science. Hence, the nature of energy emergency preparedness is seen as good data management and response planning as well as the identification of multiple stakeholders, their interests and the definition of how their energy interests affect energy emergency planning.

Energy planning is resource intensive. Costs will constrain continuous changes in any plan; nevertheless, regular review should be undertaken to accommodate basic changes such as turnover in emergency response personnel. In general, plans should be updated about every five years to make certain that active stakeholders and changes in market forces are identified. Plans should also be updated in whole or in part as energy markets change, and simultaneously, emergency responders should train regularly in order to keep their knowledge fresh and their contacts “warm.”

## II. ENERGY ASSURANCE CONSIDERATIONS

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This section addresses issues that impact how states conduct energy assurance planning. In particular, the inclusion of the protection of critical infrastructure in emergency planning and how this, and energy alternatives, contribute to energy assurance, is discussed. Because this section addresses factors that logically precede a disruption, this information may or may not be included in an energy emergency response plan.

Depending on the individual needs of each state, some states will choose to include this information in their energy emergency plans, while others may prefer to place it within a statewide energy plan or as part of the state's homeland security strategy. In any case, an understanding of infrastructure and assurance will help in updating an emergency plan.

### *Defining Critical Infrastructure Preparedness*

The U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability (OE) leads the federal government's effort to ensure a robust, secure, and reliable energy infrastructure in the new threat environment that includes malevolent threats and increasing complexity due to interdependencies. America's energy infrastructure is the backbone of commerce, transportation, communications, government, health care, and home life in the United States. Any prolonged interruption of the supply of basic energy - be it electrical, natural gas, or oil products - would be devastating to the nation and its people. We increasingly depend on robust secure and reliable energy systems to power our economy, maintain our national security, and provide for the well being of our citizens. Because energy is part of an interdependent network of critical physical and information infrastructures, it must be protected from terrorist acts as well as natural hazards.

DOE has reached out to the states and territories through state government associations. The National Association of State Energy Officials (NASEO) represents state energy offices that are required by law to develop state energy emergency plans. State energy offices are often at the center of efforts to mitigate the impact of energy shortages. The National Association of State Regulatory Utility Commissions (NARUC) represents public utility commissions, and in 2005 undertook two major surveys of state utility agencies to inventory their energy assurance planning and related efforts.<sup>3</sup> The National Governors Association (NGA) and the National Conference of State Legislatures (NCSL) also develop policies related to energy assurance and guidance.

While DOE continues its work with energy stakeholders, these Energy Assurance Guidelines provide some insights into critical infrastructure and how infrastructure relates

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<sup>3</sup> NARUC Ad Hoc Committee On Critical Infrastructure Technical Briefs. *Paper 3: Primer on Energy Assurance for Public Utility Commissions*. April 2005. The paper addresses energy assurance planning, including critical infrastructure protection and energy mitigation.  
<http://www.naruc.org/displaycommon.cfm?an=1&subarticlenbr=404>

to state energy emergency preparedness planning. Protection of the critical infrastructure will help mitigate the effects of an emergency.

### ***Suggested Components of Critical Infrastructure Protection***

There are 10 suggested components of critical infrastructure protection. They include:

1. Critical (physical) Assets
2. Threat Environment;
3. Policies and Procedures;
4. Physical and Cyber Security
5. Operations Security
6. Information System Network Architecture and Penetration Testing;
7. Consequence Analysis
8. Risk Characterization
9. Protection of Sensitive Information
10. Alternative Energy Sources.

#### ***1. Critical (physical) Assets***

The primary assets ordinarily identified for energy preparedness include energy generation and delivery infrastructure. Some examples of these include:

- Electric generation, transmission and local distribution facilities;
- Natural gas wells, collection systems, gas processing plants, inter- and intra-state pipelines and storage; and
- Petroleum production, refining, inter- and intra-state pipelines plus over-the-road delivery systems and storage.

Ordinarily, state governments do not own or control physical energy assets. In a few states, however, municipal governments own and operate utilities and in some cases, states own or exercise authority over energy production facilities. Opinions vary about what level of detail government needs to know with regard to physical assets, however, from an emergency planning perspective, knowledge of major assets, location, and impact on the delivery of energy helps preparedness and the state's ability to respond.

#### ***2. Threat Environment***

Threat has many meanings in preparedness. While much of the current focus is on the threat of terrorism, the national strategy for the physical protection of critical infrastructure takes an all hazards approach. Understanding these threats is a part of a sound vulnerability analysis. Knowing what may cause a disruption can increase

#### ***NARUC on Critical Infrastructure***

NARUC encourages public utility commissions to "assure that their regulated industries take appropriate, cost-effective measures to improve" critical infrastructure.

#### ***Six Insights Endorsed by NARUC***

- Consider cost recovery and prudence of investment,
- Examine exceptions from Freedom of Information Act provisions for proprietary utility security information,
- Include rapid sharing of information and clear communication channels during threats and for warnings,
- Continue to coordinate with other state agencies in maintaining current emergency planning,
- Pay attention to interdependencies as they relate to protecting critical infrastructure and vital assets,
- Consider regional coordination and the impact of the interstate location of critical facilities.

Source: NARUC Technical Assistance Briefs: Issue Paper on Critical Infrastructure, 2005, pp.11-12.

defensive steps to enhance assurance as well as create a more efficient response. Categories of attacks or threats to consider in an all-hazards approach include:

- *Deliberate attacks* caused by people (e.g. terrorists, criminals, hackers, delinquents, employees)
- *Natural attacks* caused by nature (e.g., hurricanes, tornadoes, floods, wildfires, earthquakes)
- *Accidental attacks* caused by technological failure (e.g., pipeline rupture, levee breaches, chemical spills, nuclear, or biological contamination)
- *Systemic threats* caused by the physical inability of energy delivery systems to meet demand

### ***3. Policies and Procedures***

Refining policies, understanding and practicing procedures are all traditional components of comprehensive energy preparedness planning. All viable energy emergency plans should be updated regularly to assure that current policies are included and that all responders are acquainted with how response and mitigation systems are designed to work.

### ***4. Physical and Cyber Security***

Lack of sound physical and cyber security means increased vulnerability. Energy providers are primarily responsible for their own security, however government can help by working with energy industries to understand the extent of need, constraints to improvement and the costs of developing adequate security. Government can then have an effect on viable policies and rules for support. Some examples are:

- Government has existing natural gas pipeline safety rules. Continuing to work with the industry to assure that these rules are followed increases energy assurance.
- Government has extensive rules pertaining to the reliable delivery of electricity. Energy emergency planning can include general descriptions of existing physical security measures as well as illustrative descriptions of the steps energy companies take to restore power or supply. This information will help planners respond to a disruption efficiently and assist officials with their explanation to the public.
- The infrastructure of the petroleum markets is often understood in general terms only. However, the more a state knows about the location of pipelines, storage, loading terminals, preferred highway delivery routes and the nature and location of retail outlets, the more it can do to assist in a shortage. Knowledge of regional refining facilities and competing finished product markets are other pieces of the physical structure with potential security issues affecting vulnerability.

### ***5. Operations Security***

State program developers are unlikely to need extensive knowledge of energy company operations security. It is useful to know that this security is in place and that energy companies train personnel in its implementation. The role of government regarding operational security might best be to ask questions and insist upon site-specific security measures. Public Utility Commissions (PUCs) may include operational security requirements in a Certificate of Convenience and Necessity, or other rules, for energy entities regulated by the state.

Industry can assist state emergency responders by explaining their operations security process and practices. This will help public officials to plan and respond accordingly during a shortage.

### ***6. Information System Network Architecture and Penetration Testing***

The realization that delicate and expensive critical infrastructure computerized support systems are vulnerable, clearly focuses the needs to assure that cyber security concerns need to be an integral part of the planning process. Fortunately, many utilities, petroleum production and local delivery companies use proprietary software or systems that are less vulnerable than off-the-shelf software. Several of the nation's major software companies have acknowledged this risk and have cautiously suggested that the Department of Homeland Security "should examine whether tailored government action is necessary."<sup>4</sup>

States may wish to have their own information technology specialists work with the energy industry and the federal government to improve such systems, thus increasing energy assurance. Due to the sensitivity of such detailed information, it may not be prudent to include such information in an emergency plan, however policy makers and planners will benefit by having up-to-date knowledge of information networks and their operating characteristics (architecture).

Public Utility Commissions (PUCs) may wish to consider rules for improved information system architecture and adequate penetration testing.

### ***7. Consequence Analysis***

Consequence analysis means understanding the effects of an energy disruption. Some consequences are impacts on related energy systems; others are societal impacts such as people displaced from their homes, costs to state and local government and loss of business income.

Widespread energy outages, such as the power failure in the Midwest and Northeast in August 2003, clearly highlight the need to consider the consequences of not only energy disruptions, but also actions taken to alleviate them.

It is suggested that up-to-date state plans contain sufficient information about current energy infrastructure and operations to project possible shortage impacts. This should be part of a thorough vulnerability assessment. Beyond this, planners may wish to assess the operational characteristics of downstream critical infrastructure and account for these

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<sup>4</sup> Associated Press in *The Baltimore Sun*, Thursday, April 1, 2004, p. 2D.

when responding to an emergency. *It is strongly recommended that this be undertaken in close coordination with large power and energy providers whose emergency response actions can lead to devastating downstream system failure.* Some potential downstream effects might be:

- Failure of petroleum supply infrastructure to function when electric power is interrupted
- Failure of water supply and purification systems to operate when power is lost
- Loss of power to buildings critical air handling or environmental equipment
- Outages at refineries and gas processing plants due to electric outages or curtailments in natural gas supply
- Secondary utility system time-to-failure when back-up storage is exhausted
- Failure of information system networks.

The response to downstream impacts may be to alter operational and emergency procedures, provide alerts and warnings where none have been given in the past, or seek to assure that automatic alternatives and backup are understood and acquired.

#### **8. Risk Characterization**

Up-to-date energy emergency plans often contain a vulnerability analysis associating state energy infrastructure with demographics. Risk is also associated with operating any type of energy power system or energy delivery system, and better understanding of this will allow planners to pre-determine the magnitude of possible damage for any given geographical area of impact.

Most states already prioritize energy user risk through utility outage and restoration rules or through a critical user list contained in a state petroleum set-aside. *It is suggested that planners re-examine existing priorities, make them current, and update them periodically.*

Adequate planning may also determine which prioritized energy end users can best protect themselves with backup supply or access to energy alternatives.

#### **9. Protecting Sensitive Information**

Much of the information for critical infrastructure preparedness will either be proprietary for private companies or sensitive for the protection of the nation. Common sense dictates not publishing detailed location maps that could be used by criminals and terrorists. Less apparent is imparting too much detail about information system architecture, consequence analysis or other vulnerability assessments that seem less direct. A state energy emergency plan may be developed with more knowledge about these characteristics than actually needs to appear in the plan. Most of the emergency protocols contained in a state energy emergency plan are already public knowledge. Since a major purpose of such a plan is to organize these items in a meaningful way for efficient response, it may be prudent to keep some response information general rather than specific. It may be better to keep secure information stored outside of the plan for use by authorized individuals only.

In addition, because of the Freedom of Information Act and sunshine laws in many states, there is a question as to whether sensitive information can be protected from disclosure. In the final analysis, accomplishing this is a delicate task and will require careful coordination and cooperation among stakeholders.

### ***10. Alternative Energy Sources***

State energy offices have promoted energy efficiency and the use of renewable energy since the early 1970's. Energy efficiency efforts can reduce the demand for electricity, natural gas, and petroleum from business-as-usual consumption levels for all classes of customers. Some consumers participate in time-of-day programs in which they voluntarily reduce consumption upon receipt of a utility signal. The obvious potential for such systems to assist in an energy emergency is apparent.

Renewable resources located at the home, business or industrial plant improve the distribution of resources, thereby mitigating the adverse impact of a shutdown. While some renewables are intermittent supplies (e.g., the wind does not always blow and the sun does not always shine), there are energy storage technologies that can be installed to improve the ability of renewables to meet demand when it arises. As a result, renewable energy can help meet demand but will in no way satisfy all demand during an emergency.

Dual-fueled and hybrid electric vehicles and other improvements in the transportation arena can help dampen the demand for gasoline and diesel fuel, freeing up these valuable resources for first responders and emergency generators. Energy efficiency and renewable energy can help diversify and improve the resiliency of supply. State energy offices should continue to promote these resources, recognizing the importance of their role in emergency preparedness and response.

### ***Energy Assurance Planning for Utilities***

Taken from the perspective of electric and gas utilities, NARUC has suggested a list of planning criteria that incorporate many of the critical infrastructure considerations suggested by DOE as well as state energy office planners. While there is no national government-based organization as closely tied to the petroleum industry as NARUC is to the utility industry, these criteria may also be applied to the protection of petroleum assets.<sup>5</sup> For example, state planners may wish to ask local petroleum delivery companies, as well as national entities who produce and transport finished oil products, if they have made appropriate business decisions regarding investments in enhanced asset security.

#### Questions to Explore Concerning Critical Infrastructure:

1. Have key energy assets been identified, digitally mapped and ranked from a security and vulnerability perspective?
2. Have critical physical and cyber risks and vulnerabilities been identified?

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<sup>5</sup> NARUC Ad Hoc Committee On Critical Infrastructure Technical Briefs. *Paper 3: A Primer on Energy Assurance for Public Utility Commissions*. April 2005, p. 11-12. The paper discusses both federal and state actions to date regarding the sharing of critical infrastructure information and provides a framework for future cooperation and efforts to harmonize information sharing among state commissions, the FERC and the Department of Homeland Security. <http://www.naruc.org/displaycommon.cfm?an=1&subarticlenbr=404>

3. Have interdependencies, such as the linkage between natural gas supply and the reliability of gas-fired generation been quantified?
4. What is the planning horizon and geographic scope of the energy assessment process? Does it accurately characterize and quantify extended and multiple contingencies?
5. Have appropriate options for response to these vulnerabilities been developed and tested?
6. Have downstream impacts on other sectors (e.g., water, transportation, and telecommunications) and societal impacts been identified?
7. Has the energy sector presented an appropriate business case for making security investments and sought to recover prudent critical infrastructure investments?
8. Has the energy sector implemented changes that will enhance reliability and security, including business continuity?
9. How has security been integrated into the ongoing business strategy of the energy sector?
10. Have investments in utility and end-user efficiencies or alternative energy sources been investigated to minimize the adverse impacts resulting from an energy shortage or emergency?
11. Has a mechanism been established to update planning and response plans “post-event” to improve the energy sector’s best practices?

### **III. DEFINE AND CLARIFY ORGANIZATIONAL RELATIONSHIPS AND RESPONSIBILITIES**

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This section discusses state and federal government roles in energy emergency planning and outlines questions to consider when defining these roles in a state's plan. The questions for consideration include:

- (A) Who has legal authority in the state during an energy emergency?
- (B) What is the relationship of the legal authority to the state's emergency plan?
- (C) What are the relationships among federal, state, and regional authorities?

#### **Who has legal authority in the State during an energy emergency?**

All states are presumed to have legal authority for general emergencies, and most have laws pertaining to energy emergencies. Many states depend upon their emergency management (or civil defense) organization for energy emergency planning and response. Others may focus energy emergency responsibilities on some or all of several groups that might be involved. These can be grouped into four broad categories:

1. Monitoring the energy supply system for the purpose of detecting any unusual imbalances that indicate the potential for an energy emergency and, if so, to advise the appropriate state officials.
2. Developing, administering or coordinating energy emergency contingency plans.
3. Communicating with federal, state and local agencies related to energy emergency planning and management.
4. Maintaining ongoing contact with components of the energy industry including regulated utilities, cooperatives, municipally-owned and unregulated providers.

#### **What is the relationship of the legal authority to the State's Emergency Plan?**

State emergency or disaster plans are designed to delineate responsibilities among state agencies and between the state and local jurisdictions. Beyond this definition, these plans seek to define the relationship of both state and local response mechanisms to the federal emergency management system. The "Emergency Support Functions" under the National Response Plan provide guidance on these relationships.

#### **Emergency Support Functions**

The National Response Plan (NRP) is an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the management of domestic incidents. It provides the structure and mechanisms for the coordination of federal support to state, local, and tribal incident managers and for exercising direct federal authorities and responsibilities. The NRP assists in the homeland security mission of preventing terrorist attacks within

the United States; reducing the vulnerability to all natural and man-made hazards; and minimizing the damage and assisting in the recovery from any type of incident that occurs.

The NRP establishes a comprehensive approach to enhance the ability of the United States to manage domestic incidents. The plan incorporates best practices and procedures from incident management disciplines—homeland security, emergency management, law enforcement, firefighting, public works, public health, responder and recovery worker health and safety, emergency medical services, and the private sector—and integrates them into a unified structure. It forms the basis of how the federal government coordinates with state, local, and tribal governments and the private sector during incidents. It establishes protocols to help:

- Save lives and protect the health and safety of the public, responders, and recovery workers;
- Ensure security of the homeland;
- Prevent an imminent incident, including acts of terrorism, from occurring;
- Protect and restore critical infrastructure and key resources;
- Conduct law enforcement investigations to resolve the incident, apprehend the perpetrators, and collect and preserve evidence for prosecution and/or attribution;
- Protect property and mitigate damages and impacts to individuals, communities, and the environment; and
- Facilitate recovery of individuals, families, businesses, governments, and the environment.<sup>6</sup>

The NRP is built on the template of the National Incident Management System (NIMS), which provides a consistent framework for incident management at all jurisdictional levels, regardless of the cause, size, or complexity of the incident. The activation of the NRP and its coordinating structures and protocols—either partially or fully—for specific “Incidents of National Significance” provides mechanisms for the coordination and implementation of a wide variety of incident management and emergency assistance activities. Included in these activities are federal support to state, local, and tribal authorities; interaction with nongovernmental, private donor, and private-sector organizations; and the coordinated, direct exercise of federal authorities, when appropriate.

The NRP contains five sections, including the *Basic Plan*, *Appendixes*, the *Emergency Support Function Annexes*, *Support Annexes* and *Incident Annexes*. The Basic Plan presents the policies and concept of operations that guide how the federal government will respond and coordinate with state and local governments and provides a compendium of National Interagency Plans. *Appendixes* provide more detailed

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<sup>6</sup> Emergencies & Disasters: National Response Plan. Department of Homeland Security Web site. [http://www.dhs.gov/dhspublic/interapp/editorial/editorial\\_0566.xml](http://www.dhs.gov/dhspublic/interapp/editorial/editorial_0566.xml)

supporting information, including terms, definitions, acronyms, authorities, and a compendium of national interagency plans. The Emergency Support Function (ESF) Annexes describe the roles and responsibilities of primary and support agencies for key response functions, like transportation and communications, which supplement state and local activities.

The *Emergency Support Function Annexes* group capabilities and resources into functions most likely needed during an incident and describe the responsibilities of primary and support agencies involved. As noted above, the key response function of energy is outlined in Emergency Support Function 12 (ESF-12). *Support Annexes* provide the procedures and specific administrative requirements common to most incidents (e.g. Public Affairs, Financial Management, and Worker Safety and Health). *Incident Annexes* describe protocols and agency roles and responsibilities for specific contingencies (e.g. bioterrorism, radiological response, catastrophic incidents). In many cases, these annexes are supported by more detailed operational supplements or standard operating procedures.

#### Derivation of ESF-12 within States

Many state emergency plans parallel the NRP; hence, they contain an ESF-12. The degree to which a state ESF-12 assigns responsibility to agencies varies among states. Typically, roles will be assigned to several state stakeholders. It is recommended that each state's energy emergency plan delineate the energy interest and response activity associated with the state's ESF-12.

#### ESF-12 Responsibilities and State Agencies

The specific responsibilities of state agencies with regard to an energy emergency are outlined below:

##### ***Governor's Office***

Governors and the Governor's Office have the ultimate responsibility for energy emergency planning. Depending on the state, the Governor's office may have a more or less active role with any emerging energy problems. Regardless of the hierarchy or degree of problem, the Governor's Office will want to be informed expeditiously.

##### ***State Energy Offices (SEOs)***

Most state energy offices were established during the early 1970's in response to the Arab oil embargo. As a result, most SEOs are involved with petroleum issues. Also, the State Heating Oil and Propane Program, sponsored by the Department of Energy and NASEO, has provided a consistent framework for 24 states to monitor prices and market conditions of home heating oil and propane.

Since the late 1980's, many SEOs have been placed within other state agencies that may or may not have the responsibility for energy emergency management. Under the State Energy Program (SEP), which provides grants to states and directs funding to State Energy Offices, states are required by law to prepare a state energy emergency plan. While the U.S. Department of Energy does not

formally review these required plans, the Office of Electricity Delivery and Energy Reliability provides guidance in their development.

***Emergency Management Agencies***

The primary emergency response agency in most states is the state emergency management agency, civil defense office, or similar authority. Since the federal deregulation of petroleum prices, several state ESF-12 annexes assigned the energy emergency functions to the Public Service Commission or Public Utility Commission (PUC) because planners perceived energy issues to be associated with regulated utility power. In some states such operations are assigned to the state police or other civil defense-related agencies.

***Public Utilities Commissions (PUCs)***

Public Utilities Commissions are regulatory agencies. All PUCs monitor regulated utilities and associated energy supply. States with non-regulated rural electric cooperatives and/or municipally-owned utilities may also develop reporting requirements for such systems. Most utilities fall under some regulation one way or another, either by the PUC, a county or municipal government that owns and operates a municipal utility, or other officials likely to sit on the board of a rural electric cooperative. Electric and gas utilities are generally required to have up-to-date emergency response and power restoration plans. These plans may or may not have to be filed with a public authority; but almost universally, they are required for licensing purposes.

Most state emergency management agencies now incorporate utility and PUC responders in their emergency response. This enhances the ability of the agency, as well as the Governor’s office, to explain what is happening to the public and makes it easier to provide governmental assistance if needed. The quality of this cooperation varies among states.

One set of questions in the 2005 NARUC survey (see p. 10) focused on the state utility commission’s role in energy emergency preparedness. The table below summarizes the findings.

<b><i>Energy Assurance Planning Authority (35 State PUCs Responding)</i></b>	
<b>Emergency Preparedness Role</b>	<b>Number of States</b>
PUC is <i>actively involved</i> in energy preparedness planning	31
PUC has <i>primary authority</i> over energy preparedness planning	6
PUC is <i>the lead coordinating</i> agency over energy preparedness planning	6
PUC has an active role in planning through <i>state emergency operations set-up</i>	19
PUC is a <i>member of an Energy Emergency Assurance Coordinator Committee</i>	7

PUC has <i>lead role in state-wide communications during energy emergency</i>	1
<i>Source: NARUC Technical Assistance Briefs: NARUC Inventory on State Energy Assurance Planning, pp. vii-viii.</i>	

***Other State Agencies***

In some cases, the SEO is not the lead agency for petroleum matters. Instead, the state Department of Agriculture or other office responsible for weights and measures is given this role. This is because the weights and measures agency is mandated to verify the octane of gasoline.

A state or local social or human services department is typically responsible for assisting with human needs when energy for seasonal heating and cooling is short or prices are extremely high. Such agencies typically manage the federal low-income heating programs, or oversee a state’s federal Weatherization Assistance Program. In several states, the SEO is responsible for these programs. The agencies can help provide financial and social relief to low-income energy users, but they are not equipped to implement emergency mitigation measures designed to curtail or redistribute limited petroleum products.

State transportation departments may be assigned a high level of responsibility because lawmakers associate petroleum use with highways and roads. A state transportation department can also help clear fuel delivery routes and typically approaches the Federal Motor Carrier Administration when driver hour waivers are needed. Law enforcement is involved whenever there is a potential for public disturbances or imminent danger to public welfare due to an energy shortage.

The assignment of responsibilities in oil-producing states may also present some confusing management patterns. Some petroleum and gas producing states consolidate the oversight of petroleum and gas production with energy efficiency and energy emergency response.

***Local Agencies (counties and municipalities)***

Even if a state maintains active emergency management function, local authorities are likely to be the first to learn of, and respond to, an emergency – including an energy problem. Not every local jurisdiction has an emergency response entity. Where these are absent, the first agency to be notified is likely the local police or sheriff’s department.

Larger cities and counties throughout the U.S. have emergency response agencies that parallel and coordinate closely with the State Emergency Operations Center (SEOC). Where such agencies exist, one can expect them to be tied closely to the state emergency management infrastructure and to train regularly on resolving state-wide and inter-jurisdictional issues caused by emergencies, including an energy shortage.

### ***Homeland Security***

The most recent addition to state emergency response concerns is terrorism. The creation of the federal Department of Homeland Security (DHS) prompted states to create additional functions within their existing emergency management structure or parallel to it. These agencies can be expected to refine their mission in the next few years to coordinate with existing response entities. Subject to many variations among the states, one might expect a state DHS to focus on prevention while emergency management agencies continue to focus on response. As agencies become increasingly comfortable with their respective roles, the interrelationships between prevention and response may grow closer and become relatively seamless. One example may be the growing need to improve the nation's aging, and increasingly inadequate, electric power transmission grid. The prevention of major electricity outages would protect large numbers of customers while enhancing the ability of emergency responders to rapidly mitigate such outages as do occur.

### **What is the relationship among federal, state and regional authorities?**

States, usually through the State Energy Offices, have worked closely with the DOE since the oil crises of the 1970s. When federal petroleum regulations ended, the relationship matured into a mutually-supportive response effort involving training and support for enhancing plans and mitigating shortages. Today, states interact with a variety of federal and regional agencies to help protect citizens during energy emergencies. Important factors relating to the major federal and regional agencies with which states coordinate are described below:

#### ***Primary DOE Energy Emergency Offices***

State Energy Offices work with the DOE more than any other federal agency. States interact with several units of the DOE; however, two dominate energy emergency planning: OE and the Energy Information Administration (EIA). The OE, as noted above, is the primary DOE unit dealing with energy emergency planning and response. It is also responsible under the National Infrastructure Protection Plan for formulating strategies to protect critical energy infrastructure. The EIA is the primary federal agency providing energy data, statistics and analysis. States also submit completed energy plans to the Office of Energy Efficiency and Renewable Energy, meet with officials from fuel-related units, and, primarily through their PUC, interact with the Federal Energy Regulatory Commission (FERC) on matters pertaining to electricity and natural gas.

#### ***Emergency Support Function 12 (ESF-12)***

The DOE is the lead federal agency when the federal ESF-12 is activated. States work closely with the DOE in sharing energy emergency and shortage information as well as seeking technical support. Within the ESF-12, the DOE is responsible for:

- Forecasting energy supply and demand, and estimating system damage;

- Advising local authorities on energy restoration, assistance, and supply priorities;
- Providing recovery coordination to affected parties;
- Providing regular incident situation reports;
- Providing a single point of access for Departmental assets and expertise;
- Serving as an information clearinghouse on recovery assistance, funding, and emergency response resources and organizations for the energy sector;
- Assisting in the provision of temporary fuel supply;
- Recommending conservation actions; and,
- Reviewing requests to the National Communications System for Energy Sector Telecommunications Service Priority restoration plans.

The Department of Energy maintains the following capabilities to meet ESF-12 requirements:

- Collects and reports to Congress information filed by electric energy generators, transmitters and distributors on loss of firm load, system voltage reductions or public appeals, bulk system operational actions and fuel supply emergencies;
- Assists in the development of state and local energy recovery priorities;
- Assists affected energy stakeholders in dealing with Federal Emergency Management Agency (FEMA) by coordinating with publicly-owned electric, gas, and lifeline utilities in applying for FEMA cost sharing for repairs;
- Assists affected energy stakeholders in obtaining repair crews and materials from outside the affected areas;
- Acts as an ombudsman in conjunction with state energy and emergency agencies to obtain electric power restoration priority to communications, public works (water, sewage), and ancillary energy facilities (e.g., fuel transportation/distribution systems, pipeline pump stations, refineries);
- Handles requests for unique Department assets to support an energy emergency response; and
- Maintains the DOE Emergency Operations Center (EOC).
  - The EOC is open 24 hours per day, 7 days a week and can be reached by telephone [voice: (202) 586-8100, FAX: (202) 586-8485], or by email at [wtchofc@oem.doe.gov](mailto:wtchofc@oem.doe.gov).

#### ***Other Federal Agencies***

Other federal agencies and their roles regarding energy emergencies include:

##### **U.S. Department of Agriculture**

USDA is best accessed via the state's agriculture agency. Issues that may need to be addressed include propane for crop drying, protecting livestock,

and supporting accurate weights and measures. In addition, the **Rural Utilities Service (RUS)** is housed at USDA. RUS is responsible for funding and tracking energy consumption information for rural electric cooperatives. <http://www.usda.gov/rus/>

### **U.S. Department of Commerce**

DOC has excellent data resources for developing emergency plan demographics. In addition, the **Mineral Management Service (MMS)** and the **National Oceanic & Atmospheric Administration (NOAA)** are part of DOC. MMS oversees the oil and gas production fields in the Gulf of Mexico [<http://www.mms.gov>], and NOAA provides up-to-the-minute tracking for hurricanes, wildfires, winter storms, and other weather-related emergencies [<http://www.noaa.gov>].

### **U.S. Environmental Protection Agency**

EPA should be contacted through a state's environmental agency. EPA may need to be contacted if waivers are sought for fuels that do not meet local air quality requirements.

### **U.S. Department of Homeland Security**

DHS leads the unified national effort to secure the country. Several states have developed homeland security agencies. States should expect to contact DHS through their state's DHS, emergency management agency, or law enforcement. During an emergency coordination will likely occur through the state's emergency operations center.

DHS also has a sub-agency, the **Federal Emergency Management Agency (FEMA)**, which supports states with general emergency backup and processes requests for disaster reimbursement. The bulk of a state's relationship with FEMA will be handled through the state's emergency management agency. DOE can also help states coordinate with FEMA on energy emergency issues.

### **U.S. Coast Guard**

USCG oversees the nation's ports and waterways accessible by tankers and barges, essential for the delivery of petroleum and liquefied natural gas supplies. [<http://www.uscg.mil/USCG.shtm>]

### **U.S. Department of Transportation**

US DOT has several sub-agencies that may relate to an energy emergency, including:

#### **Office of Pipeline Safety**

OPS rules apply to inter- and intra-state pipelines. State regulations for natural gas generally reinforce the federal requirements. The state's PUC is ordinarily the primary point of contact in the event of a pipeline problem. If the loss of gas is

sufficiently severe, states should anticipate a coordinated response through the state emergency operations center.

### **Federal Highway Administration**

FHWA has excellent data for transportation-related energy issues. In an emergency, responders will ordinarily work through the state highway agency for road-related assistance.

### **Federal Maritime Administration**

In the event that a state requires long distance waterborne fuel delivery (usually heating oil or gasoline) aboard an international shipping carrier not registered in the United States, a waiver from the federal act requiring the use of US-flagged vessels (the Jones Act) would be sought through the FMA. DOE would assist with this.

### **Federal Motor Carrier Safety Administration**

If a state receives a request to waive federal highway fuel transport driver hours in order to facilitate delivery during a shortage, it may be necessary to contact FMCSA. Ordinarily, this would be accomplished in coordination with state's transportation agency. In some cases it may be necessary for state energy officials to directly contact the regional office of the FMCSA to make the case for a waiver. Detailed instructions for this are contained on the NASEO website at:

[http://www.naseo.org/committees/energysecurity/documents/driver\\_hour\\_waivers.htm](http://www.naseo.org/committees/energysecurity/documents/driver_hour_waivers.htm)

### **Federal Aviation Administration**

FAA supports the nation's airports. In the event of an aviation fuel shortage it may be necessary to coordinate with the agency. This would most likely be handled through the state's transportation agency and coordinated at the state emergency operation center. The FAA also has air transportation data useful for planning purposes.

### ***Regional Agencies***

States should become familiar with the variety of regional energy organizations affecting them. PUCs often deal with the Electric Reliability Councils and, as these expand, the Regional Transmission Operators (RTOs) and Independent System Operators (ISOs) that coordinate the distribution of electricity.

Other examples of regional organizations are the Power Marketing Administrations (PMAs) that operate large hydropower dams under DOE jurisdiction. Bonneville Power Administration in the Northwest and the Tennessee Valley Authority in the Southeast are two such PMAs. In addition, state energy policy organizations such as the Southern States

Energy Board and the Western Energy Board may provide coordination during emergencies.

***International Issues***

Cross border fuel delivery issues may arise with Canada and Mexico. Border states may have organizations designed to deal with these issues, or the DOE can assist with cross border energy issues.

## **IV. PRINCIPLE STRATEGIES FOR MANAGING ENERGY SHORTAGES**

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There is no perfect formula for drafting an energy assurance preparedness plan or implementing a response to an emergency. This section suggests the basic pieces of information planners should obtain and suggests key considerations needed for a successful response.

### ***Finding Information***

These guidelines contain many references for updating an energy assurance preparedness plan. A good place to begin is in Appendix A, which contains NASEO's list of ten basic things needed for dealing with energy emergencies.

Within that short guide, and elsewhere in these guidelines, the importance of ongoing energy supply monitoring is stressed. This means remaining abreast of EIA data pertaining to the state <http://www.eia.doe.gov> and maintaining contact with representatives from the state's principal energy companies and suppliers.

Establishing a liaison with other agencies that have responsibilities in this area, such as the PUC and emergency management agency, is critical for obtaining information. It is also important to maintain contact with state petroleum-related associations as a valuable source of information. Having working relationships with people in the industry can provide a valuable "heads up" in many cases.

Participation in DOE-sponsored meetings, such as both the Winter and Summer Fuels Outlook conferences, will help state officials remain up-to-date on seasonal energy markets. The Office of Electricity Delivery and Energy Reliability (OE), and the EIA are also valuable sources of information

### ***EEAC System***

OE maintains a password-protected Energy Emergency Assurance Coordinators (EEAC) website through which authorized state energy emergency coordinators may access valuable energy security information, including daily news summaries, emergency situation reports, lessons learned from other states, links to outage and curtailment information, and the ability to email messages to up-to-date listings of colleagues in other jurisdictions.

The EEAC is a cooperative effort among NASEO, the National Association of Regulatory Utility Commissioners, the National Conference of State Legislatures, the National Governors Association-Center for Best Practices, Public Technology Institute, and OE's Infrastructure Security and Energy Reliability Division (ISER). It establishes a secure cooperative communications environment for state and local government personnel with access to information on energy supply, demand, pricing and infrastructure. Designated members have expertise in electricity, petroleum and natural gas. The current membership of approximately 180 people is made up of representatives from state energy offices, public utility organizations, state legislators, emergency

management agencies, homeland security offices, and Governors' offices. Local governments will be added to the system soon.

Each state has designated at least one primary and one secondary designee per energy source, up to six individuals per state for the EEAC list. In the event of an energy supply disruption or emergency, OE relies upon the EEAC contacts to provide an up-to-date assessment of energy markets in the affected states. During these emergency situations, as well as other non-emergency situations in which the list may be used, the EEAC serves as the link between the state, industry and OE.

In an energy emergency, OE may need to disclose sensitive and privileged information, and in these situations, may contact only the primary coordinator. From that point, it is the primary coordinator's responsibility to follow the state's plan for disclosure of information. In most other non-emergency or less sensitive emergency or disruption situations, both the primary and secondary coordinators may be contacted. Communications can be sent directly to the OE via email; an EEAC can use the listserves to send information to different regions; and the EEAC bulletin board is available and provides a great way to share information.

An EEAC should keep in touch with the state's key energy sector contacts, including key players in the state's primary energy supply and energy consuming sectors, as well as key emergency or energy-related personnel in other agencies of state government and local governments. Additionally, it is important to keep in contact with other EEACs in the state -- you don't want the first time you talk to the state's key contacts or other EEACs to be during an energy emergency.

The types of events that warrant communication with the EEAC network include:

- Large scale events, such as an attack on the power grid, international oil disruption, hurricane, major ice storm, etc.
- Emerging problems, such as the spring gasoline change in non-attainment air quality areas that cause a significant increase in the number of terminals without a supply; very cold weather with requests for fuel driver hour waivers; price spikes; and other indicators of stress on the supply/distribution system's ability to supply fuel
- Routine summer and winter energy assessments
- Simulations and exercises

The types of non-proprietary information that should be shared include:

- Information that quantifies the size, scope and potential duration of the problem
- Geographic area affected
- Effects upstream and downstream in the energy supply/distribution system
- Public statements by state officials
- Specific actions taken by state or local governments to mitigate impacts
- Requests from industry for assistance and response

- In-state media reports that accurately describe the problem

An EEAC should consider sending information out to the EEAC list when market indicators suggest the potential for supply problems and monitoring will be stepped up. In addition, information should be sent when an event occurs that affects energy supply, demand or price, or when an energy emergency or state of disaster is declared which affects energy supply. In the case of an international event that affects energy supply, OE will likely communicate its analysis to the EEAC list and the states, or the states may request such information from OE.

The EEAC list may also be used by OE to request information from a state in which there are reports of energy problems. State should use the list to communicate regionally to counterparts, because problems are often not limited to a single state. Too much information is often better than little or no information – if in doubt, use the list. A brief message can go a long way and communication is key.

If a message is received from another EEAC, and your state has information to lend further insights to the problem, all those who received the message should receive a response. The response should indicate whether or not similar problems are being observed in the state. The information should be verified – it is probably not wise to rely solely on personal knowledge.

An EEAC must be a credible and timely source of information. If answers are immediately available, they need to be obtained from previously-established contacts in state government and industry. The EEAC website needs to be checked regularly for postings on the bulletin boards and additional information should be added as warranted. An EEAC should also “exercise” the list periodically by sending status information to states in the region, just to get in the habit of using it. It is also a good idea to check contact information on the list and update it as necessary. It’s important to know the EEACs in the region, and have their names and numbers on an emergency contact list rather than relying solely on the website.

On the secure ISERnet website (<http://www.oe.netl.doe.gov/isernet>), there are several communications tools for exchanging information, including the EEAC listservs, the EEAC member list, and the bulletin board. Only designated EEACs have access to the secure website; designation determinations should be reviewed with the State Energy Office, or by contacting the [ISER Division](#) of the OE office. Designated EEACs can obtain the URL for the website by contacting EO’s contractor at 703-676-8308 and asking for technical assistance.

### *Understanding a State's Energy Profile and Vulnerabilities*

In addition to understanding the general response stages for dealing with an emergency and the possible levels of severity encountered, there are two additional pieces of information energy emergency planners should understand before choosing response measures: understanding the state's energy profile and assessing the vulnerabilities. These items may be covered within the body of a plan, or, if preferred, set out in appendices. For purposes of these guidelines, these items are discussed in greater detail in Appendices D and E.

The state's energy profile is composed of two elements. The first is a description of the state's energy provider industry by energy sources and stakeholder, and as much relevant energy emergency-related information as planners deem pertinent. The second is a description of how and where energy is used in the state including an assessment of vulnerability associated with that use and its location.

An energy profile includes time series of a state's energy usage by energy source and sector, the sources of supply, volume of throughput, system capacity, and interstate routing of these fuels. The EIA's fuel use data is an important source for much of this data. At a minimum, a state's energy profile should cover:

- Electric power generation capacity and output, transmission, end-uses, and prices
- Natural gas, transmission, distribution, storage, and prices
- Petroleum product, refining, distribution, storage, pipeline movement, and prices

States will need to communicate with the other stakeholders, including:

- Power generation and delivery companies, such as:
  - Investor-Owned Utilities
  - Electric Cooperatives
  - Municipal Associations
  - Power Marketing Agencies (if applicable)
  - Regional Transmission Operators/ Independent Systems Operators
  - Generation, transmission, distribution, and retail entities, if the state electric sector is restructured).
- Petroleum product refiners, suppliers, distributors, and associations
- Local governments and regional entities
- Other public sector stakeholders with relevant responsibilities. This would include, especially, all of the agencies listed in ESF-12.

An energy emergency plan's energy profile may parallel some of the information contained in a more general, State Energy Plan. However, the energy emergency plan will differ because it focuses on emergency-related conditions and how energy providers respond to shortage. So as to not reveal the specific locations of critical energy assets, information pertaining to energy providers may be general rather than specific.

A vulnerability section would contain fuel-use demographics, delivery routes, and an assessment of the impacts a shortage may have on key consumption sectors such as residential, commercial, industrial, and transportation. If particular fuels are associated with certain areas of the state, or with certain end users, this information would be included in a vulnerability assessment.

### ***Defining the Stages of an Energy Emergency***

The response of state government, including the SEO, PUC, and other responders, can be described in four phases. Each phase describes an appropriate level of mobilization required to address a potential or developing emergency situation (see diagrams on pages 29-31).

#### **Phase I - Monitor and Alert**

Phase I involves the normal ongoing energy supply, demand and price monitoring. State agencies regularly monitor data and information as it becomes available through energy supply reporting systems (see Appendix D on Supply Monitoring) and pay special attention to supply and distribution problems.

#### **Phase II - Assess and Determine Action**

In Phase II, having noticed early signs of what might become an energy emergency, responding agencies intensify data and information collection efforts and ensure that the most recent information is available. This information is analyzed to evaluate potential outcomes and assess possible courses of action.

- Appropriate contacts throughout state government should be informed of the results of this assessment.
- Appropriate action can then be determined. If no action is required, monitoring and evaluation continue and further updates are made as changes occur.

#### **Phase III - Actions and Feedback**

Once a decision has been made that specific state government action is necessary to assure the health, welfare, and safety of citizens and the continued economic well-being of the state, Phase III activity begins. This includes:

- Implementing programs to maximize available supplies and/or to minimize existing demand levels and monitoring these activities to determine their effectiveness;
- Increasing the level of communication among state agencies and others;
- If the nature of the problem involves multiple states, information sharing among state energy coordinators, using the EEAC website, should begin;
- Convening emergency planning and response organizations to consider actions that might be taken by the various state departments and agencies;
- If implementation of voluntary programs or other emergency deterrent actions fail to mitigate the emergency, implementing additional actions;

- If the situation continues to deteriorate, recommending that a *State of Energy Emergency* be declared (usually by the Governor). The Governor may also be called upon to declare a *State of Disaster*. State legislation regarding State of Energy Emergency and/or State of Disaster will dictate further action and responsibility of pertinent parties within the state;
- If it appears that all other options available to the state have proven inadequate, the next level of mobilization is to request federal assistance;
  - Federal assistance would generally be available in the case of a national/international energy emergency;
  - The emergency planning agencies and representatives from other state departments, as appropriate, would be responsible for coordinating and monitoring federal programs;
  - Federal assistance may be requested sooner without a declaration of a national emergency to provide the following:
    - Federal driver hour waivers might be requested
    - Coast Guard ice breaking efforts could be intensified
    - Vehicle fuel air quality requirements could be temporarily waived
    - Use of the Strategic Petroleum Reserve (SPR) or the Northeast Heating Oil Reserves may be requested

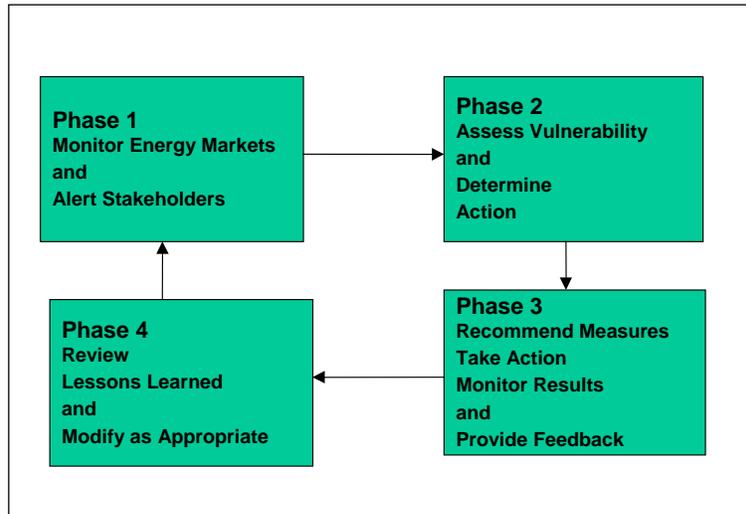
#### **Phase IV - Review Lessons Learned**

As emergency operations are phased out, responding state agencies should evaluate the emergency preparedness programs and activities that were implemented and report the results to interested parties such as the Governor's Office, cabinet level officers, legislative committees and energy policy councils. Evaluation activities should include:

- Reports describing the nature of the energy emergency and a chronology of the actions taken to respond to it;
- Evaluations of the effectiveness of specific actions taken to respond to the emergency;
- Critical reviews of the overall performance of the state's energy emergency plans in addressing an emergency.

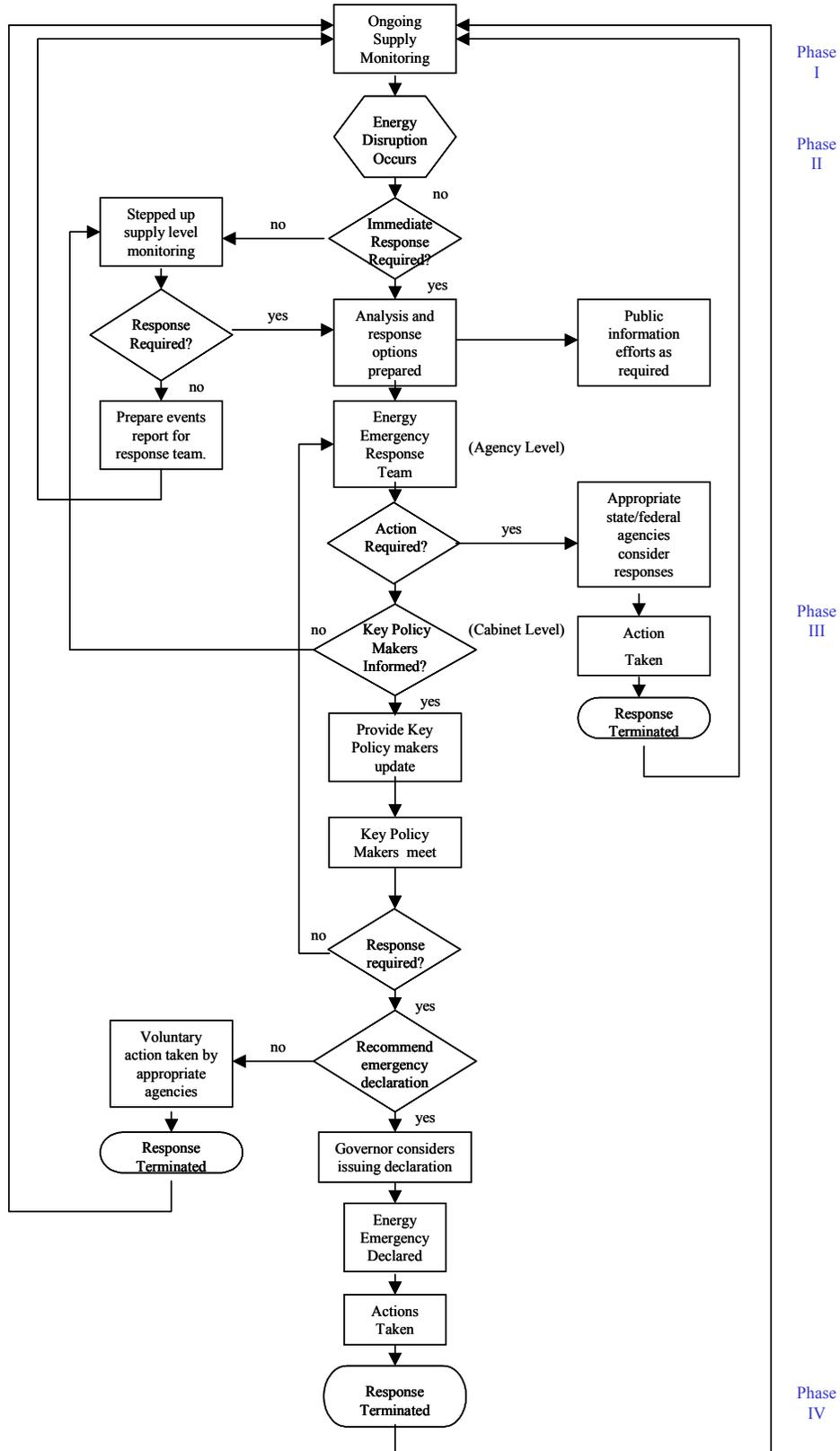
It should be noted that movement from one phase to another is as much a matter of judgment as it is a matter of objective definition.

### ***Four Phases for Managing an Energy Shortage***



## Energy Emergency Response Flow Chart

Once an energy emergency has been identified and responders have been notified, the following response flow chart suggests the steps that should be taken.



***Assessing the Severity of an Energy Emergency***

Actions to mitigate an energy emergency generally track the severity of a crisis. State officials must decide appropriate actions within any level of severity; hence, it is useful to have some guidance regarding the seriousness of an emergency in order to consider appropriate response measures. For purposes of planning, four levels of shortage are suggested:

<p><u>Normal Conditions Level 1</u> <i>Monitor and Alert</i></p>	<ul style="list-style-type: none"> <li>◆ No discernable shortage.</li> <li>◆ Possible shortages elsewhere.</li> </ul>
<p><u>Shortage Level 2</u> <i>Mild Shortage</i></p>	<ul style="list-style-type: none"> <li>◆ 5-10%* reductions in petroleum supply for a week or more, estimated by the days a port or terminal is closed or the number of substitutions of truck deliveries instead of normal pipeline supply.</li> <li>◆ 5-10%* reduction in natural gas nominations on interstate pipelines or pipelines on allocation for up to 2 weeks.</li> <li>◆ Localized storm damage causing short-term electric transmission/distribution loss.</li> </ul>
<p><u>Shortage Level 3</u> <i>Moderate Shortage</i></p>	<ul style="list-style-type: none"> <li>◆ 10-15%* reductions in petroleum products for three weeks or more.</li> <li>◆ 10 to 15%* reduction in natural gas supply nominations on interstate pipelines plus inside City Gate (the point at which gas moves from the pipeline to local distribution lines).</li> <li>◆ Curtailments by local gas distribution companies for two weeks or more.</li> <li>◆ Severe storm damage to electric transmission/distribution infrastructure.</li> </ul>
<p><u>Shortage Level 4</u> <i>Severe Shortage</i></p>	<ul style="list-style-type: none"> <li>◆ Greater than 15%* reduction in availability of petroleum products and/or natural gas for more than two weeks.</li> <li>◆ Natural gas nominations fall severely due to weather, interstate pipeline failure or production problems.</li> <li>◆ Electricity outages extend for several weeks.</li> </ul>

\*Percentage reductions are illustrative only

***Including Important Elements in the Design of Emergency Response Measures***

There are a variety of measures that the energy industry and government can take to mitigate an energy shortage. It is useful for state coordinators to understand both. Depending upon the level of severity, energy industry measures may be sufficient; the art of energy emergency management is knowing when it is necessary and prudent for

government to intervene. This section covers the necessary program elements that can be used in developing response measures; the necessity of cooperation within the state when considering response measures; implementation; and the evaluation of the effect of the measures.

### ***Program Elements***

The following short list of program elements provides a good starting point and template for evaluating each potential response measure:

- Description of the Measure
  - Provide a short narrative of the measure and actions to be taken.
- Intent of the Measure
  - Explain how energy demand will be reduced, or supply enhanced, as a result of the measure's implementation
- Conditions Under Which the Measure May be Used, and the Duration That it May be in Effect.
  - Consider the level(s) of severity in which the measure is appropriate. The description should estimate if and how the measure(s) should be used in conjunction with other measures.
- Legal Authority
  - Any regulatory or mandatory measure should include the legal basis of the measure's implementation. These include:
    - Existing legal documents
    - Other documents required to initiate an action should be prepared
    - Legal constraints

### ***Coordination***

- Consider the combination of private and public sector entities that are needed to perform a measure successfully.
- Plan to coordinate through the state's emergency management system (including ESF-12) even if proposed measures are to be implemented outside of government and especially outside of the Emergency Operations Center (EOC) structure.
- When considering measures, also take into account the possible actions of neighboring jurisdictions, regional entities and the federal government.

### ***Implementation***

This list includes identification of specific start-up actions, plus associated costs for start-up and deployment.

- Budget
  - Estimate a 90-day budget. Include cost of operations and administration (overhead).
- Procedures
  - Identify each step needed to implement a mitigation measure. Include

items such as lead time, agency responsibilities, staffing requirements, and possible constraints.

- Implementation lead time
  - Estimate how long it will take to put the measure in place.
- Operations and administration
  - Identify lines of authority, management responsibilities, and administration procedures.
- Evaluation mechanisms
  - Describe evaluation mechanisms to measure the effectiveness of the action.

### ***Impact Assessment***

Estimate the fiscal savings, social, and economic impacts. The methodology and assumptions used should be explicitly stated. To the extent practical, the response measure impacts should be separated from the effects of the shortage itself. Post-action evaluation is valuable; hence, the following steps for monitoring impacts should be considered up front:

- *Demand reductions*—estimate reductions such as voluntary conservation measures taken by citizens or mandatory measures requiring thermostat set-backs or government facility closings
- *Reductions in fuel consumption*—estimate reductions based on accepted demand measurement formulas such as those used the Federal Energy Management Program (e.g., *Federal Measurement and Verification Guidelines V. 2.2*, FEMP).
- *Supply enhancement*—inquire if there is additional supply that might be made available.
- *Interdependency effects*—discuss how the change in supply of one type of energy might affect the supply of other forms of energy.
- *Social impacts*—identify measure impacts on subgroups as defined by income, housing density or region.
- *Economic impacts*—estimate program impacts on the state’s economy. The analysis could include effects on employment, productivity, and revenues.
- *Information management*—some measures may be purely informational. All other measures could be accompanied by an explanation. Planning should identify who communicates with media and who prepares the information.

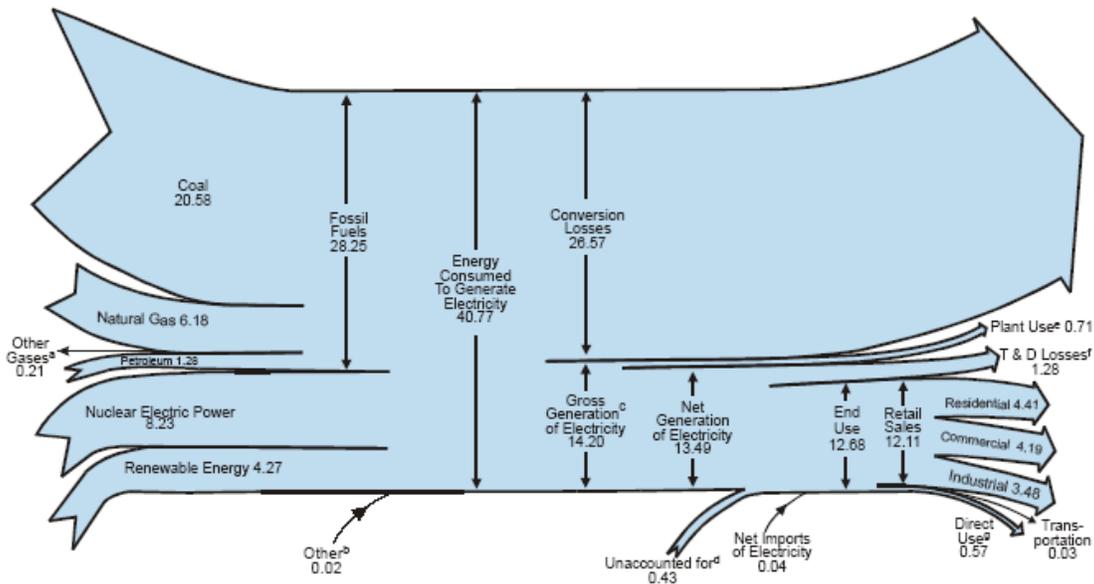
## V. RESPONSE MEASURES

This section discusses response measure by major energy groups: electricity, natural gas, and petroleum. Coal is not separately addressed and is suggested to be treated as part of the electric sector plans unless there is a large amount of non-utility coal usage in the state. It also provides general information on certain response measures, but does not offer specifications for detailed response measure planning and development.

### *Electricity*

Energy emergencies involving the electric power system place special burdens on both the electric utility and the state to implement appropriate and effective control measures. The electric power system is subject to numerous technical constraints restricting what can or cannot be done to prevent power outages. The system also contains many automatic control devices that respond almost instantaneously to perturbations in supply, demand, and other system conditions. Hence, some measures taken to prevent outages can actually increase risk and, in some cases, create cascading effects that can collapse the entire system in a matter of minutes. There have been enough episodes of this type of catastrophic, widespread, system failure to warrant care in the exercise of measures under emergency conditions. Additional technical information concerning electricity can be found in Appendices C, D, and E.

U.S. Electricity Flows 2004



### ***Power Generation, Transmission, and System Ownership***

Traditionally, electricity in the United States has been generated primarily by in-state or relatively nearby power generation facilities. In-state investor owned, rural cooperative, or municipal electric companies generate and transmit the power they produce. States regulate the industry for price, reliability and safety through a Public Utility Commission.

The advent of electricity restructuring in many states is changing the way electricity is produced and sold. Consumers are increasingly reliant on the purchase of power from a variety of in- and out-of-state sources. In several states, company-owned generating and transmission assets have been "unbundled," creating separate generating and transmission entities. As ownership of some assets moves out of state, or if assets fall outside of PUC purview, a state's ability to regulate them diminishes.

Only about a third of the states have deregulated (or restructured) their traditional regulated electric markets. In addition, as local companies buy, and become reliant on, purchased power from out of their immediate area, market forces play an increasingly important role. Market forces can create risk for consumers that neither they, nor the PUC, can control. One solution to this problem is the Regional Transmission Organization (RTO) or Independent System Operator (ISO) structure that the Federal Energy Regulatory Commission is working to broaden. Some RTOs/ISOs have been successful in matching market supply to local needs and coordinating regional utility energy management in order to avoid massive power loss. In some states that are not under the control of an RTO/ISO, the electric control area dispatchers perform many of these same functions, albeit over a smaller area, necessitating more coordination.

### ***Regional Transmission Operator / Independent System Operator Emergency Response***

RTOs/ISOs function as independent electric transmission operators, balancing authorities, and reliability coordinators for a single state or multi-state region. RTOs/ISOs operate the electrical power system in accordance with National Electric Reliability Council (NERC) standards and regional coordinating council standards. RTOs/ISOs may also operate market systems that solicit and price transactions for various services. As regional transmission operators, they possess real-time knowledge of the status of the electric system within their operating area and adjacent operating areas. Such knowledge includes power plant availability and fuel type, as well as predictive models that describe the stability of forecasted and current operations. These operators have established emergency plans for dealing with conditions where the power system is under stress. Such conditions may exist when there is either an abundance or shortage of power within the immediate control area and may include events ranging from a system-wide reserve shortage to localized voltage problems. Below are steps that RTO/ISO operators may take before and during system emergencies:

- ***Continually monitor system operations and conditions***  
RTOs/ISOs continually monitor system needs and the resources available to meet such needs. When the RTO/ISO identifies a power situation that could limit or prevent the ability to safely and reliably operate the system under normal protocols it will declare a system emergency. When time permits, an announcement of a system emergency is typically preceded by a system alert and a system warning. Notice of

such events is provided to market participants as well as to relevant state entities. System emergencies are often identified in stages by the RTO/ISO with each stage indicating the progressive serious nature of the situation.

- ***Discontinue Outside Sales Of Power/ Increase Power Imports***  
If emergency conditions warrant, an RTO/ISO can direct that the sales to areas outside of the control area be curtailed in order to meet in-market requirements. Contract arrangements by market participants must reflect the ability to use this procedure. Likewise, when conditions warrant, the RTO/ISO may solicit power from outside its control area to relieve emergency conditions.
- ***Modify Operation of Generating Units for Emergency Relief***  
Once an emergency is declared an RTO/ISO may bypass normal market operations and purchase energy or ancillary services needed to correct the situation through “out of market” transactions. An RTO/ISO may take such actions throughout the entire control area or only within a specific sub-area or service territory. When operating reserves drop below minimum reliability criteria, an RTO/ISO will typically first alert market participants and post notice of the conditions on its web site and then will take various actions to contain and correct the situation. For example, units that normally operate at close to full output capacity may be asked by the RTO/ISO to increase their output to emergency operating levels. This procedure can damage equipment if not properly implemented so is normally deployed only for a short time.

During the course of regular operations some generating units may be called upon and compensated to provide spinning reserve for the RTO/ ISO area. Spinning reserve capability involves a quick response capability to manage contingencies on the system. During an emergency, an RTO/ISO may convert non-spinning reserves to spinning reserves. Reactive power services are monitored as well and additional units can be secured to provide reactive power to maintain system stability under emergency conditions. Other generating units are typically dedicated to provide black start capability for the electric system should system-wide restoration be necessary.

- ***Request Selected Customers To Reduce Load***  
In many regions RTOs/ISOs have worked with state regulators to develop demand response programs that can be used in emergency situations. RTOs/ISOs, either directly or through their members, can deploy demand side response resources where end-use customers are compensated to reduce their demand on the system upon notice by the system operator. Such programs can be active load management with direct control of equipment or voluntary response where the customer selects equipment to be controlled based upon current operations. Some of these programs can provide emergency response in as little as thirty minutes to help maintain the reliability of the bulk power system during a capacity deficiency.
- ***Request All Customers To Voluntarily Reduce Load***  
RTOs/ISOs can develop media communications either directly or through their members to request voluntary load reduction from all customers. Such

communications should be coordinated with State Emergency Management offices, Public Utility Commissions, and media where possible. In addition, agencies should have draft press releases prepared that may be adapted for these circumstances.

- ***Reduce Voltage***

An RTO/ISO either directly or through its members can reduce operational voltage, usually by less than 5-6%, in order to mitigate system contingencies. At this level, most customers will not notice a change, however public notification should accompany such action as certain electrical equipment may be adversely affected by this action.

- ***Implement Controlled Rotating Interruptions***

This is generally the last step taken by an RTO/ISO to control a system emergency and is implemented after all other attempts to control the emergency have failed to contain the problem. Also called “rolling blackouts”, this technique involves the interruption of portions of the grid for a period of time, usually for two hours or less. As one section is restored, another is taken off-line to reduce total system load. There is often a tiered protocol for rotating interruptions. For example, the California ISO (CAISO) will allocate reductions first to utilities who failed to schedule enough power for the day and if additional reductions are needed, the CAISO will allocate those reductions based on historic peak demand. Customers interrupted in this manner generally do not receive compensation. Where practical, public notification should be utilized to permit customers to protect sensitive operations during such interruptions.

In addition to the steps that RTOs/ISOs can take to mitigate system contingencies, some further steps they may employ on a regular basis include:

- ***Assure system reliability***

Implement all prudent prevention and maintenance measures to assure system reliability. This may include the training of all operating personnel in appropriate emergency procedures, including the conduct of drills. Perform system analysis of future conditions including forecasts of demand requirements, available and planned capacity, transmission flows and operating performance on both a real time and multi-year future time period basis. Require members to operate within standards established for reliability in support of short term and long term operations. Require members to make improvements to their transmission systems in order to ensure reliable, safe and secure operations.

- ***Emergency Communications Protocols with State Regulatory Agencies***

Many RTOs/ISOs utilize formal communications protocols to keep state regulatory agencies abreast of any emergency actions identified by the RTO/ISO. These protocols are updated on a regular basis. The objective of these protocols is to ensure that state decision makers receive information about power system emergencies in a timely manner. For example, in New York, the NYISO shift supervisor is required to contact the NYPSC when unusual operating conditions occur. The NYPSC then performs a technical evaluation of system conditions and advises elected officials and

state agencies of the situation. If service disruption has or is likely to occur, state emergency management may become involved. To the extent these do not already exist, RTOs/ISOs should establish liaisons with responsible state officials for the communication of system conditions.

- ***Join in mutual aid agreements***  
Enter into mutual aid agreements and memoranda with other system operators in order to provide improved performance in meeting contingencies. This may also include agreements for sharing real time operational information that permits the RTO/ISO to observe conditions inside another's control area, which could lead to contingency conditions within their own operating area.
- ***Cooperate with state emergency and homeland security authorities***  
Work with state emergency management and homeland security authorities to assure the safety and integrity of the transmission infrastructure and associated components.
- ***Inform the public***  
Provide accurate and useful information to public officials, members and the public so there is an understanding of the operating and emergency procedures used by the RTO/ISO.

#### ***State Response – RTOs/ISOs and Legal Authorities***

The manner in which a state agency works with an RTO/ISO in the implementation of some or all of these measures depends on the legal authorities that are in place. In most instances, a cooperative working relationship is the cornerstone, as a state will have no legal authority over an RTO/ISO. However, a state may possess legal authority over the members of the RTO/ISO and can therefore augment the actions taken by an RTO/ISO in assuring cooperative participation of the members. The most common arrangement is for the RTO/ISO to develop collaborative working protocols that will keep the states informed under any system-wide emergency condition identified by the regional power entity. Most RTOs/ISOs maintain emergency protocol manuals and other supporting documentation on their web sites.

State agencies should make sure that they have copies of all of the RTO/ISO website addresses, as well as ensuring that the RTOs/ISOs have current and 24-hour contact names for state agency representatives and that state agencies have 24-hour contact names for the RTO/ISO.

#### ***State Emergency Agency Response***

In the event of an electricity emergency, the state agency responsible for responding to this type of occurrence can refer to these response procedures:

- **Monitor Conditions**  
A state can monitor the condition of the electric power system to determine appropriate actions. A state may rely on information provided by an electric utility

and upon information collected by officials.

- Assist in the Arrangement of Special Electricity Purchase Contracts  
A state can, under special circumstances, work with an electric utility to arrange special contracts for the purchase of additional power or transmission services. The objective of this is to leverage a state's influence in order to encourage sales agreements designed for emergency conditions.
- Issue Public Request for Load Reduction  
In coordination with an electric utility, a state can request the public to reduce electricity consumption and shift consumption to off-peak hours.
- Implement Load Reduction Measures at State Facilities  
Some state-owned facilities consume enough electricity to impact overall system load. A state can direct such facilities to reduce load by turning down air conditioning and water heating settings, as well as turning off unnecessary electrical equipment and lighting. Under severe conditions, a state may adjust the working hours at its facilities or even close them temporarily.

In order for this approach to work, a state must inventory facilities to learn about their electricity consumption. In many states that implement energy efficiency programs, this may have already been accomplished. This information may also identify where load reductions can occur without jeopardizing critical missions. Working with the electric utilities, this inventory can also identify where a load reduction would provide the most relief during an emergency.

- Declare State of Emergency  
If the electric power situation threatens to result in serious public health and safety impacts, a state can declare a State of Emergency, allowing special measures to be implemented. In some states, there is a single "State of Emergency" condition. Others have several emergency stages, each of which triggers different responses. Ordinarily, the Governor issues the declaration. Some states have authorities to declare an energy emergency under which the Governor may be able to order a specific set of responses within the authorities specified in the Act. Michigan has an energy emergency statute which was used during the 2003 blackout.
- Other Special Emergency Measures  
A number of additional measures can be taken under emergency conditions. These would be governed by legal authorities granted to a state. Implementation should be coordinated with electric utilities to maximize effectiveness and efficiency. Examples include:
  - Impose restrictions on the hours during which commercial, industrial, public, and school buildings may be open;
  - Impose restrictions on lighting levels in commercial, industrial, public, and school buildings;

- Impose restrictions on interior temperature in commercial, industrial, public, and school buildings;
- Impose restrictions on the use of display and decorative lighting;
- Require mandatory interruption of selected customers;
- Curtail sales of electricity outside the utility service areas;
- Grant waivers to utilities that have generators operating at less than their technical limits due to environmental or other restrictions;
- Start up state-owned backup generators to provide additional capacity; and
- Direct utilities to use pre-determined customer restoration priority lists to the degree the physical distribution system permits.

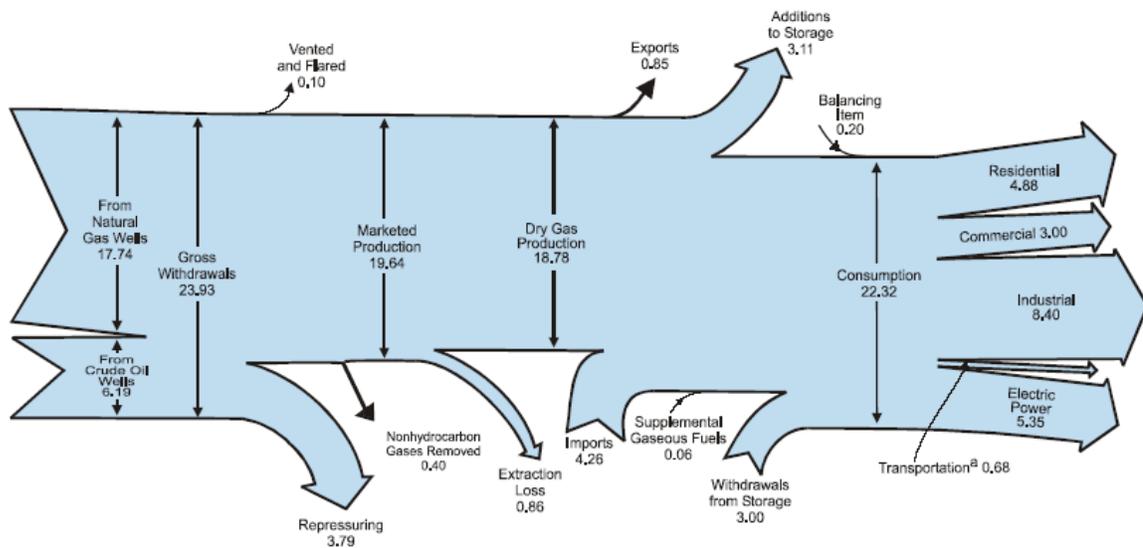
- Request Federal Assistance

Severe electricity emergencies can overwhelm state resources. At this point, a state may consider a request for assistance from the federal government.

### Natural Gas

Because of system design, disruptions in natural gas delivery are less frequent than those affecting electricity. Most natural gas systems have multiple pipeline interconnection rerouting capabilities and are buried underground. State laws require contractors to know where they are digging thus reducing (but certainly not eliminating) construction-related ruptures. Furthermore, problems with a gas system generally take longer to develop and therefore provide more opportunity for response.

Natural Gas Flows, 2004



However, when disruptions do occur, there can be substantial risk to public health and safety. A break in a natural gas pipeline can lead to fires and/or explosions. A total loss of gas supply in a region can take weeks, even months, to restore as crews must purge air

from the entire system, re-pressure it, and then manually re-light all of the customers that have been shut off. A loss of gas in winter can create serious public health impacts in a short period of time. Additional technical information concerning electricity can be found in Appendices C, D, and E.

This section provides an overview of natural gas, as well as response considerations for emergencies.

### **Gas Production and Supply**

The majority of natural gas used in the U.S. originates in the southern part of the country (Texas, Louisiana, Oklahoma, New Mexico, and Gulf of Mexico), Wyoming, and Alaska. A sizable quantity of gas is imported from Canada. Most states import gas that is transported via high-capacity, high-pressure pipelines owned by interstate gas transmission companies. Within a state, gas is provided via a local distribution company (LDC) that operates intra-state and local service lines. An LDC may also own or rent gas storage facilities that are an important component of the gas supply system. Many large commercial or industrial customers buy gas directly from producers, or interstate suppliers, and use the interstate transmission and LDC lines simply as freight transporters.

### **System Ownership**

The natural gas business structure is very complex. Gas production resources, transmission systems, and the local distribution systems are usually owned by different companies. The “gas utility” from which most customers buy is most often an LDC that generally does not own out-of-state gas supplies or interstate transmission pipelines. As such, the LDC may have fewer options for reacting to natural gas emergencies than would a vertically integrated utility.

### **Local Gas Company Response**

Local gas distribution companies are required by federal law to have emergency plans for dealing with gas infrastructure disruptions. In addition, federal pipeline safety rules apply to both local distribution companies and interstate pipelines. The emergency steps that gas companies generally take during a shortage include:

- ***Purchase and Transport Additional Gas***  
Depending on the availability of gas and transmission line capacity, an LDC may arrange to buy additional gas to meet demand. The price of this purchased gas, contract details, the availability of gas transmission capacity, and the ability of the company’s system to accept additional supply may limit the amount that can be purchased.
- ***Increase Withdrawals from Storage***  
Gas companies that own or rent storage can increase the rate of withdrawal in order to meet increased short-term demand, subject to operational constraints. This option must be exercised in relation to the impact of short-term withdrawals on longer-term supplies.

- ***Increase Withdrawals from Other Operating System Sources***  
Most gas companies have access to other supply sources such as liquefied natural gas (LNG), propane air stations, and/or synthetic natural gas plants. However, these options are not always available (i.e., they may also be in short supply), are expensive, and may not be in the appropriate locations to help in an emergency.
- ***Increase Pipeline Pressure***  
In some pipeline systems, it is possible to increase the pressure (referred to as “increasing line pack”) to effectively store additional gas. This is usually done in anticipation of high demand levels. Allowable pipeline pressure increases are regulated by federal law.
- ***Request that Customers Voluntarily Reduce Gas Demand***  
Large commercial and industrial customers may be asked to reduce gas use by decreasing thermostat settings or reducing gas-consuming industrial processes. Residential customers may be asked to lower thermostat and water heating settings, reduce hot water demand, and defer using gas appliances.
- ***Arrange for Import of Compressed Natural Gas or Liquefied Petroleum Gas***  
Compressed natural gas (CNG) and liquefied petroleum gas (LPG) can be moved by rail or truck to supplement natural gas supplies. The quantity of these substitutes is limited by the capacity of processing and transport facilities. These are expensive options.
- ***Interrupt Selected Customers***  
Some customers choose “interruptible” gas service, which allows an LDC to cut their supply in times of high gas demand. These arrangements, which provide significant financial incentives to customers, usually require advance notice of interruption and limit the total number of hours in a year that service can be interrupted.

Interruptible customers must have fuel switching capability - - usually oil or LPG. Since interruption is normally a wintertime event and other fuels are also in high demand, interruptible customers should be encouraged to acquire pre-season alternative fuel.

- ***Implement Gas Cutoffs***  
In times of severe system stress, a local gas company can cut off customers, including those who are not on interruptible service contracts. This is a “last resort” measure to avoid loss of pressure in the entire system. Because of the extensive effort required to restore service, and relight all customer pilot lights, this measure is rarely implemented. The determination of which customers to cut off is based on the configuration of the gas network and on customer priorities. In general, every attempt is made to maintain service to residential customers and special facilities (e.g., hospitals) and to impose cutoffs on lower priority customers. However, the configuration of a gas system sometimes means that customers at the end of radial pipelines are the first to lose service, independent of their priority. In general,

customers that are interrupted by the imposition of such a measure do not receive compensation.

### **State Response – Gas Companies and Legal Authorities.**

The manner in which a state agency works with a gas company depends upon the legal authorities in place. Steps that a state can take include:

- ***Review Gas Company Emergency Plans***  
The state should review gas emergency plans. These plans are normally on file with the PUC where they are reviewed and generally approved. Exercises to test the plans should be conducted annually. The state should participate with the LDC in these exercises to better define roles and highlight deficiencies.
- ***Review County and Municipal Natural Gas Emergency Plans***  
Analogous to electricity emergency plans, states may require that county and municipal agencies have plans for dealing with natural gas disruptions. These plans should be reviewed and tested.
- ***Monitor Conditions***  
States need to monitor the condition of the natural gas system to determine appropriate actions. States can generally rely on information provided by the gas company and on information collected on its own.
- ***Assist in the Arrangement of Special Gas Purchase Contracts***  
Under certain circumstances, most states can work with a gas company to arrange for special purchase contracts to obtain additional supplies and transmission services. The objective of this intervention is to leverage a state's influence and encourage the execution of sales agreements that would not be employed except during emergency conditions.
- ***Issue Requests for a Reduction in Gas Use***  
In coordination with a gas company, a state can issue requests for the public to reduce natural gas consumption and to shift consumption to off-peak hours.
- ***Implement Gas Demand Reduction Measures at State Facilities***  
A state can direct its own facilities to reduce demand for gas by turning down space heating settings and turning off non-critical gas-consuming equipment. Under severe conditions, a state may adjust the working hours at its facilities or even close them temporarily. In order for this approach to be effective, a state must inventory its facilities and their natural gas consumption patterns. It is desirable that this inventory be done prior to the onset of emergency conditions.
- ***Declare State of Emergency***  
If the natural gas situation deteriorates to a level that threatens serious public health and safety, a state can declare a State of Emergency that allows special measures to be implemented. The Governor ordinarily issues the declaration.

- ***Implement Additional Emergency Measures***

There are a number of additional measures a state can use under emergency conditions. Implementation should also be coordinated with the gas company to maximize effectiveness and minimize disruptive and counterproductive effects.

Examples include:

- Impose restrictions on the hours during which commercial, industrial, public, and school buildings may be open
- Impose restrictions on interior temperature in commercial, industrial, public, and school buildings
- Require mandatory interruption of selected customers
- Require retention, or later, restoration, of approved lists of priority customers as the physical structure of the system permits.

- ***Request Federal Assistance***

Severe natural gas emergencies can overwhelm state resources. At this point, a state can request assistance from the federal government.

- ***Establish Notification Protocols***

In a fashion similar to electricity, the procedures by which the state receives notification of an impending or actual natural gas emergency should be established.

The procedures include:

- Identify conditions requiring notification;
- Identify agency(ies) and individuals to be notified;
- Select manner of notification;
- Indicate information to be communicated. (Gas companies are already required by federal law to report certain emergency conditions that have safety implications to the U.S. Department of Transportation, Office of Pipeline Safety. State officials can use this notification network as a start.)

### **Gas Curtailment Responses**

States plan to curtail (reduce usage including cut-offs, noted above) in a variety of ways. As noted in Chapter II, the National Association of Regulatory Utility Commissioners, Ad Hoc Committee on Critical Infrastructure, conducted two major surveys of state utilities commissions in 2005. The first catalogued current energy assurance programs and policies implemented by state public utility agencies. The second documented state natural gas curtailment policies. Thirty states plus the District of Columbia responded to the natural gas survey. While this study revealed considerable differences among the respondents, it also showed that “primary authority to respond – was evenly divided among the commissions, Governors, and shared authority.”<sup>7</sup> Overall, the study found “a strong collaborative process” existing among state government stakeholders.

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<sup>7</sup> NARUC Ad Hoc Committee On Critical Infrastructure Technical Briefs. *Paper 8: NARUC Inventory on Gas Curtailment Planning*. April 2005. The NARUC paper reports in detail the findings of a 2004 assessment of state commissions regarding gas curtailment planning and related policy issues.  
<http://www.naruc.org/associations/1773/files/Gas%20Curtailment%20Inventory%20Report%20%238%2Epdf>

- ***Curtailment Plan Proceedings***

The decision to curtail gas is preceded in most states by some sort of information gathering process such as a formal hearing or intensive staff review. The curtailment plans in most states are a part of the LDC's tariff filing. Some states responded that they also could levy fines or penalties if LDCs failed to file curtailment plans in a timely manner.

- ***Curtailment Priorities***

Approximately half of the states have authority to require specific actions of LDCs in order to respond to a shortage. However, a few states have no such authority. The study notes that all curtailment plans "placed a priority on protecting human health and safety." Generally, "priorities are implemented to ensure continued service to residential customers and other critical loads."

- ***Gas in Generating Electricity***

In general, the study revealed that the use of natural gas for electricity generation has not reached the point that concerns many utility commissions. A majority of the states responding in the study indicated that "electric generation with non-firm customers have no priority of use during gas curtailment and are generally curtailed prior to other users."

The most important lesson learned from the gas curtailment survey is that the bulk of state public utility commissions join with other state agencies in responding to energy shortages. Gas curtailment policies are usually reflected within the tariffs submitted by LDCs and most curtailment plans thus submitted are required under state law. Finally, it is important to remember that utility rules vary among states. Therefore, energy officials in each state must find out exactly how their state utility policies are implemented. An understanding of the rules in neighboring and regional states is also useful because many LDCs are either owned or coordinate with out-of-state entities and some or all of a state's gas supply may cross state lines to reach customers.

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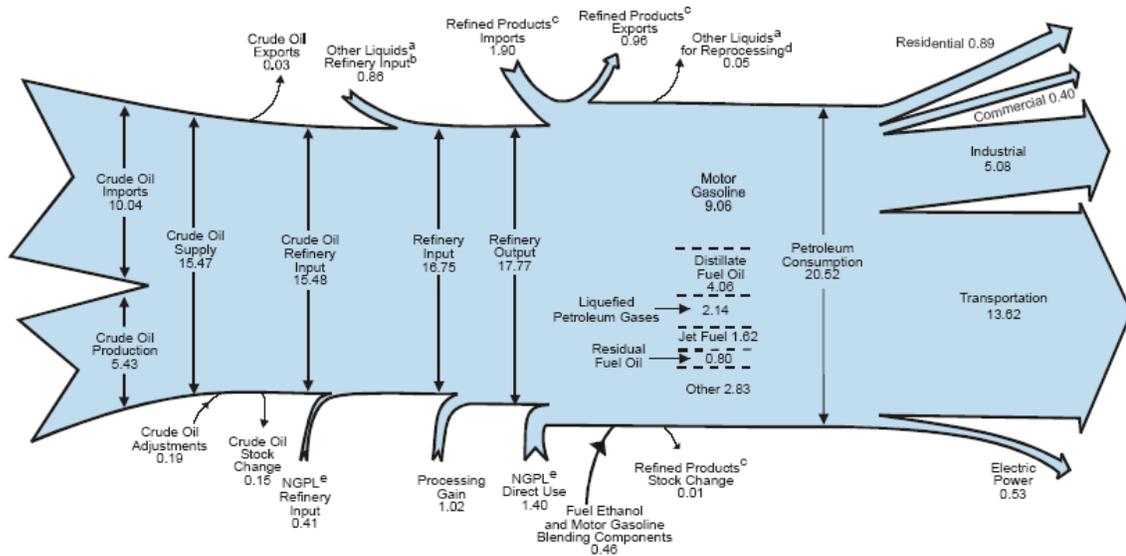
***Petroleum***

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There are several essential petroleum products used by different sectors of a state's economy. The ones of most importance from the perspective of energy emergency planning include:

- Gasoline: Used for transportation
- Heating (or No. 2 Distillate) Oil: Used for residential and commercial heating
- Diesel fuel: Used for transportation and in some industrial applications
- Jet fuel and Aviation Gasoline
- Liquefied petroleum gas (LPG) and Propane: Used for space heating and cooking
- Fuel oil: Used for industrial boilers, space heating, and electric power generation

U.S Petroleum Flows, 2004



There are numerous other petroleum products, but shortages in their supply are generally not considered to affect public health and safety and so are not usually considered in energy emergency planning. Additional information on petroleum can be found in Appendices C, D, and E.

### **Ownership**

The petroleum market involves numerous companies, both domestic and foreign. Unlike the electric and natural gas systems, there is no “utility” that can exercise substantial control over the petroleum product system and be a primary focus of any emergency response. While a number of the major oil companies are vertically integrated, managing oil from exploration and production through retail marketing, the market also contains many companies that specialize. At the retail level the petroleum “industry” is heavily weighted toward middle level suppliers (jobbers) and retail outlets. As a result, energy emergencies involving petroleum products are complex and require states to work with multiple organizations to develop effective actions.

### **Production and Supply**

Electricity and natural gas are essentially “domestic” forms of energy (even though the United States receives a substantial portion of its natural gas from Canada). Oil is an international commodity and the U.S. imports well over half of the oil it consumes. Thus, in addition to the usual supply and demand factors influencing any commodity, oil is also subject to international policy decisions or events that exist outside of the nation’s control. Domestic oil production is enhanced as much as improving technology allows, but the amount of “proven” oil reserves available within the US (and Canada) continues to diminish.

### **Refining and Delivery**

Two other major factors bear on the availability, and the price of oil products -- the refining system and the delivery system. At the refining level, the availability of oil products depends on the maintenance and repair of an aging system of refineries.

Notwithstanding advances in refining chemistry, technology, and safety, no new refineries have been constructed within the U.S. in over twenty years, although plant expansions have occurred. When refineries suffer outages of any kind, product supply is restricted and prices increase.

The national oil product delivery system is highly reliable. Major underground pipelines provide the bulk of the oil to end users. Regional and local storage supplement pipeline supply and the entire network is managed by sophisticated computer controls. Locally, oil products are transferred from inter- and intra-state pipelines (or, for many coastal areas, ships and barges) to motor carriers. During natural disasters and extreme weather, problems in this transfer can occur. While there is virtually nothing a state can do to influence foreign oil markets, and very little it can do to ameliorate refinery problems, a state can abet in-state transfers when the need arises.

### **Market Forces**

The market forces that affect the petroleum industry include:

- *International Market Economics*  
Shortages emanating from major oil supplier closures can drive prices up nationwide. Actual and predicted international events can affect world oil prices. The expected impact of international events is a rapid increase in the price of crude oil and petroleum products with a potential surge in demand caused by purchasers anticipating even higher prices. For example, a reduction in Organization of Petroleum Exporting Countries (OPEC) supply targets, or a political intervention in export from one country such as Venezuela or Nigeria, creates national price volatility as major suppliers place limits on the quantities delivered to jobbers and retailers. Conversely, when falling prices are expected, some purchasers may liquidate inventories purchased at higher prices in order to avoid losses from lower prices. This, of course, compounds downward pressures on prices.
- *Price Volatility*  
It helps to look at petroleum product shortages on a sliding scale. These products are commodities and when demand for a commodity exceeds its supply, prices rise. Analysts call this ‘price volatility’. Consumers are not interested in volatility when the price is going down (although suppliers are). Higher prices both increase the incentive to find new supply and, if sufficiently severe, curtail demand. As demand decreases, and supply increases, the price of a commodity tends to balance.
- *Seasonality*  
Petroleum product prices tend to move on a seasonal basis. They rise when seasonal demand increases; they retreat when seasonal demand diminishes. For example, gasoline prices rise in the summer because of summer vacation travel and, if left to market forces, retreat in the winter. Heating oil prices increase as winter approaches. Propane prices tend to rise in winter also. This is true even though propane is a make-up fuel for certain industrial processes, as well as a

staple for various agriculture needs that do not necessarily coincide with winter.

- *Other Curtailment*

In spite of seasonality, petroleum product supply can be curtailed in any season. When this happens, prices rise outside of normal expectations and consumers perceive that the market is out of balance. This can result from regional incidents with respect to pipelines or refineries serving a state or region, unusually high levels of demand for a parallel fuel,<sup>8</sup> or refiner or major supplier volume limitations. Increasingly, even the suggestion of problems precipitates volatility in commodity markets driving up prices ahead of actual shortage.

If problems occur in production, refining, or transport, the result is often a spot outage. Spot shortages are short-term events often focused in one area. When the localized problem ends, such as the outage of a regional refinery, the spot shortage ends and prices return to a lower level.

### **Gasoline Pricing**

Nearly half of U.S. petroleum use is gasoline; the transportation sector's dependence on gasoline suggests that contingency planning should focus on the needs of motorists and on alternative strategies for meeting transportation needs. Highway vehicles in the United States increased from 89.2 million in 1970 to 137.6 million in 2001. When estimating petroleum needs in most states, transportation usage vastly exceeds other uses for oil products.

The relationship of transportation demand to gasoline prices appears to be changing. Economics 101 teaches that supply and demand govern prices. However, when a commodity becomes so imbedded in the lives of buyers that they appear to consume at any price, that commodity is said to be highly inelastic. In the past, consumers have reacted to higher gasoline prices by reducing demand, although the speed and degree to which this demand reduction takes place is influenced by other economic factors and consumer choices. In recent years there appears to be less demand sensitivity to prices as has been seen in the past.

The implications of the increased inelasticity of gasoline prices are unclear. Eventually, there is an expectation that higher gasoline prices would shift discretionary purchases away from other goods and services. In recent years, we have seen less of an impact on demand from sharp price increases, most likely because these temporary price spikes quickly moderated. Historically, sustained high prices for gasoline will eventually reduce demand. Strong demand for motor gasoline with continued high prices may also impact the volume of heating oil to be produced as winter approaches.

### **State Actions**

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<sup>8</sup> The nature of crude oil is such that a refinery can produce more gasoline and less heating oil or vice versa. Refineries "tilt" production in the spring to produce more gasoline for summer driving and in late summer and early fall to refine more distillate for winter heating.

Given the complexity of the international and national petroleum markets, and the many regional sub-sets of these markets, there are steps a state can take in responding to an emergency situation, including:

- ***Require County and Municipal Petroleum Product Emergency Plans***  
As with electricity and natural gas, states may require that county and municipal agencies have plans for dealing with petroleum product supply disruptions. These county and municipal plans should be coordinated with the state plans to ensure effective operation.
- ***Monitor Conditions***  
A state should monitor the supply of petroleum products to determine appropriate actions.
- ***Issue Public Request for Demand Reduction***  
A state can issue requests to the public and industry to reduce petroleum consumption. In addition to requesting public participation, the state can implement a number of voluntary and mandatory programs to encourage participation in demand reduction. Examples include:
  - Increase promotion of the use of public transportation and encourage employer support for mass transit versus parking subsidies
  - Increase promotion of telecommuting and teleconferencing to minimize travel
  - Expand carpooling and vanpooling programs, both individual- and employer-based
  - Increase enforcement of highway speed limits
  - Promote flex-time work scheduling to reduce congestion
  - Encourage reduction in industrial processes requiring diesel fuel or fuel oil
  - Encourage reduction in space heating using propane
  - Assist LPG and heating oil consumers in locating alternate suppliers
  - Work with industry associations to obtain support for proposed measures from their membership
  - Assist low-income customers in obtaining emergency supply or other help in obtaining product.
- ***Enhance Supply***  
States can boost supply by following these recommendations:
  - Facilitate the movement of petroleum products to disaster areas by coordinating needs with the state highway agency and police units. (In most states, this would be done through the State Emergency Operations Center)
  - Act as a liaison among energy industries to facilitate communications and verify requests for assistance
  - Coordinate the process of acquiring waivers of federal and state driver hour limitations as needed to increase bulk highway fuel transport

- Reduce demand at state-owned facilities in the same manner as recommended with electricity and natural gas
- Request waivers from the U.S. Environmental Protection Agency for the import of gasoline that does not meet local air quality requirements
- Work through the DOE to obtain Jones Act waivers for the import of petroleum products on non-US flag vessels.

- ***Mandatory Emergency Measures States Can Consider***

If the petroleum situation deteriorates to a level that threatens public health, safety and welfare and causes significant economic impacts, a state can declare a State of Emergency that allows the implementation of mandatory measures. These measures should be considered when petroleum supplies are forced to significantly restrict supply.

In a serious petroleum shortage, provisions of the Uniform Commercial Code may apply, including Section 2-615.<sup>9</sup> The code covers commercial transactions and has provisions that address conditions when a supplier is unable to meet its supply obligations. Section 2-615 permits a seller to breach its contract with a buyer if delivery, “has been made impracticable by the occurrence of a contingency”, caused by events outside of the supplier direct control. States should review the adoption of this code under state statute to understand specifically how these provisions might apply in their states.

Note that under Section 2-615 the seller must allocate available supply in a fair and reasonable manner. Historically, when this provision triggered allocations of petroleum products, supplies were either allocated as a percentage of contractual volumes or based on the prior year’s actual purchases. Should such a condition occur, suppliers may not be able to discriminate within a class of accounts to give priority to one user over another. This may require state action under emergency authority to specify those uses that should be given priority attention to assure essential public needs are met. States should discuss this issue with their suppliers to determine how they would address this situation and contingencies can be crafted to assure that essential public needs are met. Two options are:

- Establish a “Priority End User Program” which requires that suppliers provide police, fire, and emergency medical services one hundred percent of their current requirement upon certification to their suppliers. The list of priority users should be kept as short and clear cut as possible to avoid disputes on the question of whether some service is a priority. The priority uses may also need to be tailored to the particulars of an event. For example, diesel fuel for backup generators to support water systems may need to be included in the priority list in the event the petroleum shortage is coupled with a power

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<sup>9</sup> Uniform Commercial Code – Article 2. Part 1. Short Title, General Construction And Subject Matter. Legal Information Institute Web site.  
<http://www.law.cornell.edu/ucc/search/display.html?terms=Allocations&url=/ucc/2/article2.htm#s2-615>

outage. This action can be done quickly and should be done before initiating a full-scale set-aside.

- In the event of petroleum shortages where suppliers are allocating supply for an extended duration (for example, two months or longer), a state set-aside program could be implemented. (See Appendix F: Petroleum Fuel Set Aside) This program would require petroleum companies delivering fuel into the state to set aside a percentage of their projected deliveries (usually gasoline, propane, liquefied petroleum gas, and diesel fuel) for subsequent allocation by the state authorities. In these cases, a list of priority uses should be identified to guide the decision process. This could include:
  - Police, fire and emergency response units
  - Life and health care facilities
  - Water and sanitation services
  - Telecommunications
  - Mass transit
  - Agriculture and food services
  - Critical industry and commerce
  - Other priority users as determined by the state

Other special measures that could be used to manage supply or curb demand include the following:

- Impose purchase restrictions on petroleum (primarily gasoline) products, including minimum purchase requirements, odd/even license plate purchase authorizations, staggered days of operation, and others
- Reduce highway speed limits
- Grant exemptions to driver and/or vehicle restrictions to allow increased shipments of fuels
- Impose restrictions on the hours during which commercial, industrial, and public facilities may operate.

### ***Request Federal Assistance***

Severe petroleum product emergencies usually result from national or international events that are beyond the ability of state agencies to influence. At this point, the state can request assistance from the federal government.

## VI. PUBLIC INFORMATION

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This section outlines the information to share with the public and how the information should be disseminated in the event of an energy emergency.

### ***Public Information Programs***

A strong public information program is a key crisis management tool. Timely and accurate information helps prevent confusion and uncertainty and enlists public support and cooperation. Participants in an effective public information program include the Governor's Office, state agencies, local governments, energy providers, local businesses, state legislature, and the federal government. It is essential to provide stakeholders and the public with information about the nature, severity, and duration of an emergency because inadequate understanding and awareness can lead to counterproductive reactions that may exacerbate the situation. Before state government can provide information to the public, it must gather information, describe the emergency accurately, and develop recommendations to manage the situation. It is assumed that state resources for these purposes would be more readily available during an emergency than in non-crisis times. Caution should be exercised to comply with state information protocols when receiving direct requests from the media.

- Functions

Public information programs have two primary functions in an energy emergency. The first is to help the public understand the nature of the problem and prevent panic. The second to encourage appropriate responses including conservation and energy use reduction programs.

- Problems to Avoid

Experience reveals two major risks due to poor communications: (1) multiple authorities may inadvertently release information that appears to be contradictory because they use different technical terms, and (2) some groups will take advantage of a shortage by characterizing it in ways that further their self interest.

- Types of Public Information Campaigns

- ***Informational Campaign***

The Governor or other state official(s) provide recurring communication through television, radio, and printed media, as appropriate. This campaign should provide clear and concise updates of the situation and the steps being taken to provide relief.

- ***Educational Campaign***

An educational campaign informs citizens on ways to minimize energy usage and the inconvenience they may be experiencing due to a disruption. Key elements of the educational campaign include:

- Use of the Internet, in addition to other media, to expand coverage.

- Electric and natural gas utilities are responsible for making emergency information available to their customers.
- Natural gas and electric utilities, whose emergency procedures call for public relations, should coordinate closely with the PUC and state emergency management to deliver a unified message.
- When state action is required, release to the public should come from a designated state spokesperson. In many states this person will be at the State Emergency Operations Center (SEOC). It may also include the State Energy Office and the Public Utility Commission.
- Antitrust laws prohibit oil companies from sharing information among themselves, so companies are unlikely to inform the public during shortages. As a result, the lead agency concerned with petroleum may be asked to explain the adequacy and availability of oil product supplies.

### ***Coordination***

Coordinating public information requires a mechanism for interagency cooperation and procedures to assure that public statements are timely, accurate, and consistent. As part of the planning process, a specific office should be assigned the responsibility for the public information program. This assigned office, depending on the energy resource in question, could be located within the Governors Office, Public Utility Commission, State Energy Office, or Emergency Management Agency. Recommended public information coordinating activities for various phases of energy emergency management, include:

- **Preparation**

In preparing for an impending energy emergency, the SEO should review public information plans and briefing materials and revise them as needed. Contact should be made with the state emergency management agency to assure that information protocols are coordinated and understood.

- **Location**

Assuming most communications will come from the SEOC, SEO officials should make provisions for the use of data sets, charts and related displays on-site or by remote means. An example is to make sure that projection equipment is available and operable for displaying computer-generated slides.

- **Responsibility**

A public information program will be implemented at the discretion of the Governor and managed by an assigned individual or office. Because media are not required to contact designated public information officers, in order to be prepared, agency officials should learn about the proper levels of responsibility and obtain any necessary clarification through pre-crisis coordination and routine training.

- **Effective Communications**

An effective emergency response plan involves continuous coordination and two-way communication with all levels of government, private industry, and the public.

- **Special Responsibility of Assigned Office**

The office providing public information needs to assure that necessary personnel, equipment, and facilities are on hand, and that procedures allow it to function as a central clearinghouse for gathering and disseminating energy information, whether or not it actually makes presentations to media.

### ***Operational Considerations***

The following are guiding principles for implementing public information programs during an energy emergency:

- ***Designate Contacts***

Maintain an up-to-date, 24-hour telephone and address directory of key staff and other stakeholders such as: ESF-12 state agencies, local governments, federal government agencies, and energy industry representatives.

- ***Ensure Accuracy***

Information must be verified before release. Regularly scheduled meetings with the press help relieve pressure to answer questions prematurely without adequate verification.

- ***Include Local Officials***

Make certain that local officials receive at least as much information as the media.

- ***Prepare Press Kits***

Handouts for press conferences and written statements for broadcast appearances are particularly good channels for communicating relatively detailed information such as background, statistical data and updates in which present developments are compared to previous situations. Written statements provide a record of what was said.

- ***Use National and State Information***

Use data from the Energy Information Administration and/or Office of Electricity Delivery and Energy Reliability, plus other sources, to describe the external forces (e.g., international markets, shipping issues, transportation, refinery outages, weather) that might affect a state's energy situation. Use industry experts in the interpretation of events.

- ***Don't Rush to Conclusions***

Use *extreme* caution when drawing conclusions with media present. Energy emergencies usually involve complex factors and media are under pressure to simplify information and provide headlines. Public opinion can be swayed by

fragmented data and unsupported opinions. Information and conclusions should be balanced and accurate.

- ***Access Key Policy Makers***  
Use access to key policy makers and experts from various state agencies as needed. Ask these persons, where possible, to answer substantive questions from the media.
- ***Inform the Public***  
Assist the media to inform the public in every way possible. The objective is to provide authoritative, accurate, and timely information in order to avert the spread of rumors and panic.
- ***Use Contacts in Private Organizations and Industry Associations***  
Enlist private organizations to distribute information. For example, the Automobile Association of America (AAA) distributes information about gasoline and diesel fuel prices.<sup>10</sup> Fuel oil and propane dealer associations are invaluable for providing information and speaking on behalf of the petroleum industry.

#### ***Data and Information Acquisition and Dissemination***

Public information requires access to data about the cause of, and recovery from, an energy emergency. The assigned office should draw data from well-established, credible sources. The following are guidelines for linking information regarding the progress of an energy emergency to public information efforts:

- Use existing organizational, data structures and procedures to the maximum extent possible.
- Identify the type and sources of information needed, and the level of detail and analysis required by decision makers.
- Designate media contact(s) with the requisite technical knowledge and communication skills to summarize the energy situation.
- Develop a rapid management review and approval process for public information material prior to transmitting any information outside of the office.
- Maintain a file of all news articles on the energy emergency for recordkeeping and review purposes.

#### ***Equipment Requirements***

Additional communication equipment may be needed and obtained on loan from other state agencies. For example, if a state police or emergency management division has an SEOC, it is typically equipped to handle public information needs.

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<sup>10</sup> Daily Fuel Gauge Report. American Automobile Association.  
<http://www.hospitality-1st.com/PressNews/AAA-dfgr.html>

## **VII. Conclusion**

The ongoing threat of terrorist activity within our nation's borders, our aging energy infrastructure, and the enormous economic loss associated with intentional or unintentional energy outages and natural disasters have highlighted the need for states to be prepared for all hazards as identified in the National Response Plan and the National Strategy for the Protection of Critical Infrastructure. States will continue to be on the front line when emergencies occur, and the public will expect that states know how to effectively respond in a coordinated fashion to mitigate the consequences and assure a rapid recovery.

The guidelines discussed in this document can serve as an important starting point for a state's energy emergency planning effort. They are not a substitute for a good, well-developed state plan that reflects the unique elements of a state's energy use, legal foundations and organizational structure. They provide a wealth of information and insights that can and should be considered in any well-developed plan. The process of developing a comprehensive plan, including the involvement of all the stakeholders, is nearly as important as the final document. Relationships established during the preparation of a state planning effort should also be reinforced and strengthened using exercises and training opportunities to sustain the capabilities developed in the planning process. Such efforts will produce invaluable results when an emergency occurs.

The Office of Electricity Delivery and Energy Reliability, the National Association of State Energy Officials and the National Association of Regulatory Utility Commissions remain committed to assist states with energy emergency planning and the protection of critical energy infrastructure now and in the future.

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## **VIII. Appendices**

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Appendix A - NASEO's Quick Guidelines: Ten Things You Should Know

Appendix B - Additional Information Pertaining to Federal Agencies

Appendix C – Federal Energy Emergency Actions

Appendix D – Monitoring Energy Supplies

Appendix E – Essential Pre-Crisis and Background Information for State Energy  
Emergency Responders

Appendix F – Petroleum Fuel Set-Aside

**NASEO's Quick Guidelines: Ten Things You Should Know**  
**NASEO's Guidance for State**  
**Energy Emergency Information Coordinators**

March 2003

- 1. The Governor takes the heat when there is an energy supply disruption. Make sure you and your staff are prepared to deal with the situation and intrastate political pressure.**

*In Summary:*

Be familiar with state procedures for declaring emergencies and with the National Governor's (NGA) Energy Emergency Policy.

**NGA Energy Emergency Policy**

*18.7 Energy Emergency Preparedness*

*States have played a unique and important role in response to past energy crises and must maintain their ability to meet their responsibilities to mitigate the effects of future supply disruptions or shortages. It is imperative that states and the federal government develop strategies for responding to a broad variety of possible energy and electricity emergencies. Initial efforts should focus on strategies to prevent emergencies from occurring. Efforts to diversify our energy systems while maximizing our use of cost-effective domestic energy resources are part of this long-term effort. Additional efforts must focus on planning the response federal and state governments would take if an energy or electricity emergency occurs. Any federal actions must give consideration to existing state laws and programs, and state and local officials must be included in any federal planning process.*

*Voluntary conservation should be preferred to mandatory measures whenever possible. Any mandatory response should be phased in, beginning with the least stringent measures, with rationing reserved for only the most severe shortage.*

*To facilitate emergency preparedness, the Governors support the following measures:*

*It is essential that integrated emergency response plans and procedures be developed and well tested to ensure the coordination and flow of information among energy suppliers; consumers; and federal, state, and local governments.*

*Fuel switching capability for large energy users to reduce dependence upon a single fuel source should be encouraged.*

*A timely official review of the Strategic Petroleum Reserve (SPR) should be undertaken by Congress and the Administration to determine its ideal size.*

*The Administration also should establish more specific criteria for determining when the SPR should be tapped, taking into account regional reserves.*

*Upon a Governor's declaration of an energy or electricity emergency, non-exempt federal facilities within a state should be required to reduce their energy consumption by at least 10 percent from the previous year's consumption, for the duration of the emergency.*

*Time limited (effective Annual Meeting 2001-Annual Meeting 2003). Adopted Annual Meeting 2001.*

## 2. **Know Your State's Energy Profile.**

Useful energy emergency planning begins with knowledge of the fuels used within your state. Someone in the agency should understand the sources, volume, and import routing of these fuels. Once you know the state's fuel profile, you can gauge the most vulnerable consumption sectors or you can readily identify the impacts of inclement weather, pipeline or power outages, etc.

*In summary:*

- Understand the state and local energy market(s).
- Know the relationship of local markets to regional and national markets.
- Stay current with EIA State Energy Data pertaining to your state.
- Cover all of the energy and fuel types:
  - Electricity,
  - Natural Gas,
  - Motor Gasoline,
  - Aviation Fuels,
  - Propane,
  - Heavy industrial fuels,
  - Distillates,
  - Renewables,
- Know how much energy your state consumes on a monthly basis. *Note: most data is published monthly and you can divide by 30 to get daily information.*

## 3. **Get To Know The Key Government and Industry Contacts**

Energy emergency preparedness is highly dependent on knowing who is responsible for what and how to locate them. Many, if not most, energy shortage situations can be resolved with a telephone call or direct communication with a key industry or state stakeholder. As a matter of fact, 9 out of every 10 shortages or supply disruptions are resolved without an emergency ever being declared. In addition, knowledge of your state's demographics is a must for understanding the impacts of shortages.

*In summary:*

- Understand the relationship of population centers to rural areas
- Have good demographic information for your state
- Know key persons in your state's key energy supply sectors
  - Petroleum
  - Natural gas
  - Electricity
  - Coal
  - Other
- Know key players in the various energy consuming sectors. This could be associations or other groups
  - residential,
  - commercial,
  - industrial.
- Know the key emergency and/or energy-related personnel in other agencies of state government (including the Governor's Office and state emergency management agency) and major local governments.
- Know key personnel in neighboring state energy offices.
- Know key personnel in your DOE regional office.

- Understand the role of your public utility commission in safeguarding electric and natural gas operations and energy pricing. Have a current emergency personnel contact list for all utilities, public, private, large and small. Have a current e-mail distribution list of the EEIC contacts and secondary contacts in surrounding states.

#### 4. **Maintain a Current File of Legal Authorities**

Responding to an energy shortage has many legal implications and the private sector stakeholders with whom you must work are very much aware of this. Avoid the temptation to do things the law will not allow.

*In summary:*

- Know informal “pecking” order for dealing with emergencies.
- Understand the rules promulgated by your public utility commission pertaining to local distribution company power restoration and safety.

#### 5. **Remember Energy Locations and Keep Them Current**

Geography is an important component of emergency preparedness. Most states have distinct regions with parochial supply requirements. These must be understood in order to craft an appropriate response. Knowing import and supply geography will help officials focus on the supply and retail facilities closest to a problem. Knowing how the regional energy supply network works is very important.

*In summary:*

- Know the sources of energy imported into your state and how it moves into the state
  - Pipelines,
  - Major electric transmission facilities,
  - Trucking,
  - Rail,
  - Ports.
- Know the electric utilities and gas distribution company service areas
- Locate all major petroleum import terminals for your state
- Know the routes of your state’s major highways
- Understand the distribution of all major fuel retail outlets.

#### 6. **Be Familiar With Response Measures**

The tools of response are most often called measures. Various measures are appropriate for different levels of response. Ideally, a state will have passive and voluntary measures to mitigate minor problems and an increasing scale of active and mandatory measures for more severe stages of supply disruption.

*In summary:*

- Understand what is possible and not possible in your state.
- Be prepared to explain how measures work and
- Why they might be recommended.
- Be prepared to recommend measures to the Governor
  - Voluntary,
  - Mandatory,
  - Supply Enhancement,
  - Demand restraint.

## **7. Work With The Private Sector**

Remember, various segments of the fuel industry compete for customers. It is in their interest to provide seamless, reliable service. All segments of the fuel industry are covered by one or more rules pertaining to such factors as price, territory, supply obligations or safety. Given this, you can rely on the private sector as the “first line of defense” in mitigating a fuel shortage.

Notwithstanding bad press, coordinate with the private sector to handle most mild and moderate supply problems and make the administration of mandatory measures, when necessary, efficient.

*In summary:*

- Understand the energy shortage mitigation plans of local distribution companies.
- Know the executive director of the local petroleum, propane and related professional associations.
- Maintain current contacts and communications.

## **8. Update Your Plan**

The energy supply industry is dynamic. Mergers, technology, changes in consumption patterns and political events all impact a state’s energy profile. Assume that some of your plan’s information will be questionable within two to three years and significantly out-of-date in five to seven years. Budget money and staff for plan upgrades.

*In summary:*

- Review the State’s Energy Emergency Preparedness Plan on a regular basis.
- Take account of changes in local and national energy markets as they impact your state.
- Coordinate your planning with your state’s emergency agency.

## **9. Maintain An Alternative Budget for Emergencies**

Plan to defend some politically acceptable maintenance budget for routine monitoring and plan updates and have a short-term, augmented, budget ready to present to higher authority when an emergency occurs.

*In summary:*

- Understand your budget for emergencies.
- Strive to maintain some amount of contingency planning funds to defray the costs of gearing up for any fuel shortage that affects your state.

## **10. Be Prepared When Meeting With The Media**

Being the “expert” places a special burden on the state’s energy emergency information contact. First of all, given the tendency to work closely with emergency management agencies, you can reduce distress and embarrassment by clarifying which agency is to be the official spokesman for the particular emergency. And, remember the first commandment -- no matter where an energy office is located, the Governor will become involved. Know the Governor’s Press Office protocols before the first reporter calls.

It almost goes without saying, knowing the numbers will enable the spokesperson to say something intelligent without venturing into the dangerous, but media-preferred, waters of speculation. Keep the report simple, number-driven, upbeat and short. Answer baited or antagonistic (or baited seemingly friendly) questions with the numbers. Try to think ahead of the questions.

*In summary:*

- Understand the Governor's Press Office communication protocol.
- Know your state government's communications hierarchy.
- Know when to speak and who is responsible for saying it.
- Stay abreast of events.
- Make sure the director is briefed daily, or more often, on the numbers as well as the situation.
- Practice responding to hostile questions.
- Know when to hold 'em and know when to fold 'em.

## *Appendix B - Additional Information Pertaining to Federal Agencies*

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### **Additional Information Pertaining to Federal Agencies**

A. The U.S. Department of Energy  
DOE's energy emergency support responsibilities and capabilities are distributed among several elements within the Department. DOE sets forth the missions of the key elements as follows:

1. Office of Policy

This Office is the principal advisor to the Secretary, Deputy Secretary, and Under Secretary on energy and technology policy issues, including the environmental consequences of energy use. This Office has primary responsibility for the formulation and development of national energy policy and for the conduct of policy analyses. It analyzes, develops, and coordinates departmental science and technology policy, environmental policy including global change policy, and economic policy. It is also responsible for advising the Department's senior management on issues related to the Department's environmental security and energy emergency policies.

2. Office of Electricity Delivery and Energy Reliability (OE)

This Office operates DOE's Emergency Management System, Headquarters Emergency Operations Center (Forrestal Building), the Technical Support Center (Germantown, Maryland) and ensures integration and compatibility of all Departmental emergency operations facilities. OE ensures integration and compatibility of all Departmental emergency operations facilities. In order to meet its national security requirements and responsibilities contained in the Federal Response Plan, DOE has established mandatory reporting requirements for electric power system incidents or possible incidents. Such incidents are to be reported to the Department through its EOC on a timely basis.

The OE is also responsible for Critical Infrastructure Protection. It manages Departmental activities that support DOE's role as lead agency for Government interaction with the nation's energy sectors regarding critical infrastructure protection. In this role, OE develops and manages the critical infrastructure protection R&D program, and leads and coordinates Departmental efforts to work with industry, state and local governments and national and international entities in accordance with Presidential Decision Directive 63 (Policy on Critical Infrastructure Protection). This Directive calls for a series of actions that are designed to defend our critical infrastructures from various threats. The Directive also identifies lead federal agencies for each critical infrastructure in the U.S.

### 3. Energy Information Administration (EIA)

EIA was created by Congress in 1977. It is a statistical agency of the U.S. Department of Energy that provides policy-independent data, forecasts, and analyses to promote sound policy making, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment. EIA distributes four types of information products: Energy data, analyses, forecasts, and descriptive information about our products. Many of the products, such as the *Petroleum Supply Monthly*, deal with specific industries.

Of particular value to a broad range of customers are products that contain data on all fuel types presented in an integrated manner. Some key releases of integrated information are the *Monthly Energy Review*, the *Annual Energy Review*, the *Short-Term Energy Outlook*, and the *Annual Energy Outlook*.

Most of the energy data are collected by EIA staff who design and send our statistical surveys to energy producers, users, transporters, and certain other businesses. Companies and households report directly to us. EIA also obtains energy data from other sources, such as trade associations and other government agencies.

EIA's analysis products are technical reports and articles that analyze issues about energy including economics, technology, energy production, prices, distribution, storage, consumption, and environmental effects. The Administration's forecasts cover all energy types, and include forecasts of supply, consumption, prices, and other important factors. There is a short-term forecast that goes out 6 to 8 quarters in the future, and a midterm forecast that goes out 20 years. Some of EIA's forecasting models are available on their Web site at <http://www.eia.doe.gov>.

Other EIA products are descriptions of information products that include directories of survey forms, lists of publications, electronic products and models, a guide to energy education resources, and complete lists of energy data contacts to call who have answers to energy questions.

### 4. Additional Activities

The following actions are taken in an emergency that requires activation of the Federal Response Plan and ESF-12.

- DOE Headquarters will establish the Headquarters Emergency Management Team (EMT) and assign personnel to temporary duty at the Federal Emergency Management (FEMA) Headquarters, Regional Operations Center, and Disaster Field Office as needed;
- The ESF-12 priority will be to save lives, protect property, and assist other ESFs by aiding in the restoration of damaged energy systems; and

- Within 24 hours of implementation of the Federal Response Plan or upon instruction from FEMA, DOE Headquarters will start submitting situation reports to FEMA Headquarters.

B. Federal Emergency Management Agency and the Federal Response Plan

1. FEMA Role and Responsibility

Under the Stafford Act and Executive Orders 12148, *Federal Emergency Management*, and 12656, *Assignment of Emergency Preparedness Responsibilities*, the Federal Emergency Management Agency has been delegated primary responsibility for coordinating Federal emergency preparedness, planning, management, and disaster assistance functions. FEMA also has been delegated responsibility for establishing federal disaster assistance policy.

2. Federal Response Plan

FEMA has the lead in developing and maintaining the Federal Response Plan which describes the structure for organizing, coordinating, and mobilizing federal resources to augment state and local efforts under the Stafford Act and its implementing regulations that appear in 44 CFR 206. The NRP also may be used in conjunction with federal agency emergency operations plans developed under other statutory authorities as well as memorandums of understanding (MOU) among various federal agencies. The NRP is implemented through regional supplements developed by FEMA, and the regional offices of other federal agencies, that describe specific actions, operating locations, and relationships to address the unique needs of the region and states. From time to time, operations supplements to the NRP may be issued to address special events that merit advanced planning, such as the Olympics or Presidential inaugurations.

3. Organization of the NRP

The NRP consists of six sections, two of which are the Basic Plan and Emergency Support Function Annexes. The Basic Plan presents the policies and concept of operations that guide how the federal government will assist disaster-stricken state and local governments. It also summarizes federal planning assumptions, response and recovery actions, and responsibilities. Separate Emergency Support Function Annexes describe the mission, policies, concept of operations, and responsibilities of the primary and support agencies involved in the implementation of key response functions that supplement state and local activities. Energy is ESF-12.

4. State Assistance

Under the Stafford Act, a Governor may request the President to declare a major disaster or an emergency if an event is beyond the combined response capabilities of a state and affected local governments. Based upon the findings of a joint Federal-State-local Preliminary Damage Assessment (PDA) indicating the damages are sufficient to warrant assistance under the Act, the President may grant a major disaster or emergency declaration. No direct Federal assistance is authorized prior to a Presidential declaration. However, FEMA can use limited pre-declaration authorities to move Initial Response Resources (critical goods typically needed in the immediate aftermath of a disaster, e.g., food, water, emergency generators) and emergency teams closer to potentially affected areas.

FEMA also can activate essential command and control structures to lessen or avert the effects of a disaster and to improve the timeliness of disaster operations.

5. Additional Assistance

Additionally, when an incident poses a threat to life and property that cannot be effectively dealt with by state or local governments, FEMA may request the Department of Defense (DOD) to utilize its resources prior to a declaration to perform any emergency work “essential for the preservation of life and property” under the Stafford Act. Following a declaration, the President may direct any federal agency to use its authorities and resources in support of state and local assistance efforts to the extent that provision of the support does not conflict with other agency emergency missions. A state must commit to pay a share of the cost to receive certain types of federal assistance under the Stafford Act. In extraordinary cases, the President may choose to adjust the cost share or waive it for a specified time period. The Presidential declaration notes any cost-share waiver, and a FEMA-State Agreement is signed further stipulating the division of costs among federal, state, and local governments and other conditions for receiving assistance.

6. Energy Consequences

A natural disaster, such as an earthquake, may produce energy consequences such as pipeline ruptures disrupting petroleum transmission and natural gas or transmission tower collapses interrupting gas flow and electric transmission. Conversely, failure of a primary transmission line may result in an energy emergency in its own right.

## *Appendix C – Federal Energy Emergency Actions*

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### **Federal Energy Emergency Actions**

#### I. Electricity

##### Federal Power Act (16 U.S.C. §791a et seq.)

- Section 202(c) permits DOE to order temporary interconnections of facilities and the generation and transmission of electric energy in an emergency situation. (16 U.S.C. §824a(c))
- Sections 210 and 211 authorize the Federal Energy Regulatory Commission to order interconnections and wheeling transmission services, if such actions are in the public interest and would promote efficient use of the facilities in question, conserve energy, or improve system reliability. (16 U.S.C. §§824i and 824j)

The Federal Government has the following available in the event of an electrical emergency:

#### A. Emergency Electric Power Interconnections

The Secretary of Energy has authority in an emergency to order temporary interconnections of facilities and the generation and delivery of electric power through the *Federal Power Act, Section 202(c)*. This authority may be utilized upon a petition from a party requesting the emergency action or may be initiated by the Government on its own initiative. Adverse economic conditions are not considered to be an emergency justifying the use of the statute.

##### 1. Historical Use

The Federal Power Commission used Section 202(c) of the *Federal Power Act* extensively during the Korean War to direct the delivery of electric power to various aluminum smelters in the Pacific Northwest to ensure that adequate aluminum was available for the war effort. In the early 1970s the FPC also used this authority to order the connection of the municipal electric system in Cleveland to the investor-owned Cleveland Electric Illuminating Company system. DOE has received several petitions from parties seeking issuance of Section 202(c) orders, but has denied them following determinations that an emergency did not exist.

##### 2. Economic Charges

Implementing regulations (10 CFR 205.370 et seq.) specify that the involved parties must attempt to resolve the economic charges associated with the interconnection and/or delivery of electric power. If no resolution can be reached, the matter would be referred by DOE to the Federal Energy Regulatory Commission for hearings and resolution.

- This authority probably has limited usefulness in light of ongoing restructuring of the electric power supply industry. An increasing number of independent generating supply entities, and energy supply brokers, are available to meet increased demand for electric power that cannot be met by utilities. Similarly, when a utility petitions DOE to order a transmission entity to deliver electric power over the bulk electric transmission system, the lead-time for permits and construction of new transmission lines limits the applicability of this authority to existing connections, which would already be operating at close to design capacity in an emergency. It is likely that physical limits to transmission, rather than refusal to cooperate, will limit power movements in emergency situations.

This authority needs to be re-examined when the electric power industry restructuring is completed.

B. Electric Power Reliability

The Secretary of Energy has limited authority with regard to the reliability of the interstate electric power transmission system. Under the *Federal Power Act, Section 202(a)* and the *Public Utilities Regulatory Policies Act, Section 209(b)*, DOE can define reliability regions and encourage interconnection and coordination within and between regions to gather information regarding reliability issues and to make recommendations regarding industry standards for reliability. These authorities are utilized whenever the Secretary requests a special study on electric power reliability issues.

C. Power System Emergency Reporting Procedures

The Department of Energy has authority to obtain current information regarding emergency situations on the electric supply systems in the United States. The *Department of Energy Organization Act, Federal Power Act, 10 CFR Sections 205.350 - 205.353* give DOE the authority to established mandatory reporting requirements for electric power system incidents or possible incidents. This reporting is required to meet national security requirements and other responsibilities contained in the NRP for emergencies. The DOE-417R Form was developed to standardize reporting procedures. Such incidents are to be reported via telephone, fax, or e-mail to the DOE Emergency Operations Center (staffed 24 hours a day, 365 days a year) on a timely basis.

1. There are four types of incidents that should be reported to DOE:

- *Loss of Firm Load*  
Based on their size, utilities must report activities that include load shedding actions resulting in the reduction of 100 megawatts or more of firm load or equipment failures/system operational actions that result in a continuous interruption for 3 hours or longer to over 50,000 customers.
- *System Voltage Reductions or Public Appeals*  
Utilities must report anticipated or actual system voltage reductions of 3 percent or greater for purposes of maintaining the continuity of the bulk electric power supply or any general public appeal to reduce the use of electricity for purposes of maintaining the continuity of the bulk electric power system.
- *Bulk Power System Operational Actions*  
Utilities report any incidents that degrade the reliability of the bulk power service such as actual or suspected intentional acts of physical sabotage (not vandalism) or terrorism to provider systems. They must also report an abnormal bulk electric power system operating condition that forces curtailment of scheduled electric power flows or limits emergency response capabilities.
- *Fuel Supply Emergencies*  
Utilities report existing or anticipated fuel supply (or water supply for hydro units) emergency situations at electric power generating stations that could threaten continuity of the bulk electric power supply system.

D. Allocating Coal Shipments

Coal is used primarily to generate electric power. The President has authority to allocate coal (and require the transportation of coal) for the use of any power plant or major fuel-burning installation during an energy emergency under the *Power plant and Industrial Fuel Use Act, Section 404(a)*. This allocation would take place upon declaration of a “severe energy supply interruption” as defined in the *Energy Policy and Conservation Act*, or a published finding that a national or regional fuel supply shortage exists. Section

404(e) precludes the President from delegating the authority to issue these coal allocation orders, but DOE may be requested to provide information about the energy emergency or to take other necessary action in the implementation of such a Presidential Order. To date, these authorities have never been used.

## II. Natural Gas

### Natural Gas Act (15 U.S.C. §717 et seq.)

Section 3 grants DOE the authority, upon application, to authorize imports and exports of natural gas. (15 U.S.C. §717b) Section 3 requires DOE to approve, without modification or delay, applications to import liquefied natural gas and applications to import natural gas from countries with which there is in effect a free trade agreement requiring national treatment for trade in natural gas.

Section 7(c)(1)(B) authorizes the Federal Energy Regulatory Commission, in times of emergency, and without notice or hearing, to issue a temporary certificate of public convenience and necessity for the transportation or sale of natural gas to assure maintenance of adequate service or to serve particular customers. (15 U.S.C. §717f(c)(1)(B))

### Natural Gas Policy Act of 1978 (15 U.S.C. §3301 et seq.)

DOE has delegated authority (E.O. 12235) under sections 302 and 303, respectively, to “authorize purchases of natural gas” and to “allocate supplies of natural gas” in interstate commerce upon a finding by the President under section 301 of an existing or imminent “severe natural gas shortage, endangering the supply of natural gas for high-priority uses.” (15 U.S.C. §§3361-3363)

The potential federal responses to natural gas emergencies are as follows:

### A. Natural Gas Imports and Exports

Under the *Natural Gas Act, Section 3*, DOE can authorize imports and exports of natural gas to and from NAFTA partners Canada and Mexico.

### B. Natural Gas Emergency Allocation Authority

DOE can order any interstate pipeline or local distribution company served by an interstate pipeline to allocate natural gas in order to assist in meeting the needs of high priority consumers during a natural gas emergency under the *Natural Gas Policy Act, Title III, Sections 301 to 303* (E.O. 12235).

#### 1. Emergency Purchase and Allocation

DOE has been delegated the emergency purchase and allocation authority of the President (E.O. 12235) under Title III, Sections 301 to 303 of the *Natural Gas Policy Act*. To use this authority, the President must first declare a natural gas supply emergency for high-priority users under Section 301. Under the provisions of Section 302, the Secretary may authorize emergency purchases of natural gas by any interstate pipeline or local distribution company served by an interstate pipeline. The Secretary may also order pipelines to transport gas or construct emergency facilities. Section 303 allows the Secretary to allocate supplies of natural gas.

#### 2. Implications of Industry Restructuring

The restructuring of the natural gas industry following Federal Energy Regulatory Commission Order 636 in 1992 has fundamentally changed the transmission and distribution networks. Interstate natural gas pipelines are common carriers and must provide customers equal access to pipeline space. Consequently, some of these emergency provisions may no longer be necessary. The emergency authorities may

need to be rewritten to reflect current realities in a natural gas industry that has been significantly restructured since the *Natural Gas Policy Act* was written in 1978.

C. Prohibit Burning of Oil and Natural Gas

The President has authority to prohibit any power plant or major fuel-burning installation from using natural gas or petroleum as a primary fuel during an emergency. The *Public Utilities Regulatory Policies Act of 1978, Section 607* and *Power plant and Industrial Fuel Use Act, Section 404(b)* provides this authority. To date, these authorities have never been used.

D. Pipeline Operations

Under the authority of the *Natural Gas Pipeline Safety Act* and *Hazardous Liquids Pipeline Safety Act*, the Office of Pipeline Safety governs the operation of liquefied natural gas plants and gas and hazardous liquids pipelines in interstate and intrastate operations to establish general parameters for the safety. OPS may issue waivers of its regulations for good cause (to permit pipelines to increase operating pressure or to address a particular safety issue, for instance). OPS looks to DOE staff to provide relevant energy supply, distribution and infrastructure interdependency impact assessments for use by OPS in determining whether to issue such waivers.

1. History

In the period following a break in the Colonial Pipeline Company's pipeline system, DOE (Office of Emergency Management and EIA Office of Oil and Gas) staff worked closely with the OPS to provide petroleum product supply and distribution assessments to determine the appropriate operational requirements for restoration of safe service.

III. Petroleum

Energy Policy and Conservation Act (EPCA) (42 U.S.C. §6201 et seq.)

Section 103 provides broad authority, which has been delegated to the Department of Commerce (E.O. 11912), to limit exports of crude oil and refined petroleum products (as well as coal, natural gas, petrochemical feed stocks and energy-related materials and equipment). The Commerce Department has implemented this authority with respect to certain domestic crude oils and petroleum products refined from Naval Petroleum Reserve crude oil in its Export Administration Regulations at 15 CFR Part 754. (42 U.S.C. §6212)

Sections 151-181 authorize DOE to establish and operate the Strategic Petroleum Reserve (SPR). Section 161(d)(1) authorizes the President to order draw down of the SPR upon a finding that draw down is required either by a "severe energy supply interruption"<sup>11</sup> or obligations of the U.S. under the Agreement on an

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<sup>11</sup>Section 3(8) of the EPCA defines "severe energy supply interruption" as a national energy supply shortage which the President determines -

- (A) is, or is likely to be, of significant scope and duration, and of an emergency nature;
- (B) may cause major adverse impact on national safety or the national economy; and
- (C) results, or is likely to result, from (i) an interruption in the supply of imported petroleum products, (ii) an interruption in the supply of domestic petroleum products, or (iii) sabotage or an act of God.

The Act also provides that in addition to the circumstances set forth in section 3(8), a "severe energy supply interruption shall be deemed to exist if the President determines that -

- (A) an emergency situation exists and there is a significant reduction in supply which is of significant scope and duration;
- (B) a severe increase in the price of petroleum products has resulted from such emergency situation; and
- (C) such price increase is likely to cause a major adverse impact on the national economy."

International Energy Program (IEP). (42 U.S.C. 6241 (d)(1)) Section 161(h) empowers the President to draw down the SPR despite the absence of a “severe energy supply disruption” or a need to meet U.S. obligations under the IEP, if the President finds that other circumstances exist that constitute, or are likely to become, “a domestic or international energy supply shortage of significant scope or duration” and the President determines that draw down would assist directly or significantly in preventing or reducing the adverse impact of such a shortage. However, there are several limitations on the use of this authority: the Reserve may not be drawn down for more than 30 million barrels or for longer than sixty days with respect to a single event, or if the Reserve would be reduced below the level of 500 million barrels. The Act gives the President authority to authorize the export of crude oil withdrawn from the SPR during a drawdown for refining or exchange outside the U.S., in connection with an arrangement for the delivery of refined petroleum products to the U.S. (42 U.S.C. §6241(i)) The Commerce Department has implemented this authority in its Export Administration Regulations at 15 CFR 754.

- Section 251 empowers the President to require U.S. oil companies to divert oil supplies to other International Energy Agency (IEA) member countries in satisfaction of United States' allocation obligations when the IEA's emergency oil sharing system has been triggered. (42 U.S.C. §6271)

Petroleum supply disruptions can result in the following federal actions:

- A. U.S. Lead for International Oil Emergency Response Activities  
DOE is responsible for coordinating U.S. involvement in an International Energy Agency (IEA) response to an international oil supply emergency. The IEA, consisting of 23 member countries, was created following the 1973 oil crisis with the goal of developing and maintaining cooperative oil emergency response policies and programs. This authority comes from:
  1. Executive Order 11912,
  2. Department of Energy Organization Act,
  3. Energy Policy and Conservation Act (Sections 251 to 254), and
  4. Agreement on an International Energy Program.
- B. International Energy Program  
As a signatory to the 1974 Agreement on an International Energy Program (IEP), the U.S. is obligated to cooperate with its allies in the International Energy Agency (IEA) to respond to international oil supply emergencies. The IEA has two primary oil emergency response mechanisms that it can employ. The IEP contains an emergency oil allocation program known as the Emergency Sharing System, under which each member country is responsible for helping share the burden of an oil supply shortfall. A second measure developed by the IEA in 1984 is known as the Coordinated Emergency Response Measure (CERM), which utilizes a more market-oriented approach involving stock draw and complementary measures, such as demand restraint.

DOE leads U.S. participation in an IEA oil emergency response action. The Department develops plans for U.S. emergency response actions, develops the U.S. position on an appropriate international response, and makes recommendations for action to the

President. Close coordination is maintained with the Department of State and other interested Federal agencies.

C. Strategic Petroleum Reserve

The DOE is authorized to create and maintain a Strategic Petroleum Reserve and the President is authorized to order a drawdown of the Reserve in emergency circumstances as defined in the *Energy Policy and Conservation Act, Sections 151 to 181*.

1. Drawdown

DOE is authorized to create and maintain the SPR and implementing the draw down and distribution of the reserve upon a Presidential finding of a “severe energy supply interruption” or the need to fulfill International Energy Agency obligations. The President can also order a drawdown if he finds that other circumstances exist that constitute a “domestic or international energy supply shortage of significant scope or duration.” Under this authority, the SPR can be drawn down by up to 30 million barrels a day for up to 60 days, but not fall below 500 million barrels. Purchasers would be delivered oils within approximately 16 days from the day of the decision. However, it could take several weeks for purchasers to transport oil from the SPR, have it refined and then distributed to consumers. In November 2001, the President ordered that the SPR be filled to its 700 million barrel capacity.

2. History

The emergency drawdown authority was used in January 1991 during the Gulf War when 17 million barrels of SPR oil were sold pursuant to the IEA’s Gulf War Contingency Plan of January 11, 1991. In addition, DOE has had three Congressionally-mandated sales of SPR oil for deficit reduction purposes and operational expenses and has conducted two test sales with industry to ensure SPR readiness. In September of 2000, the President directed that 30 million barrels of SPR be swapped to bolster oil supplies and enhance low inventories of winter heating oil. Companies that obtained the oil were required to return the oil plus an additional bonus amount to the SPR by the fall of 2001.

3. Jones Act and the SPR

In the event of a drawdown of the SPR, the volume of crude oil to be moved would be significantly greater than the capacity of the available U.S.-flag crude oil tanker fleet that the Jones Act requires for transport. While procedures exist to expedite the waiver process on a case-by-case basis, a general waiver of the Jones Act, such as directed by the President in his finding for the 1991 SPR drawdown, is essential to assure the rapid and orderly sale and distribution of SPR oil.

D. Limiting Exports of Energy Products

The Department of Commerce has broad authority to limit exports of energy supplies, including coal, crude oil, petroleum products, natural gas, or petrochemical feed stocks under the *Energy Policy and Conservation Act, Section 103*. However, such actions could have implications for U.S. international trade obligations under the *General Agreement on Tariffs and Trade (GATT)* and *North American Free Trade Agreement (NAFTA)* and are seldom used. DOC may seek advice on energy supply situations from DOE when considering this option.

1. Export Administration Regulations

DOC has implemented this authority in its Export Administration Regulations in the past. Exports of refined products do not require a license (with the exception of product refined from Naval Petroleum Reserves crude oil). Exports of certain domestic crude oils (Naval Petroleum Reserves crude oil, crude oil subject to a *Mineral Leasing Act* right of way, and *Outer Continental Shelf Lands Act* oil)

remain subject to restrictions in different statutes, including *Energy Policy and Conservation Act*, Section 103, and require an export license. Section 103 has never been used to re-impose export controls on crude oil or refined petroleum products.

2. Priority for Domestic Energy Supplies

The DOE has delegated authority from the Department of Commerce (DOC) under the *Defense Production Act of 1950, Section 101(c)* to assign priority ratings to contracts for materials, equipment, or services for projects deemed necessary to “maximize domestic energy supplies” or enter the marketplace to allocate the same. Most often these contracts are essential to exploration, production, refining, transportation, or conservation of energy supplies, or construction and maintenance of energy facilities. Impositions of priority ratings on contracts legally require the contractor to perform the contract on a priority basis. Such contractors receive DPA “breach of contract protection” from their existing customers.

3. Defense Production Act (DPA) Contract Eligibility

DOE must determine whether a contract(s) is eligible and supplies of materials or equipment are critical and essential to the project. DOC must determine whether the supplies for which priority assistance has been requested are scarce and whether the project reasonably can be accomplished without them. Section 101(c) is also one of the permanent provisions of the DPA that never expires should the Congress allow the DPA to lapse.

- History

This authority was used in the 1970s, and again in the 1980’s. In the early 1990s, it was also used to facilitate the development of the Alaskan North Slope oil fields and was considered for use during the Persian Gulf War to enhance foreign oil production. In limited circumstances, Section 101(c) could be used to obtain equipment needed to repair damaged production facilities or to expedite supply of fuel oil to electric utilities.

- Supply from Foreign Projects

Increasing energy supplies from foreign projects can increase domestic energy supplies. During emergencies, DOE may want to increase foreign oil production. It can do so through a draft interim final rule. This draft rule would become effective immediately upon issuance through a waiver in the DOE Organization Act .

E. Directed Energy Supplies Under the Defense Production Act

The Secretary of Energy, under the *Defense Production Act of 1950, Section 101(a)*, can require suppliers to accept contracts or orders at their normal market prices, on a priority basis, for energy supplies that are deemed “necessary or appropriate to promote the national defense.” The Secretary can also impose priority ratings on existing contracts, requiring suppliers to meet priority defense requirements relative to other customers or simply issue allocation orders to suppliers.

1. Application to DOD Contractors

The Secretary’s broad energy emergency authority applies to the Defense Department, Defense Department contractors (such as commercial airlines), and other federal agencies with national security or defense-related responsibilities. The *Defense Production Act* provides complying suppliers with breach of contract protection. This authority could be used to require acceptance of and priority performance under contracts relating to the production, delivery, or refining of petroleum products to meet national defense energy needs.

2. Transportation of Supply

DPA authority could also be used to facilitate transportation of energy supplies during an emergency by requiring pipelines, marine terminals, and other facilities to perform transportation contracts to promote national defense. However, the authority to control the general distribution of petroleum supplies in the “civilian market” cannot be used until the findings are made that supplies are “scarce and critical” and defense needs cannot be met without causing dislocations that will create appreciable hardship (Section 101(b)).

V. Other Federal Authorities

A. Government Emergency Telecommunications

DOE sponsors energy industry requests for priority access through the interstate and intrastate telecommunication switching networks. Refer to the *Federal Communications Act of 1934*, *Presidential Executive Order 12472*, and *47 CFR Part 201*.

1. National Communications System

The National Communications System (NCS) has established a National Security and Emergency Preparedness (NSEP) program called the Government Emergency Telecommunications Service (GETS) to facilitate emergency communications. GETS provides priority access through the computer systems controlling the Local Exchange Carrier (LEC) and the public switching networks that route intrastate and interstate calls. GETS provides the legal ability for telecommunications providers to give preference in the routing of telecommunications to NSEP users.

2. Delegated Authority

NCS has delegated to DOE the authority to issue GETS personal identification numbers (PINs) to the energy industry so that their NSEP telecommunications can obtain priority access to telecommunications routing.

B. State Energy Emergency Assurance Coordination

DOE and NASEO have agreed that DOE will develop, maintain, and distribute a contact list of state and federal individuals responsible for energy market assessment and energy emergency responses. The states will participate in the effort by providing timely assessments of energy markets to DOE and other states in the event of an energy supply disruption. Refer to the *Department of Energy Organization Act, Section 205* and *Federal Energy Administration Act of 1974, Sections 51 to 59*.

1. Electronic Communications Network

This critical electronic communications network of DOE officials, state emergency officials, state energy offices, and local emergency management officials provides a mechanism for the rapid dissemination and sharing of information on energy supplies, distributor and market assessments. DOE provides states an aggregated regional assessment of the effects of a market disruption when two or more states are affected. The assessment will draw upon information gathered by states, as well as other information, data, or analysis available to DOE. In support of this effort, each state identified one or more Energy Emergency Assurance Coordinators from different agencies throughout the state.

C. Low Income Home Energy Assistance Program (LIHEAP)

The Department of Health and Human Services (HHS) can make the Low Income Home Energy Assistance Program (LIHEAP) emergency contingency funds available to assist eligible low income households meet their home heating and/or cooling needs arising from a natural disaster or other emergency such as extremely high energy prices. DOE may advise HHS on the fuel supply situation for such emergency funding. This authority

is granted by the *Community Opportunities, Accountability and Training and Educational Services Act of 1998, Title III, Sec 301-309* and the *Low Income Home Energy Assistance Act of 1981*.

1. Distribution of Funds

High heating oil and propane prices have justified distributing emergency discretionary funds in the past to states based on their use of these fuels or other variables that reflect state needs.

- History

In 1992, HHS released discretionary funds when December heating oil prices rose 20 percent higher than the prior year's average retail price. Discretionary funds were provided to help low-income households pay for unusually high-energy expenses during the summer heat wave of 1995. HHS also released emergency discretionary funds in the summer and fall of 2000 to help eligible households respond to high-energy prices.

2. Block Grants

In addition to the availability of discretionary emergency funds, HHS also annually awards energy assistance block grants to the 50 states, District of Columbia, eligible Indian tribes/tribal organizations and insular territory areas, who then make payments directly to eligible households, or on behalf of such households, to help meet the cost of home energy. Although funded by the Federal Government, the HHS LIHEAP program is operated by each grantee.

D. Federal Energy Management Program (FEMP)

In a severe emergency, the President may order increased conservation in federal facilities and operations, including the federal vehicle fleet. FEMP helps federal agencies reach their energy savings goals by aggressively raising awareness of energy efficiency activities and making it easier for agencies and utilities to save energy and money. The General Services Administration (GSA) coordinates the notification and distribution of the President's request. Refer to the *Energy Policy Act of 1992 (EPA Act)* and the *Energy Emergency Conservation Act of 1979, Section 211(c)*.

1. Conservation by Federal Agencies

Federal agencies spend approximately \$4.3 billion annually on utilities and are required by *Executive Order 13123* to reduce their energy consumption by 20 percent from 1985 levels by 2010. FEMP energy savings performance contracts, utility incentives programs, and other creative financing mechanisms help federal agencies and utilities reach their energy and budget goals. FEMP has a Federal Utility Partnership Working Group to develop communications between federal agencies and utilities. Utilities are moving from rebates to customized financing programs and value-added services such as energy audits, design assistance, load management, maintenance, and power quality to federal agencies.

2. Caveat Concerning Federal Closures

At times it may be counterproductive to order the closure of federal office buildings to save energy. Federal staff could actually increase total energy demand in peak periods by increased residential consumption. Timing and magnitude of all emergency building closures needs to be weighed carefully.

3. Fuel Switching

Public Utilities Regulatory Policies Act of 1978 (codified in 16 U.S.C. §2601 et seq. and 15 U.S.C. §717z)

DOE has delegated authority (E.O. 12235) under Section 607, following the President's finding of a "severe natural gas shortage endangering the supply of natural gas for high-priority uses," to prohibit the burning of natural gas by any electric power

plant or major fuel-burning installation. Required emergency finding identical to that in the Natural Gas Policy Act. (15 U.S.C. 717z)

Powerplant and Industrial Fuel Use Act (42 U.S.C. §8301 et seq.)

Section 404(a) grants the President authority to allocate coal (and to require the transportation thereof) for the use of any powerplant or major fuel-burning installation. (42 U.S.C. §8374(a)) Exercise of this authority requires a Presidential finding of a severe energy supply interruption, as defined in Section 3(8) of Energy Policy and Conservation Act (EPCA), set out above. Section 404(e) stipulates that the President may not delegate his authority to issue allocation orders under this authority.

Section 404(b) grants the President authority to prohibit any powerplant or major fuel-burning installation from using natural gas or petroleum, or both, as a primary energy source. (42 U.S.C. §8374(b)) Exercise of this authority requires a Presidential finding of a severe energy supply interruption, as defined in Section 3(8) of EPCA, set out above. Section 404(e) stipulates that the President may not delegate his authority under this provision.

D. Facilitating the Transportation of Energy Products

ICC Termination Act of 1995 (Pub. L. No. 104-88, 109 Stat. 803)

Authorizes the Surface Transportation Board, Department of Transportation, to issue priority orders during an emergency situation for rail movement of commodities including petroleum. (49 U.S.C. §11123)

Regulations of the Department of Transportation, Federal Highway Administration, provide in 49 C.F.R. 390.23 for waiver of Federal motor carrier safety regulations in Parts 390 to 399 for motor carriers or drivers operating commercial motor vehicles to provide emergency relief during a regional or local emergency declared by the President, Governor of a State, or the Regional Director of Motor Carriers. An emergency is defined to include natural disasters, explosions, blackouts or other occurrences, natural or man-made, which interrupt the delivery of essential services such as, electricity, medical care, sewer, water, telecommunications and telecommunications transmission or essential supplies such as food and fuel, or otherwise immediately threaten human life or public welfare. For example, the waivers may exempt motor carriers and drivers from limits on on-duty hours when providing direct assistance in such emergencies and provides exemptions from inspections, record keeping, hazardous materials, and other requirements.

Magnuson Act (50 U.S.C. §191 et seq.)

Authorizes the Secretary of Transportation to issue regulations governing the movement of any vessel within the U.S. territorial waters, upon a Presidential declaration of a national emergency by reasons of actual or threatened war, insurrection or invasion, or disturbance or threatened disturbance of the international relations of the United States. (50 U.S.C. §191)

Ports and Waterways Safety Act (33 U.S.C. §1221 et seq.)

Authorizes the Secretary of Transportation to establish vessel traffic systems for ports, harbors and other navigable waters and to control vessel traffic in areas determined to be hazardous (e.g. due to conditions of reduced visibility, adverse weather, vessel congestion, etc.). (33 U.S.C. §1223)

Public Law No. 81-891, 64 Stat. 1120 (“Jones Act” waiver)

Directs the Secretary of the Treasury to waive the provisions of section 27 of the Merchant Marine Act of 1920 (“Jones Act”), which require the use of vessels documented under 46 U.S.C. §12106 (i.e. U.S.-flag, U.S.-built, and U.S.-crewed vessels) in coastwise trade, “upon the request of the Secretary of Defense to the

extent deemed necessary in the interest of the national defense by the Secretary of Defense.” In addition, Public Law No. 81-891 authorizes the Secretary of the Treasury to waive compliance with the Jones Act either upon his own initiative or upon the written recommendation of the head of another agency whenever the Secretary “deems that such action is necessary in the interest of the national defense.”

#### E. Environmental Waivers

##### Clean Air Act (42 U.S.C. §7401 et seq.)

- . Section 110(f) of the Clean Air permits a State Governor to issue an emergency temporary suspension of any part of a State Implementation Plan (“SIP”) (as well as a temporary waiver of penalties for “excess” SO<sub>x</sub> or NO<sub>x</sub> emissions) in accordance with the following: (1) the owner/operator of a fuel burning source petitions the State for relief; (2) the Governor gives notice and opportunity for public hearing on the petition; (3) the Governor finds that an emergency exists in the vicinity of the source involving high levels of unemployment or loss of necessary energy supplies for residential dwellings and that the unemployment or loss can be totally or partially alleviated by an emergency suspension of SIP requirements applicable to the petitioning source; (4) the President, in response to the Governor’s request, declares a national or regional emergency exists of such severity that a temporary SIP suspension may be necessary and other means of responding to the energy emergency may be inadequate; and (5) the Governor issues an emergency suspension to the source.
- . Environmental Protection Agency regulations (40 C.F.R. 80.73) permit EPA to grant an exemption from the Clean Air Act Section 211(k)(1) requirement mandating the sale of reformulated motor gasoline in nine large U.S. cities (in order to reduce emissions of ozone-forming substances and toxic substances) in “appropriate extreme and unusual circumstances (e.g. natural disaster or Act of God)” if a refiner, importer, or blender satisfies the following five criteria:
  - a. Nonconforming gasoline is necessary to meet projected supply shortfalls;
  - b. Refiner/importer/blender could not have avoided noncompliance and is minimizing extent of noncompliance;
  - c. Refiner/importer/blender can demonstrate how compliance will be expeditiously achieved;
  - d. Refiner/importer/blender agrees to make up air quality detriment where practicable; and
  - e. Refiner/importer/blender pays to U.S. Treasury an amount equal to the economic benefit of nonconformity less the amount expended in making up the air quality detriment.

#### F. National Defense and National Security

##### Defense Production Act of 1950 (50 U.S.C. App. §2061 et seq.)

- . The Secretary has delegated authority (E.O. 11790 and E.O. 12919) under section 101(a) to require performance on a priority basis of contracts for energy supplies that the Secretary deems “necessary or appropriate to promote the national defense,” and to allocate energy supplies “in such manner, upon such conditions and to such extent as [the Secretary] shall deem necessary or appropriate to promote the national defense.” This authority could be used, for example, to require acceptance of and priority performance under contracts relating to the production, delivery, or refining of petroleum products, to meet national defense energy needs of the Department of Defense and its contractors. It also could be used to facilitate petroleum

transportation during an emergency, for example, by requiring pipelines, marine terminals, and other facilities to perform oil transport contracts necessary or appropriate to promote the national defense. (50 U.S.C. App. §2071(a))  
Section 101(a) authority is not available to control the general distribution of material in the civilian market unless further findings required by Section 101(b) of the DPA are made, *i.e.* that the material is a “scarce and critical material essential to the national defense” and that defense needs cannot be met without causing dislocations in that market that will create “appreciable hardship.” (50 U.S.C. App. §2071(b))

Section 101(c) authorizes contract “priority ratings” and the allocation of equipment, material and services in order to maximize domestic energy supplies, if the Secretaries of Energy and Commerce, under E.O. 12919, make certain findings with respect to the need for the material, equipment or services for the exploration, production, refining, transportation, or conservation of energy supplies, or for the construction and maintenance of energy facilities. This authority could be used, for example, to assist oil companies or electric utility companies in obtaining equipment needed to repair damaged facilities, or to provide fuel oil to electric utilities. (50 U.S.C. app. §2071(c))

Section 708 provides a limited antitrust defense for industry participating in voluntary agreements “to help provide for the defense of the United States through the development of preparedness programs and the expansion of productive capacity and supply beyond levels needed to meet essential civilian demand in the United States.” In the event of widespread damage to energy production or delivery systems, this authority could be used to establish a voluntary agreement of service companies to coordinate the planning of the restoration of the facilities. (50 U.S.C. app. §2158)

The Secretary has delegated authority (E.O. 11790 and E.O. 12919) under Section 710 to train and employ persons from the private sector in order to facilitate planning for and responding to emergencies. (50 U.S.C. app. §2160)

#### G. Nuclear Energy

##### Atomic Energy Act of 1954 (42 U.S.C. §2011 et seq.)

Authorizes the Nuclear Regulatory Commission, upon the declaration by Congress of a state of war or national emergency, to suspend any licenses granted under the Act if such action is necessary for the common defense and security. (42 U.S.C. §2138)

#### H. International Authority

##### International Emergency Economic Powers Act (50 U.S.C. §1701 et seq.)

Authorizes the President to declare a national emergency to deal with a threat, which has its source in whole or substantial part outside the United States, to the national security, foreign policy, or economy of the United States. Upon declaration of a national emergency, the Act provides the President with plenary control over property that is subject to U.S. jurisdiction and in which any foreign country or national thereof has an interest. If a petroleum shortage is sufficiently severe to invoke a presidentially declared national emergency, the IEEPA could be used to control supplies of petroleum products in which foreign countries or foreign nationals have an “interest” (e.g. regulate exports of petroleum products owned or controlled by a U.S. company and in which a foreign national has contract right to acquire). (50 U.S.C. §§1701-1702)

## Appendix D – Monitoring Energy Supplies

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### Monitoring Energy Supplies

Energy supply monitoring should take place regularly. State Energy Offices and Public Utility Commissions keep track of energy developments pertaining to the state, its region, and the nation through industry contacts, trade publications, and statistical reports. The EIA web site (<http://www.eia.doe.gov/>) provides an abundance of reports and statistics on all types of energy, arranged in a variety of ways to make the data easy to find.

#### I. Monitoring Electricity

##### A. General Information

Day-to-day electricity supply and demand are monitored on a routine basis by operating companies. Utilities generally prepare annual forecasts estimating demand for electricity and the means to satisfy it for the following five years.

Other forecasted information includes:

- expected price for fuel and other necessary purchases;
- expected fuel and purchased power availability; and
- plant status and similar data.

##### B. Reporting to the DOE

Utilities are also required to report to the DOE Emergency Operations Center any of the following events:

- loss of firm system loads;
- voltage reductions;
- requests to the public to reduce usage;
- vulnerabilities that could impact system adequacy or reliability; and
- fuel supply emergencies (see Power System Emergency Reporting Procedures, May 1989, U.S. DOE).

##### C. Data Sources

###### 1. Electricity Sales

Monthly sales of electricity are published by state, month, and sector by the EIA in the *Electric Power Monthly* (found at [http://www.eia.doe.gov/cneaf/electricity/epm/epm\\_sum.html](http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html)).

###### 2. Electricity Production by Fuel Source

This information is published in the EIA *Electric Power Monthly* ([http://www.eia.doe.gov/cneaf/electricity/epm/epm\\_sum.html](http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html)) that includes, in English units (tons and barrels):

- the quantity of fuel used;
- kilowatt-hour produced;
- fuel costs by state.
  - The source of this information is the *Monthly Report of Cost and Quality of Fuels for Electric Plants*, FERC-423.

###### 3. Levels of Fuel Inventories Available for Generation

Coal inventories and prices are published in the EIA *Quarterly Coal Report* ([http://www.eia.doe.gov/cneaf/coal/quarterly/qcr\\_sum.html](http://www.eia.doe.gov/cneaf/coal/quarterly/qcr_sum.html)), that lists the amount of coal consumed in each state and the price paid by each sector. Levels of fuel inventories will be estimated by each utility

- and reported by the number of days of supply on hand at each location for coal and oil-fired plants.
4. **Generation Capacity and Plant Availability**  
This information can be obtained from the *Inventory of Power Plants in the United States* ([http://www.eia.doe.gov/cneaf/electricity/ipp/ipp99\\_sum.html](http://www.eia.doe.gov/cneaf/electricity/ipp/ipp99_sum.html)) published by the EIA.
  5. **Regional System Reliability Forecast**  
NERC (<http://www.nerc.com/>) publishes annual reports of regional system reliability. These reports assess regional reserve margins by comparing net system availability with peak load projections and system-pool reserve availability.
  6. **Coal Distribution**  
This data is published in the EIA *Quarterly Coal Distribution Report* ([http://www.eia.doe.gov/cneaf/coal/quarterly/qcr\\_sum.html](http://www.eia.doe.gov/cneaf/coal/quarterly/qcr_sum.html)) and is a source of information regarding the origin and method of shipping coal.
  7. **Cooling and Heating Degree Days**  
Cooling and heating degree day data are available from the National Weather Service and National Oceanic and Atmospheric Administration (NOAA). [http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/cdus/degree\\_days/](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/degree_days/). This data may be used to describe extreme weather conditions that create peak loads on the electrical generation system.
  8. **Contact Names, Addresses, and Telephone Numbers**  
It is important to maintain a list of key utility personnel involved with emergency operations at key locations.

Exercise caution when using and integrating data from these various sources. Direct communication with electric utilities and the state agencies will be helpful in avoiding inaccurate conclusions.

## II. Monitoring Natural Gas

### A. Complexities in Monitoring Natural Gas

Natural gas markets have become more complex to monitor in recent years as a result of the direct purchase agreements between large users and wellhead producers. This decentralization has resulted in a significant decrease in available data. Adequate monitoring of natural gas requires information covering:

- the quantity of interstate deliveries to LDC;
- storage levels;
- gas injection rates into storage;
- projected system send-outs;
- spot market and contract prices;
- curtailment notices; and
- heating degree days.

### B. Data Sources

#### 1. Interstate Deliveries to LDC

Natural gas deliveries by sector are shown in the EIA *Natural Gas Monthly*

([http://www.eia.doe.gov/oil\\_gas/natural\\_gas/data\\_publications/natural\\_g](http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_g))

- [as monthly/ngm.html](http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_monthly/ngm.html)), that shows the amount of natural gas delivered into the state for sale.
2. **Storage Levels and Injection Rates**  
State natural gas inventories are reported in the EIA *Natural Gas Monthly*, ([http://www.eia.doe.gov/oil\\_gas/natural\\_gas/data\\_publications/natural\\_gas\\_monthly/ngm.html](http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_monthly/ngm.html)). From this information the percentage of storage capacity being used at any time can be calculated.
  3. **Projected System Send-Outs**  
Natural gas demand and supply projections are provided by the LDC as part of their annual GCR filings. These projections include storage field inventory balances. Potential shortages can be identified when long-term supply is inadequate to meet projected demand.
  4. **Spot and Contract Prices**  
Average city gate prices (price to the LDC as gas is received), and prices by sector, for each state are published in the EIA *Natural Gas Monthly*, ([http://www.eia.doe.gov/oil\\_gas/natural\\_gas/data\\_publications/natural\\_gas\\_monthly/ngm.html](http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_monthly/ngm.html)). Price is an indicator of aggregate supply. When short-term prices are lower than long-term contract prices, supplies are generally judged to be in excess of demand. Conversely, when long-term contract prices are lower, spot markets are assumed to be tight, indicating that demand may be exceeding supply.
  5. **Curtailment Notices**  
Interstate pipelines provide notices of curtailments to FERC. Notices of curtailment are early indicators of reduced supply. The supplementary supply required to offset the reduction in deliveries may need to be calculated and perhaps satisfied from other in-state supplies, depending upon the current levels of storage volumes, actual system send outs, and inter-tie exchanges.
  6. **Heating Degree Days**  
Heating degree-day information is provided the National Weather Service on a daily and monthly basis, [http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/cdus/degree\\_days/](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/degree_days/). Statistics can often be obtained through local or regional weather stations. These values indicate periods of extreme cold weather that bring on increases in demand for natural gas for space heating.
  7. **Contact Names, Addresses and Telephone Numbers**  
A list of individuals that are involved with emergency-related activities and planning in state government, at local distribution companies, and interstate pipeline companies is needed in any plan.

### III. Monitoring Petroleum

- A. **Monitoring Petroleum Markets**  
Petroleum markets are monitored continuously by marketers and commercial buyers. Statistical organizations such as the EIA maintain databases containing information used to determine recent market behavior and anticipate supply disruptions. The American Petroleum Institute (API) (<http://www.api.org/statistics/>) is another source of information. While it is relatively easy to obtain aggregate petroleum data, the nature of the petroleum market, and the lack of regulation, makes learning about individual companies

relatively difficult. Following are some suggestions for working with the industry to obtain information.

1. Liaison

To ensure proper interpretation of the data, contact is maintained with liaisons within the petroleum industry. Monitoring requires a variety of data, including:

- petroleum product use;
- Prices;
- Inventories;
- Production; and
- sources of crude oil.

2. Infrastructure

Petroleum supply infrastructure information is useful. Examples include:

- marine and pipeline terminals;
- locations of terminals;
- terminal capacity; and
- terminal product transfer capability (i.e., number of loading rack positions).

Most important, monitoring also requires accurate and timely information about:

- petroleum supply;
- wholesale and retail prices;
- Inventories; and
- production rates for state and regional refineries.

3. Decentralized Delivery Network

Because petroleum is distributed through a decentralized network, there is no single source of information by which to assess or characterize emerging problems. Anti-trust laws also prohibit oil companies from sharing information regarding supply availability and price.

Consequently, petroleum information is either published by a third party that can maintain the anonymity of sources or is confidential and not available. Therefore, the state's role in developing data and assessing supply is more critical for petroleum products than it is for electricity or natural gas, where utilities control supply and distribution within franchised service territories.

4. Estimating the Severity of a Shortage

The severity of a fuel shortage can be estimated by reference to various indicators, but to quantify a statewide shortage in terms of an accurate percentage of shortfalls is difficult. Further, due to the variety of supply arrangements, distribution systems, and local consumption patterns, some communities may experience a more serious shortfall than others. Therefore, it is not always useful to tie the phases of a flexible energy emergency plan to specific percentage shortage levels.

B. Supply and Demand:

The following sources provide information useful in monitoring petroleum supply and demand

1. Motor Gasoline Consumption

The total number of gallons of gasoline used is provided on a monthly and annual basis of motor gasoline sales revenue by the Federal Highway

- Administration. The data can be found on at:  
<http://www.fhwa.dot.gov/index.html>.
2. Petroleum Product Demand  
 Monthly deliveries of petroleum products to states by primary suppliers are reported in the EIA *Monthly Report of Petroleum Products Sold into States For Consumption*,  
 ([http://www.eia.doe.gov/oil\\_gas/petroleum/info\\_glance/consumption.html](http://www.eia.doe.gov/oil_gas/petroleum/info_glance/consumption.html))
  3. Form EIA-782C.  
 This report contains actual delivered volumes for the proceeding month for each petroleum product supplied and projected deliveries for the upcoming month. This information is necessary in order to determine the severity of a petroleum shortage and to calculate the amount of petroleum product to be set aside for emergency hardships. Monthly historical sales of all petroleum products by state are also reported in the EIA C-007 Report, *First Sales of Petroleum Products into States for Consumption*.
  4. Wholesale and Retail Prices  
 Wholesale and retail prices are available on the EIA web site at: [http://www.eia.doe.gov/oil\\_gas/petroleum/info\\_glance/prices.html](http://www.eia.doe.gov/oil_gas/petroleum/info_glance/prices.html). The data include weekly and monthly prices such as the EIA *Petroleum Marketing Monthly*, that provides monthly information regarding wholesale and retail prices at the state-level and the *Weekly Petroleum Status Report*, that provides information on national and international prices and inventory information. In an emergency, more timely information is needed and may be obtained through industry publications such as Oil Price Information Service's OPIS-Alerts or the *Oil Daily*. Special state-conducted telephone surveys of petroleum distributors and retailers are also conducted.
  5. Inventories and Production  
 Inventory (stocks) and production data can be found on the EIA web site at: [http://www.eia.doe.gov/oil\\_gas/petroleum/info\\_glance/stocks.html](http://www.eia.doe.gov/oil_gas/petroleum/info_glance/stocks.html) and [http://www.eia.doe.gov/oil\\_gas/petroleum/info\\_glance/exploration.html](http://www.eia.doe.gov/oil_gas/petroleum/info_glance/exploration.html). Data are presented weekly and monthly by region. Data are reported by regional areas known as Petroleum Administration for Defense Districts (PADD). State level monthly inventories are also published in this report. Weekly data are also available through the API *Weekly Statistical Bulletin* (<http://www.api.org/statistics/>) at PADD level aggregations.
  6. Infrastructure Information  
 Relevant information includes a listing of refineries serving the state, their production and storage capacities, the location and capacities of pipelines and terminals, and marine terminals. This information is compiled from various sources including state, industry and other private sources. A list of operable refineries can be found in EIA *Petroleum Supply Annual* at:  
[http://www.eia.doe.gov/pub/oil\\_gas/petroleum/data\\_publications/petroleum\\_supply\\_annual/psa\\_volume1/current/pdf/table\\_38.pdf](http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/petroleum_supply_annual/psa_volume1/current/pdf/table_38.pdf)
  7. Source of Crude Oil  
 The source and volumes of crude oil supply used by regional refineries may be found in the EIA *Petroleum Supply Monthly*

([http://www.eia.doe.gov/oil\\_gas/petroleum/data\\_publications/petroleum\\_supply\\_monthly/psm.html](http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_monthly/psm.html)). This information is needed to estimate the extent to which refiners may need to shift supplies if any given source of crude oil is disrupted.

- For example, when crude oil was embargoed from Iraq and Kuwait in 1990, the effects of this action on Midwest supplies was able to be determined.

8. Heating Degree Days

Heating degree-day information is provided by the National Weather Service on a daily and monthly basis,

[http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/cdus/degree\\_days/](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/cdus/degree_days/). Statistics can often be obtained through local or regional weather stations. These values indicate periods of extreme cold weather, which bring on increases in demand for heating fuels for space heating.

9. Contact Names, Addresses, and Telephone Numbers

This information is obtained directly from the oil companies or their various associations and is periodically updated. State petroleum and dealer associations are excellent sources for the names of jobbers and distributors involved with the sale and distribution of gasoline, distillate, LPG and other petroleum products.

*Appendix E – Essential Pre-Crisis and Background Information for State Energy  
Emergency Responders*

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**Essential Pre-Crisis and Background Information for State Energy Emergency Responders**

I. State Energy Profile

A state energy profile should contain the elements of a state's energy industry so that responders will know how various energy supply systems work and whom to contact during a shortage.

A. The Basics of a State Electricity Industry

1. Investor Owned Utilities

Investor owned utilities (IOUs), dominate the nation's electricity industry. They own most of the generating plants and transmission lines. In states with a strong cooperative or municipal system, the local IOU still provides most of the generated power resold to consumers. IOUs are regulated by the state's utility regulatory body for tariff, reliability, safety, consumer priorities, growth and emergencies. IOUs have been traditionally owned by local investors but in several regions of the nation, they have merged into regional investor owned entities and become local subsidiaries.

2. Electric Membership Cooperatives (EMC)

Most states have electrical cooperatives that originally served rural customers. The growth of suburbs, towns and cities has blurred this distinction. Cooperatives typically own and maintain significant local delivery capacity through less populated areas. They usually belong to a state-wide electric membership cooperative association, or corporation, that acts on their behalf in many intra- and inter-state matters, helps them purchase power, manages safety training and assists during emergencies by receiving and transferring information, coordinating repair crews and helping companies exercise mutual aid agreements if needed.

Cooperatives generally have mutual aid agreements with other cooperatives – in state and in neighboring states. Most cooperatives manage their own affairs and answer to a board of directors. PUCs do not generally regulate their rates but it is not uncommon to see some linkage between the PUC and cooperatives on safety and emergency matters.

3. Municipal Electric Utilities

Municipalities throughout the US own and operate their own utilities. These utilities account for a smaller percentage of delivered electricity than IOU and EMC. Most belong to state associations, or corporations, that provide services to their members similar to those offered by EMC associations. Some municipal utilities (and cooperatives) also own generating plants and transmission lines or participate in larger organizations that do this for them. Municipals rarely fall under PUC jurisdiction for either rates or safety and emergencies. Like EMC, they do have extensive mutual aid agreements. For all three of the ownership types it is useful to know:

- who owns the utility;
- where the utility is located and the area(s) it serves;

- how the utilities manage outages including mutual aid agreements, and restoration priorities;
  - to whom and how utilities report emergencies;
  - what steps utilities take to prevent and or mitigate the loss of power and the failure of infrastructure;
  - what public laws and regulations apply; and
  - the typical restoration sequence they employ to restore power in various areas – urban, sub-urban and rural.
4. Generation Plants
- The first place a state energy planner looks for electrical generation is the IOU. As noted in the body of the guide, electric restructuring is pushing many IOU to break up vertically integrated assets so that planners should look for generating capacity owned and delivered from out-of-state companies as well as those owned and operated by in-state IOU. States should also identify independent sources of power such as merchant plans, co-generation plants and large industries that sell excess power.
5. Interstate Sales
- Utilities have long shopped for lower cost power if available outside of their own systems. Deregulation, combined with economic competition, the growth of large interstate transmission grids and a growing number of interstate marketing entities, has encouraged large end users to purchase power from many available sources for the best price in addition to, or instead of, locally-generated power.
6. Desired Data
- The best places to search for data are the state PUC and the EIA. Even if a PUC does not regulate all generation or transmission affecting a state, it is likely to know who sells power, where it is located and what it costs. EIA data also will help determine where the bulk of a state's power comes from and in what sectors it is consumed. Information to examine includes:
- megawatts generated;
  - megawatts imported;
  - reserve capacity;
  - exports;
  - principal facilities and location;
  - ownership;
  - customers served (preferably broken out by type); and
  - infrastructure failure prevention and back up.
7. Transmission
- Vertically integrated IOU own the bulk of US transmission lines. Electric restructuring is beginning to change this. Divestiture of vertically-owned assets has resulted in independently-owned (usually conglomerate) transmission systems. As the interstate sale of power has increased, so has the complexity of transmission. Hence, electric problems in one area have caused outages in other systems hundreds of miles away.

It is recommended that states look for sources of major power transmission as well as in-state delivery systems. Precise trunk and branch line location may not be necessary, but a general knowledge of

where they are, and what external conditions may affect them, is useful to have.

Many state power systems fall within RTO and that are committed to improve reliability. States should get to know the RTO, if one exists, and understand what it does to distribute and route power and prevent failures. State officials should also understand the role of the Electric Reliability Councils and how their impact.

The same two sources a state needs for generation apply to transmission as well. Start with the PUC and the EIA when seeking information.

Useful information to cover includes;

- line location;
- line capacity;
- ownership; and
- infrastructure protection and restoration protocols.

## B. The Basics of the State's Natural Gas Industry

### 1. Structure and Ownership in the Gas Industry

The natural gas industry can be roughly divided into three categories: production, transmission and distribution. In states with gas production, gas can be supplied to consumers directly from the well-head, or going through gas processing units where liquids are removed. Most states, buy gas from inter-state transmission lines.

Gas is produced by large national oil and gas companies plus a myriad of relatively small owners and operators who sell their gas to processing plants or transmission companies. The major transmission companies, such as Columbia, may also have an interest in local distribution companies.

### 2. Local Distribution Companies (LDCs)

The primary companies delivering gas to consumers are called LDCs. They obtain gas from various producers or interstate transmission pipelines. LDCs are regulated by PUCs for the same factors found in the electric market. LDCs, like electric utilities, are investor owned and also, like electric companies, subject to consolidation. In some states, the same company sells both electricity and natural gas. Additionally, independent companies have emerged that are not regulated for tariff by PUCs, but must comply with various operating, safety and environmental regulations. It is useful to know:

- millions of cubic feet imported;
- how much each company nominates (contracts to buy);
- volume of cubic feet produced if applicable.
- storage capacity available to the state (both in- and out-of-state);
- export volume if applicable;
- principal facilities and location;
- ownership;
- customers served (preferably broken out by type); and
- infrastructure failure prevention and back up.

### 3. The Impact of Deregulation

Natural gas companies, like electricity companies, have always sold to a wide variety of end users. Large volume energy buyers can obtain an industrial or commercial rate that is more closely attuned to the market than residential rates that are adjusted to provide predictable and manageable prices for home consumption. Many states have allowed large industrial, commercial and institutional consumers to buy natural gas directly from producers while the LDC serves as a transmission company delivering gas to the end use for what is basically a freight rate plus certain fees. Many states have now extended open market purchase to residential users as well. The result is that many users of natural gas now purchase gas at market, rather than tariff-controlled rates. At least one state has basically deregulated its natural gas market so that the long-standing LDCs became a wholesale distributor to several independent, market based, companies. For LDCs and other ownership types it is useful to know:

- who owns the companies;
- where the companies are located and who they serve;
- how the companies manage storage;
- how the companies manage supply shortage; how the companies repair pipeline ruptures and restore gas, including their mutual aid agreements and restoration priorities;
- to whom and how do they report emergencies;
- what they typically do to prevent the loss of gas and mitigate infrastructure failure or damage;
- what public laws and regulations apply; and
- their typical restoration sequence to various areas – urban, sub-urban and rural.

## C. Basics of the State's Petroleum Industry

### 1. Ownership Structure

A typical state petroleum industry is composed of several layers of ownership. Whether produced in or out-of-state, the produced oil must be refined before it is sold to consumers. States closest to refineries may enjoy lower pipeline transportation costs. In some cases, ownership may be wholly, or partially, vertically integrated from production through retail sales; hence the levels listed below may overlap. Levels of ownership pertinent to state petroleum consumption include:

- a. Production Companies  
Identifying these companies is "nice-to-know" but not critical for state planning purposes
- b. Refineries  
It is useful, but not absolutely necessary, to know which refineries supply a state's petroleum. If known, potential shortages can be identified early when a supplying refinery curtails production or shuts down for any reason.
- c. Primary Suppliers  
The SEO should identify every company that imports oil into the state so that it can maintain import volume information and know whom to contact if a state Set Aside is necessary.

- d. Pipeline Companies  
Each state should identify the owners/operators of inter- and intra-state pipelines importing and shipping petroleum to and within the state.
- e. Wholesale Distributors (or Jobbers)  
These companies may be subsidiaries of national or regional entities, or they may be independent. They are key players in the transfer of petroleum products from pipelines (or from barges and ships, if applicable) to retailers. They generally operate facilities, called terminals, at which product is transferred from interstate carrier for local delivery. State officials should know who these jobbers are, or at a minimum, be in contact with the state organization that represents them. It is also useful to know the location of various terminals throughout the state as well as the volume per day transfer capacity of each facility. Other information a state can try to obtain from jobbers includes:
  - o areas served;
  - o principal roadways used;
  - o numbers of residential, commercial, institutional and industrial customers;
  - o access to, and volume of, available storage;
  - o emergency plans if any;
  - o volume of product delivery (per specified period of time); and
  - o names of non-oil company transporters who may be hired to deliver product.

Remember, petroleum companies are unregulated and are not obligated to provide information. Various petroleum associations may be a better source for some or all of this data.

- f. Retailers
  - o Motor gasoline is sold primarily through retail gasoline outlets. While it is useful to know the number and location of operating outlets on a yearly basis, these outlets change hands often. Knowing the total number of state retail outlets is usually sufficient.
  - o Home heating oil and LPG retailers will be significantly fewer in number than motor gasoline service stations. A list of these companies is very important for providing assistance to low income customers during a shortage. Knowledge of what jobber terminals they use is helpful. Note: in some states a terminal is a major wholesale facility. In others, it may include every retail heating oil company with a truck. There is no standard for this.

## 2. Consumption Profile

EIA provides relatively up-to-date data for in-state sales of all retail petroleum products. Charts and graphs from the EIA provide valuable information for understanding how various shortages impact different consuming sectors and the relative importance of each type of petroleum product within a state's economy.

## II. Vulnerability Assessment

A vulnerability assessment will help state energy emergency planners understand the relationship between the state's energy providers, energy imported and customers. The aim of an assessment is to associate geographic and consumption patterns with energy supply in order to predict the impact of a shortage on various customers and areas within a state.

### A. Demographics

Some of the demographic factors planners should consider exploring in order to do a vulnerability assessment are:

1. population.
2. housing profile.
3. employment profile.
4. sector energy use (or include in Energy Profile).

### B. Energy Emergency Stakeholders

Stakeholders are those entities who participate in a state's energy marketplace in some manner. Obvious stakeholders are the various energy companies that generate, transmit and sell power or fuel. Others include agencies identified in ESF-12. Clearly, the SEO should be a stakeholder even if it is not specifically identified as one because of its location within state government. One could argue that the public is a stakeholder as well. For the purpose of emergency planning, the public's interest is identified through the energy use profile and the demographics contained in the vulnerability assessment. A plan should contain the following:

1. State energy providers identified and described.
2. State agencies identified in ESF-12, the SEO and others as applicable. (e.g., Attorney General, People's Counsel).
3. Energy, company and dealer associations and related organizations.
4. County and municipal government organizations including:
  - Emergency management.
  - State-wide government associations.
5. Out-of-state stakeholders including:
  - Interstate energy holding companies doing business in state.
  - Federal agencies.
  - Regional entities.
6. Cross cutting organizations including:
  - Social service agencies assisting consumers.
  - Private and non-profit relief agencies.

### C. Assessment

Evaluate potential vulnerability to energy shortages for various end users and locations, and for a variety of reasons, in light of the state's energy profile, its demographics and the interests of its stakeholders.

## ***Appendix F – Petroleum Fuel Set-Aside***

### **I. Overview**

#### **What Is the Purpose of the Set-Aside?**

Typically, a state Petroleum Fuel Set-Aside is a mandatory program designed to provide “hardship” assistance to designated petroleum customers based on the availability, not price, of refined petroleum products. A Set-Aside would ordinarily be implemented when the amount of liquid petroleum fuels entering a state is inadequate to meet demand for a sustained period. These conditions are manifest when wholesaler-resellers (major, often national, suppliers) of petroleum commodities cannot obtain and resell sufficient product and there is a need to ration supply in order to serve priority customers. Price is not an issue in this type of emergency; the problem a Set-Aside is designed to meet is when price can no longer attract product for sale.

This condition may also exist when wholesaler-resellers find it necessary to reduce the amount, or allocation, of product to local retailers due to such conditions as insufficient supply of crude oil or refined petroleum products such as gasoline, diesel fuel, home heating oil, etc. extended maintenance or repair of refineries or other large-scale problems. If this happens, a Governor may declare an energy emergency, or designate certain geographic areas as suffering from supply imbalance and redirect product to those areas as needed.

Most Petroleum Set-Asides are designed to interfere with the petroleum market as little as possible. A Petroleum Set-Aside allocates limited volumes of fuel to designated priority users in order to maintain vital services. They are not intended to control consumption, reduce queues, and provide relief for routine uses such as driving (including commuting to and from work). A Set-Aside does not dictate cost. All fuels delivered through the program are purchased at the market price and, ordinarily, through the priority customer’s usual supplier(s). The volume of fuel allocated, or released for purchase to designated users, is designed to achieve maximum flexibility in the distribution of shortage fuels and to minimize government interference with the petroleum market.

### **II. How Does the Set-Aside Work?**

In most states, emergency management is coordinated through the state emergency management agency and a state emergency plan that designates one or more agencies to lead energy emergency responses under Emergency Support Function 12 (ESF-12). The agency most likely to have the lead in a liquid fuels shortage is the department in which State Energy Office(SEO) is housed or the SEO itself if it stands alone. Within that office, a set Set-Aside program generally assigns responsibility to a Fuel Allocation Manager. This manager, in consultation with higher authority and representatives of the petroleum industry, allocates fuel up to a set percentage of the total monthly supply of the fuel available for sale in the state. Set Aside regulations usually designate a percent of the volume for each fuel to be adjusted within a maximum parameter (e.g., 5%) according to the severity of the shortage. No supplier would be required to set aside more than the percentage designated for any single fuel. The wholesaler-retailer (or prime supplier) retains the physical volume designated to be set-aside for release as ordered by the State Energy Office.

### **The key steps in operating a Petroleum Fuel Set-Aside:**

- End-users on the list of qualified priority customers and who experience a hardship obtaining adequate supply, file a pre-prepared Hardship Application with the State Energy Office for relief.
- Each potential applicant must judge whether or not to apply for hardship relief based on monthly fuel needs.
- The application must be filed within a certain number of days at the beginning of each month (e.g., 7 business days).
- At the beginning of each month, the Fuel Allocation Manager, using information furnished on the federal EIA 782C form<sup>12</sup>, for each primary petroleum supplier shipping onto the state determines the volume of each fuel available for assignment.
- The Fuel Allocation Manager makes hardship assignments from the monthly available volume of set aside fuel.
- The Fuel Allocation Manager orders wholesaler-resellers to supply the retail dealer normally used by priority customers (e.g., usually an established or contractual customer) whose applications are approved.
- The retailer receiving this supply then sells the product to the applicant at the market or other price negotiated between them.
- Assigned fuel is sold only to approved applicants in accordance with the Set-Aside regulations. Applicants are, of course, free to purchase whatever fuel they can on the open market.
- The Fuel Allocation Manager may base the decision to assign fuel on a variety of factors depending upon the severity of the shortage, the time of year, the number of applications received from other priority customers within and outside of a specific applicant's area, the actual volume of fuel available for the month or any other orderly and equitable distribution process (e.g., first come, first served).
- If, at the end of any month, not all set-aside fuel has been assigned, the Fuel Allocation Manager may order a release to all priority users or to the public. All set-aside fuel should be disbursed by the end of each month to avoid confusion with the following month's allocation.
- Applicants may appeal decisions to some higher authority, usually the state Attorney General. If relief is granted, the relief is most likely to be assigned at the beginning of the following month before other assignments are made. Of course if the program ends in the month following an order for relief, the order would be invalid.

### **How Is the Need for Set-Aside Identified?**

The conditions suggesting the use of a Set-Aside occur when retail dealers report to their various retail associations that the amount of product allocated to them by wholesaler-resellers, major petroleum companies, or various market intermediaries has been severely reduced compared to their normal allocation.

### **What Fuel Sectors Are Involved?**

The fuel sectors most likely to be affected by the above conditions include all liquid fuels such as distillate (heating oil, diesel and kerosene) motor gasoline, propane, aviation fuels and boiler fuel.

### **Percent of Petroleum Product to Set Aside**

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<sup>12</sup> <http://www.eia.doe.gov/oss/forms.html#eia-782c>

Typically, the maximum monthly percentage of incoming product set aside by major suppliers, and reallocated to priority users are:

- Motor gasoline: 5%
- Middle distillate (diesel & heating oil): 4%
- Boiler Fuel (#4 and heavy industrial fuel oil) 3%
- Propane: 3%
- Aviation gasoline: 5%
- Kerosene: 2%.

Note: The higher the percentage the larger the amount is removed from the generally available supply. The percentage should be no larger than what is expected to be required to meet emergency supply needs.

### **Who Can Apply for Hardship Relief?**

The potential applicants for the Set-Aside include businesses, groups, institutions and governments included within the list of priority customers whose goods and services are needed for the welfare of the public and may include wholesale purchaser-resellers for sale to wholesale purchaser-consumers (retailers) and their customers (end-users). These priority categories are similar to those used for allocating fuel in other energy areas – especially electricity.

- agricultural production and distribution,
- aviation including ground support,
- cargo, freight & mail,
- emergency services,
- energy production,
- government/sanitation,
- health care,
- public passenger transportation,
- telecommunications,
- utility services (including water),
- nonmilitary shipping.

### **III. Steps for Implementing a Set-Aside**

#### **Monitoring**

- The State Energy Office (SEO) monitors petroleum fuel supply imported into its state using state, federal and private sector data. It does this continuously and remains in close touch with state petroleum fuel associations and others who can provide timely data. If fuel monitoring, or requests received from retail dealers or associations, indicates a shortage of sufficient magnitude to require hardship relief, the SEO should:
  - Verify these reports using the EIA 782C reporting forms and other sources of energy data including regional, private sector and anecdotal information.
  - Identify the geographic area(s) affected.

#### **Notification**

- In many states, the SEO notifies the State Emergency Operation Center (SEOC) and, through the SEOC, the Governor's Office about the shortage and its potential impact on petroleum product users in the affected areas. This will vary depending on legal authorities.
- The SEO also notifies petroleum companies importing and selling fuel within the state.
- Where possible, SEO staff often meets with petroleum suppliers to review Set-Aside procedures. States with up-to-date state energy emergency plans will usually have ongoing

relationships with the industry and may have worked out Set-Aside issues as part of overall emergency planning.

- The SEO may consider holding public meetings with groups of priority customers to explain the application form and process.

### **Program Preparation**

Most often, an SEO would be responsible for carrying out or at least overseeing the following:

- Prepare fact sheets and information for the media and public.
- Test receipt and notification systems (manual and electronic).
- Review and, in consultation with higher authority as required, set procedures for disbursing unallocated product at the end of each month.
- Review the appeals process and notify the state Attorney General of the impending Set-Aside.
- Set-Aside duties are assigned by management to members of the agency staff. Management provides rapid program review and training.

### **III. The Hardship Application**

It is helpful for the agency managing a Set-Aside to produce a Hardship Application form and “Handbook” for distribution to priority end-users, the media, wholesaler-resellers and retailers. An SEO would review the format and content of the application form and manual whenever a Petroleum Fuel Set-Aside is contemplated to assure that needs of the energy crisis at hand are met. If so approved, the SEO would consider placing the application form in HTML format and posting it on a web site for completion and return via E-mail.