Local Government Energy Assurance Guidelines

VERSION 2.0

pti Public Technology Institute
The resource for technology executives in local government

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This document was developed by the Public Technology Institute (PTI). As the only national non-profit technology organization created by and for cities and counties, PTI works with a core network of leading local government officials—the PTI membership—to identify opportunities for technology research, share best practices, promote technology development initiatives, and develop enhanced educational programming. PTI shares the results of these activities and the expertise of its members with the broader audience of the thousands of cities and counties across the United States. For additional information, visit the PTI website at: http://www.pti.org/.

This version (2.0) of the *Local Government Energy Assurance Guidelines* builds upon DOE's Ten-Step Framework and PTI's first version of the *Local Government Energy Assurance Guidelines* (1.0) to help local governments develop their own Energy Assurance Plans (EAPs). Version 2.0 reflects experience gained in developing local EAPs since the Guidelines were first published in 2009. The Ten-Step Framework can be found at: http://www.energyassurance.us/index.php/leap/more_2/52/.

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1 Introduction

1.1 Purpose of the Guidelines

Communities typically address energy emergencies from a post-disaster response and recovery point of view. The goal of this guidance document is to enable these communities to make the transition to a pre-disaster planning and risk reduction approach. Simply put, the *Guidelines* have been developed to assist local governments in *planning* for as well as *responding* to natural and man-made events and emergencies. Such emergencies often result in a decrease or total outage of energy that is needed to sustain critical functions and essential services within and around the jurisdiction. The *Guidelines* also serve to assist these jurisdictions in the *recovery* phase, in which energy services vital to the health, welfare, and safety of the resident population are restored.

The *Guidelines* were produced because very few local governments have a response and recovery plan that is specific to energy emergencies. Such a plan may be viewed as an insurance policy to mitigate the effects of emergencies with the potential to severely impact those essential local services that depend on a continual, adequate flow of energy. The *Guidelines* have been written for all local government decision-makers: elected and appointed officials; senior staff; policy makers; and those responsible for energy and emergency operations. As written, this document can be used both to educate decision-makers about the importance of having an EAP and also to develop and implement such a plan. Due to political, organizational or other considerations, local governments need flexibility—as opposed to a "one-size-fits-all" solution—in preparing their EAPs. The *Guidelines* have been prepared with this flexibility in mind.

Local government decision-makers have become increasingly interested in energy assurance for several reasons:

- The energy infrastructure is aging, which jeopardizes its ability to meet demand.
- There is a lack of awareness, training, and education regarding energy planning, response, and recovery.
- The number, severity, and length of energy-related events and emergencies can seriously impact our Nation's economy and well-being.

An all-hazards approach to energy assurance planning involves adequately preparing for numerous hazards across many categories, including sabotage and terrorism, civil disturbances, natural disasters, infrastructure failures, and public health emergencies. Due to the intricate interdependencies of the U.S. energy industry, preparing for one type of hazard will often help a jurisdiction prepare for others.

During numerous oil price surges and natural disasters, DOE has assisted local governments in assuring reliable and resilient energy systems. Energy assurance planning has evolved from the relatively limited State Energy Office-led petroleum shortage analysis and scenario responses in the 1970s, to State Public Utility Commission electricity and natural gas supply reliability analysis and planning in the 1980s and 1990s, to government-wide energy analysis and planning since September 11, 2001.

Recently, the Federal government has devoted significant resources to local government energy assurance planning. The first major Federal allocation of EAP funds to local governments came in 2010 through the American Recovery and Reinvestment Act of 2009 (ARRA), which distributed more than $8 million to 43 U.S. cities for energy assurance planning.[1]

Under DOE funding, these *Energy Assurance Guidelines* will help localities:

- Identify key public and private contacts
- Formulate roles and responsibilities
- Understand legal parameters
- Determine actions to reduce adverse impacts
- Mitigate disruptions to the energy supply system
- Elevate awareness of energy security and assurance
- Become better informed about EA resources
- Improve all-hazards emergency preparedness and response
- Learn about critical infrastructure, key assets, and essential services

The *Guidelines* are organized into three main sections: Introduction; Section 2, Issues to Consider When Developing an EAP; Section 3, How to Develop or Enhance a Local EAP. Supporting documentation and references are provided along with case studies and statements from community leaders experienced in the planning process.

1.2 What Is Energy Assurance and Why Is It Important?

> *Improving the ability of energy sector stakeholders to prevent, prepare for, and respond to threats, hazards, natural disasters, and other supply disruptions.*
>
> -U.S. Department of Energy,
> Office of Electricity Delivery and Energy Reliability

What drives the need for a locally responsive EAP? If an energy emergency is localized, it may relate only to the energy distribution system, or even more specifically, to just one asset or building. If it is regional or larger in scope, it may involve electricity transmission and/or generation. In any case, the energy provider is going to prioritize its response, in part, based on the scale and scope of the emergency. Because of this reality, local governments may have to take an active role in mitigating the effects of energy supply disruptions and their impacts on key local assets and critical services. To fully grasp the concept of EAP, it is necessary to examine its context, beginning with the providers and producers of energy supplies. Also important is the transportation or transmission of energy supplies and the subsequent distribution of supplies to end users (which are often categorized as commercial, industrial, transportation, residential). In addition, EAP must account for the potential disruption of any of these activities, as disruptions can significantly impact the provision of critical services. Finally, the context for EAP involves restoration or recovery—the return to normal operations. Even though other entities may be responsible for generating, transmitting, distributing, and delivering energy to local jurisdictions (e.g., investor-owned utilities), most key activities and energy consumption fall within local boundaries. For that reason, local governments are a focal point for energy assurance. It is imperative that they understand their roles and responsibilities with regard to energy assurance and determine how these roles and responsibilities can most effectively be assumed.

[1] http://www.energyassurance.us/index.php/leap/inside/C5.

Local Government Energy Assurance Planning involves:

- Preparing for—and responding effectively to—an energy emergency at the local level
- Developing response actions in close collaboration with regional, State, Federal, and private sector partners (e.g., energy utilities) until disrupted energy services (electricity, petroleum, and/or natural gas supplies) can be restored to serve the day-to-day energy needs of the local jurisdiction
- Working to ensure that both the critical infrastructure and essential services that are dependent on energy systems and infrastructure are *resilient* or able to "bounce back" and be restored rapidly
- Ensuring that the EAP complements and becomes a part of existing Emergency Response and Continuity of Operations Plans (COOP)

Resiliency Defined

DOE defines resiliency as the ability of an energy facility to recover quickly from damage to any of its components or to any of the external systems on which it depends. Resiliency measures do not prevent damage; rather they enable energy systems to continue operating despite damage and/or promote a rapid return to normal operations when damages/outages do occur.

Source: http://www.oe.netl.doe.gov/docs/HR-Report-final-081710.pdf.

1.3 Energy Assurance Challenges

Local EAPs need to address the range of all-hazards emergencies and disasters that could significantly affect energy assurance in a locality or broader region. Planning should encompass both natural and manmade disasters, including deliberate attacks, system failures, human error, aging and deteriorating infrastructure, and technological disasters. Plans need to take into account high-impact/high-frequency events, low-impact/high-frequency events, and high-impact/low-frequency events, as well as unexpected emergencies. Examples of unanticipated major events include the 2010 BP oil spill disaster in the Gulf of Mexico and the August 2003 power blackout that ran from the Eastern and Central United States into Canada.

Depending on the jurisdiction, threats of concern could include wildfires, hurricanes, earthquakes, floods, heat waves, wind storms, ice storms, physical and cyber attacks, gas pipeline or electric grid system overloads or damage, and fuel shortages—coal, gasoline, diesel, and propane. Because of infrastructure interdependencies, any of these hazards could cause prolonged energy disruptions with cascading effects. They could also lead to extensive, adverse impacts on public health and safety and the local economy. In some instances, these hazards could cause major damage to gas and electric transmission and distribution systems and facilities, with widespread customer service curtailments that could take weeks to restore. In those cases where new, highly specialized energy components or equipment are required (for example, transformers and circuit breakers), replacement could take many months, and could require special arrangements for transporting the equipment over roads, bridges, and rail lines.

Table 1 gives examples of typical energy assurance preparedness components and response actions for localities to take in dealing with all-hazards disruptions. The components range from prevention and protection through mitigation, response, and restoration. These needs are only a small subset of findings from local government post-disaster reports and exercise after-action reports from across the Nation. Local EAPs should take into account these and other relevant components and actions.

Table 1. Common Energy Assurance Planning Components and Proposed Response Actions

EAP Component	Proposed Response Actions
Awareness of infrastructure and related threats/ interdependencies	It is necessary to have an understanding of regional energy infrastructure, energy assurance threats (physical and cyber) and associated infrastructure interdependencies, vulnerabilities, and consequences under different scenarios.
Information sharing and situational awareness	Planners must determine requirements to allow information sharing and situational awareness during energy disruptions. They must also enable appropriate collection, assessment and dissemination of this information.
Effective, holistic planning	Effective energy emergency preparedness, response and restoration involves developing relationships and working with energy providers and a broad range of regional multi-jurisdiction, cross-sector and multi-disciplinary stakeholders.
Capability to assess risk and determine appropriate mitigation measures	Along with the ability to assess regional energy assurance risk, it is necessary to be able to determine cost-effective prevention, protection and mitigation investments, including backup and alternative energy sources, energy conservation measures, and innovative energy technologies.
Cooperation and coordination	Effective energy assurance planning requires cooperation and coordination on energy assurance issues among local government, energy providers, other critical infrastructure operators, key business and community stakeholder organizations and State and Federal partners.
Information sharing	Constraints on information sharing among energy stakeholders must be addressed. Also needed are improved energy assurance alert and warning systems and reliable, resilient interoperable communications and IT systems.
Understanding roles and responsibilities	An understanding of roles, responsibilities and authorities of various levels of government and private sector organizations is necessary for an effective decision-making process on energy assurance preparedness, emergency response and restoration.
Adequate trained personnel	Planners must recognize that it is crucial to have adequate trained personnel to operate critical equipment and provide essential services, including damage assessment and emergency maintenance.
Energy emergency response procedures	Energy emergency response procedures must provide for sufficient communications to energy providers and key response personnel; ensure the operation of emergency power generators; arrange necessary fuel stocks for prolonged energy disruptions; and improve mutual aid and contractual arrangements for fuel distribution.
Understanding the requirements for recovery and reconstitution	Requirements include a decision-making process for restoration priorities; certification procedures to facilitate the influx of maintenance and damage assessment personnel from outside the region; and arrangements for waivers to expedite cross-State fuel shipments and to address weight- and size-restrictions for transporting critical energy system components.
Continuity of business and operations	Private and public sector energy-assurance-related continuity of business and operations plans should include procedures to prioritize and sustain key assets, functions, and services and to maintain supply chains.
Effective public information and risk communications strategy	An effective public information and risk communications strategy should cover all-hazards and include energy providers, local government agencies across jurisdictions and other key stakeholders. It should identify target audiences, messages that need to be conveyed, and the organizations/individuals that will function as spokesmen.
Energy assurance exercises, training and education	Energy assurance exercises, training and education should include energy suppliers, businesses, public sector response personnel, political leaders, and the general public. Broad regional exercises should bring these stakeholder constituencies together to address energy related interdependencies.
Review process for EAPs	A continuous process of review and enhancement of EAPs in cooperation with other local agencies and jurisdictions should be part of local and regional disaster preparedness activities.

2 Issues to Consider When Developing a Local Energy Assurance Plan

2.1 Collaborating on Local Energy Assurance Planning: Relationship Building

Partnering with stakeholders is essential in developing an EAP. Including partners in the planning process makes it possible to develop and implement EAPs that are meaningful and effective. Partnering also helps ensure that the end product is relevant to all stakeholders and their constituents. In order to identify and cultivate the most constructive relationships, it will help to become familiar with this and other relevant energy assurance documents. Simply taking note of named agencies, points of contact, and suggested relationships will result in a fairly comprehensive list of potential partners to invite to the planning process. Changes to that initial list will no doubt occur as some of the initial participants drop off due to time pressures, lack of interest, or reluctance to prioritize local energy assurance planning activities.

A major part of building and retaining relationships is having a clear vision and timeline for the work that is to be undertaken. The individuals who are most capable of building a successful plan are often that the ones who are most in demand due to their own responsibilities and participation in other projects. Key stakeholders may not have time for open-ended processes or murky goals and objectives. Ideally, there should be a clear definition of the roles and responsibilities that are required to develop and implement the plan, as well as a good idea of the knowledge, skills and abilities of those who are invited into the process.

In the past, the most effective energy emergency responses have been characterized by close cooperation between the public and private sector. On the public sector side, the National Association of Regional Councils (NARC) is a good resource for making connections with other relevant agencies, such as councils of government and metropolitan planning organizations. It may also be useful to involve State agencies in the local planning process, depending upon the resources with the potential to be impacted by an energy emergency. The State Energy Office or its equivalent is likely to be needed at the table. Other local governments should also be considered, as it may be necessary to establish a mutual aid agreement with one or more over time. Other potentially valuable partners include emergency management agencies, energy service providers, key infrastructure operators and major business owners/operators. The Federal government can play a key role, and has a wealth of experience in emergency planning and response. Quasi-governmental agencies, including those that manage wastewater and water supply, can also be critical partners. Private sector partners, non-governmental organizations and citizen groups all have unique contributions to make, and should be considered as potential members of the collaborative. The goal is to leverage existing public and private partnerships and bring in as many sources of assistance as possible. Ideally, most of this assistance will be provided free of charge.

2.2 Taking an All-Hazards Approach

Since 2001, common practice has been to develop and implement emergency response plans that encompass "all-hazards." The 2010 *Energy Sector-Specific Plan: An Annex to the National Infrastructure Protection Plan* describes all-hazards as a grouping classification encompassing all conditions, environmental or manmade, that have the potential to cause injury, illness, or death; damage to or loss of equipment, infrastructure services, or property; or alternatively causing functional degradation to social, economic, or environmental aspects.

All-hazards can also be less formally defined to include any incident caused by terrorism, natural disasters, equipment failures or any chemical, biological, radiological, nuclear, or explosive accident. Such incidents can require a multi-jurisdictional and multi-functional response and recovery effort. Using the all-hazards approach gives local jurisdictions the capacity to respond effectively to energy supply disruptions from any of a range of emergencies, including fires, floods, earthquakes, tornados, blizzards, or any number of non-natural disasters such as a cyber attack.

An all-hazards approach will also include preparation and response plans for electromagnetic disturbances, such as electromagnetic pulse, also known as "EMP." EMP can be a burst of electromagnetic radiation that results from an explosion, especially a nuclear explosion, or a suddenly fluctuating magnetic field. EMP can also be a high intensity, short duration burst of electromagnetic energy. The resulting electric and magnetic fields can interfere with electrical and electronic systems to produce damaging current and voltage surges.[2]

All-hazards planning is a unifying approach to dealing with emergencies. Since local jurisdictions cannot predict where or when an emergency might surface or how it will affect their critical infrastructure and essential services, it makes sense to adopt this multi-disciplinary approach. It is abundantly more efficient to have—to the extent possible—a single approach and plan for all emergency situations in terms of their origin (natural or man-made) and their impacts (e.g., the energy sector, telecommunications, and water supply) than a separate plan for each type of emergency. There are numerous common attributes across and among emergencies that make a unifying all-hazards plan possible and practical.

For example, plans for hurricane emergencies have been on the books for most impacted coastal regions for decades. Yet aspects of these same plans, with minor adjustments in many cases, can also serve the same jurisdiction for an energy emergency wherein, for example, a major transmission line fails. Moreover, the plans have the potential for use by other jurisdictions that may be prone to flooding. Thus, not only is it possible that a single unit of local government might expand the reach of its existing emergency plan, but it is also quite probable that local governments can share lessons learned and portions of their EAPs, thereby decreasing the time and cost burden associated with plan preparation. It is important to note that energy assurance planning must be tailored to a local jurisdiction's specific location and circumstances. Although it is always advisable to learn from other local governments, a successful EAP requires a unique, detailed review and analysis of the particular community energy situation. In many cases, however, lessons learned from response and recovery can be transferred from one government to another, especially within the same State, where there is a higher likelihood that the local authority issues might be similar (see Section 3.3).

2.3 Identifying Energy Infrastructure Interdependencies

The energy sector consists of thousands of electricity, oil, natural gas, and renewable energy assets that are geographically dispersed and connected by systems and networks.

Energy infrastructure needs to be operating properly in order for other critical infrastructures, such as transportation, communications, finance and governmental systems to perform as needed. These other critical infrastructures are dependent on the energy sector to maintain functionality, and vice versa—that is, they are interdependent. For example, coal shipments for electric power plants are highly dependent on rail. There are also dependencies within the energy infrastructure itself, notably the dependency of petroleum refineries and pipeline pumping stations on a reliable electricity supply, and of backup generators and utility maintenance vehicles on diesel and gasoline fuel.[3]

[2] http://www.nerc.com/files/GMD_Guideline_v2_clean.pdf.

[3] U.S. Department of Homeland Security, U.S. Department of Energy, *Energy: Critical Infrastructure and Key Resources Sector-Specific Plan as input to the National Infrastructure Protection Plan*, page 17, May 2007.

Although the concept of interdependencies may not be new or novel to some, additional thoughtful consideration is needed as to how it applies to energy and other sectors of the economy. Even as early as 1997, a report from the President's Commission on Critical Infrastructure Protection noted that energy is the lifeblood of our interdependent infrastructures, and routine disturbances can cascade into a regional outage. That Commission also noted that technical complexities may permit vulnerabilities to go unrecognized until a major failure occurs. The August 2003 blackout in the Midwest and Northeastern United States and Canada was triggered by just such a disturbance.[4] A series of incidents started by a power line sagging into a tree in Cleveland, Ohio, cascaded across critical infrastructures, resulting in significant loss or degradation of essential services in numerous States. Table 2 illustrates three types of infrastructure interdependency failure.

Table 2. Types of Infrastructure Interdependency Failure

Failure Type	Description
Cascading	A disruption in one infrastructure causes a disruption in a second infrastructure; for example, a loss of energy causes a wastewater treatment plant to shut down.
Escalating	A disruption in one infrastructure exacerbates an independent disruption of a second infrastructure; for example, the time it takes for restoring banking services is prolonged because telecommunications lines and signals are not available.
Common Cause	A disruption of two or more infrastructures at the same time is the result of a common cause; for example, a tornado simultaneously adversely impacts the availability of electric power, petroleum, clean water and telecommunications.

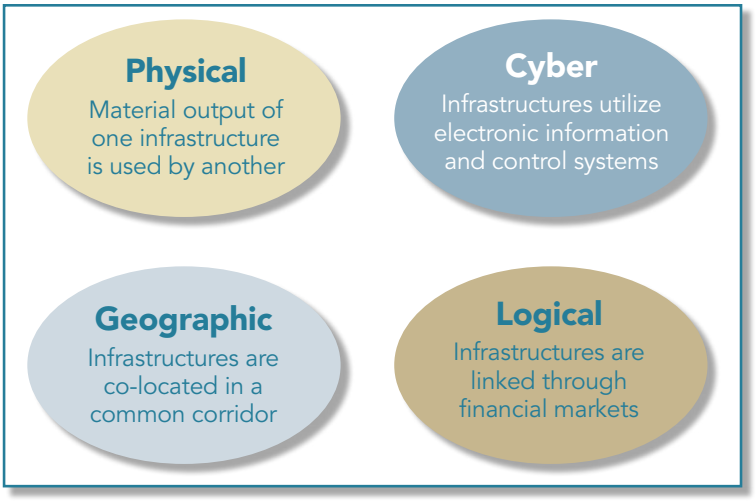
Source: James P. Peerenboom, Ronald E. Fisher, "Analyzing Cross-Sector Interdependencies,"40th Annual Hawaii International Conference on System Sciences (HICSS'07), 2007 http://www.computer.org/portal/web/csdl/doi?doc=doi/10.1109/HICSS.2007.78.

There are four general categories of infrastructure interdependency:[5] physical, cyber, geographic, and logical. These categories are described in Figure 1.

These infrastructure interdependencies vary in scale and complexity, ranging from local linkages (municipal water supply services and local emergency services) to regional linkages (electric power coordinating councils), to national linkages (interstate natural gas and transportation systems) and to international linkages (telecommunications and banking and finance systems).

One of the first steps in developing an EAP, and thereby mitigating the possible consequences of an energy emergency, is to understand the dependent relationships among energy infrastructures, key local services and valued community assets.

Figure 1. Categories of Infrastructure Interdependency



[4] James P. Peerenboom, Ronald E. Fisher, "Analyzing Cross-Sector Interdependencies,"40th Annual Hawaii International Conference on System Sciences (HICSS'07), 2007 http://www.computer.org/portal/web/csdl/doi?doc=doi/10.1109/HICSS.2007.78.

[5] Rinaldi, Peerenboom and Kelly, "Identifying, Understanding and Analyzing Critical Infrastructure Interdependencies," *IEEE Control Systems Magazine*, 2001.

Table 3 shows how some of these relationships and essential services can be disrupted through an energy outage.

Table 3. Potential Effects of Energy Disruptions on Essential Services

Essential Services	Potential Effects by Energy Type	
	Electric Power Systems	**Natural Gas/Oil**
Banking & Finance	Financial transactions; HVAC systems	Fuel for heat, generators & facilities
Telecommunications (Landline, Cellular and Cable)	Switches and communication facilities: distribution, supervisory control and data acquisition (SCADA) systems, customer service & repair crew communication	Fuel for heat, generators & facilities
Transportation	Electric public transportation; signal and control system; transport of fuel and shipping of goods and materials	Fuel and lubricants for vehicles and facilities: transport of fuel and shipping of goods and materials
Water Supply	Control systems, lift stations, and facilities: transportation of water (pumps); cooling and emission controls; water transport for emergency response	Fuel for treatment, heat, pumps and lift stations, and facilities; water transport for emergency response
Governmental Systems	Facility HVAC systems; lighting; telecommunications; battery charging (e.g., 800 MHz radios); emergency response and protective services such as EMS, police, fire)	Gas-fired HVAC systems; fuel/water pumping/processing etc.
Emergency Response & Protective Services	Limitation of base-to-field communications; recharging of office and field equipment; re-routing of impacted individuals/animals to facility with electrical service	Electrical outages for gas-fired power generation with similar impacts as under electric power systems
Sewage Systems	Curtailment of sewage pumping and treatment for stationary, local/regional scale systems and temporary site-based pump and treat systems	Curtailment of sewage pumping and treatment for stationary, local/regional scale systems and temporary site-based pump and treat systems if electrical systems are gas/oil fired

Source: Adapted with permission from the Geospatial Information & Technology Association (GITA).
www.gita.org/ciper/Infrastructure%20Interdependencies%20Final.pdf.

Key Questions

…in Identifying Energy Infrastructure Interdependencies

1. What is the complete route of electricity from the generating plant to the local major end users?
2. What is the local major energy infrastructure, where is it, and is this information available in one place (map, file, etc.)?
3. Who are the local energy suppliers, and what are the types of energy supplied to local key assets?

2.4 Understanding Continuity of Operations Plans

It is important that planners review available Continuity of Operations Plans (COOPs) in their local governments, regions and/or States. As part of the energy assurance planning process, local governments should consider developing and/or updating contingency COOPs for vital government functions in light of energy assurance issues. Such vital functions include providing backup power generation to life-sustaining equipment, as well as access to fuel and short-term shelter, among other things.

The COOP details how to deliver minimum essential functions throughout an energy emergency. It will usually list specific actions taken to mitigate an energy emergency. Most COOPs will list essential services, key staff responsible for those services, technology priorities (especially communications, a top priority for all government COOPs), security and access protocols, and related issues.

Every COOP is different, as it is designed to meet specific local needs. Generally, the prime objectives for government COOPs include:

- Ensuring the continuous performance of government's essential operations during a disaster
- Reducing loss of life and minimizing damage to property
- Achieving a timely and orderly recovery from a disaster
- Protecting key assets, including facilities, from damage
- Mitigating disruptions to operations
- Ensuring minimal loss of energy and electricity to key assets

Major energy intensive industries also will usually have formal COOPs in place. It is helpful to solicit input from these industries and other local businesses that have developed their own COOPs. Lessons learned from private sector plans can help with developing or enhancing a local EAP.

Key Questions

…in understanding COOP Plans

1. Does the local jurisdiction have a Continuity of Operations Plan (COOP) in place?
2. How does the local EAP interact with the COOP, and what have planners done to ensure that the plans are consistent?
3. When was the last time the local COOP was updated, and why?
4. Which private sector partners may have a COOP in place that local planners might learn from, and are these partners likely to share some of this information?
5. Have planners considered incorporating successful components of private sector COOPs into the government COOP?
6. Does the local COOP list all known quantities of fuel, fuel supplier contact information, backup power supplies, and the fuels used for all of the backup power supplies?

2.5 Determining Information Sharing and Situational Awareness Needs

Information Sharing: Engaging Energy Suppliers and Infrastructure Operators

Important partners in local government EAP efforts include the operators of petroleum and natural gas supply infrastructure, as well as electric utility companies, which serve the local jurisdiction. The EAP should take account all of the infrastructure operated by these energy providers, and incorporate all the ways in which this infrastructure might impact the critical services for which the local government is responsible.

Basic information on natural gas pipeline operators and utilities serving a given jurisdiction often can be obtained via industry associations or through the State Energy Office. Many local businesses maintain relationships with petroleum supply companies, as do State personnel responsible for emergency petroleum allocations and prioritization schedules. Local governments often communicate to some extent with relevant electric utilities, though additional information typically is available from the State Public Utility Commission or comparable agency.

Energy suppliers possess information and expertise that may be of use to local governments in their EAP efforts. Suppliers know who their customers are, they know customers' usage patterns and quantities, and they are more familiar than anyone with the infrastructure they operate. Planners should be aware, however, that suppliers may have legitimate reasons to maintain confidentiality with respect to operations, security procedures, emergency response, purchasing, storage, financial positions and other areas. Some of this information has the potential to be used in legal proceedings (such as dockets and hearings) in a way that may be harmful to their existing resource acquisition and business goals. Some of this information could also put operations at risk if it were to be misused. Energy suppliers may decide that allowing unfettered access to internal information would set a precedent for outsiders to obtain this data. Understanding these potential limitations in acquiring information from suppliers will help planners frame the sort of request that has the highest likelihood of getting a positive response.

In most cases, energy suppliers have their own internal policies and procedures for information sharing, and are not subject to external requirements concerning this matter. Gaining access to information for local government energy assurance planning will likely be based more on relationships and the proprietary nature of the information being sought than anything else. Non-disclosure or confidentiality agreements can also be a useful approach. If the business relationship is based on a contract, language can be developed to include the right to view, copy and/or use relevant information for the express purpose of energy assurance planning. In any legal, business, or other agreement, allowing the energy supplier the opportunity to approve what, how, when and where its information will be used is an important consideration.

Ideas for Encouraging Energy Suppliers to Share Information

Because acquiring relevant information from the local energy supplier is critical to EAP efforts, and because this need must be balanced with the companies' need for confidentiality, it is difficult to pinpoint any one best method to gain access to this information. What follows are three ideas that may prove useful in this effort. It is important to note that these are not recommended strategies but rather a description of what may prove effective in a variety of situations. Planners should gauge the costs and benefits of each as they develop their approach.

- **Informal requests built through trust:** One strategy for obtaining information from an energy supplier involves building trust and a mutually beneficial relationship in advance of any request for information. This trust is best built by regular face-to-face meetings between managers and open, two-way communications. Once the company understands the nature of the locality's energy assurance planning and the fact that

complementary efforts can actually improve their emergency planning and response times (and likely their post-emergency customer service rating), the company is likely to assist with local efforts to some degree. The company needs to understand that local planners view EAP as a true partnership. Once this understanding is established, information sharing can become more consistent. The company will want the local government to be a satisfied, long-term customer, and the local government wants reliable, affordable energy, along with useful information to assist in energy assurance and related emergency planning. It is a beneficial partnership with obvious gains for all parties.

- **Regulatory request:** More formal in nature, a regulatory request will usually be presented to the State Public Utility Commission or equivalent government agency. Regulatory requests typically take three to six months from the time of the original request to the time that the response or information is required. A municipality's legal counsel can prepare this request relatively easily.
- **Franchise agreement:** Local governments often grant certain utility easements and/or rights-of-way so that service may be delivered. In exchange, the local government receives just compensation. The provisions of this agreement are generally codified in a franchise agreement between the two parties. Although these agreements are usually limited in scope for the express purposes of delivering and assuring reliable energy services, the scope of these franchise agreements has recently been expanded in many cases. A local government may consider including access to, and release of, relevant energy information as a term of its franchise agreement. It is important to remember the spirit of collaboration when crafting such language, and it may be helpful to work closely with the utility in advance of writing the first (draft) franchise agreement. Learning the information-related concerns of the utility is almost always useful, and it is beneficial for the utility to see why the government wants or needs their information.

  In the franchise agreement, it is helpful to include a statement outlining the right to discuss and negotiate what information is needed by the local government, and confirmation of the utility's willingness to provide such information on a case-by-case basis. Generally, this process is very open-ended, and may result in very little information being provided at first—but the process ensures that the right to request information from time to time is contractually obligated. One risk to relying on franchise agreements for information disclosure is the infrequency with which these agreements are renewed: a 20-year time horizon for a franchise agreement is fairly typical, whereas a five-year agreement is rare.

Situational Awareness Needs: Communicating Information during a Disruption

As acknowledged in the *2010 Energy Sector-Specific Plan: An Annex to the National Infrastructure Protection Plan*, "During times of increased security posture or emergency situations, the best information sources are the trusted relationships between government and industry. Such relationships ensure that necessary information is provided when and where it is needed, and can be directly applied to protect and recover key energy infrastructure and resources." While sophisticated software programs and new hardware certainly help, human relationships and trust built between people results in quicker, more reliable and useful communication during an emergency.

Crisis Communications: A Casebook Approach (1996) recommends that local governments undertake the following steps in response to an emergency:

- Explain **what** happened and the nature of the energy emergency.
- Explain **who** is involved in the energy emergency and their roles, to the best of the government's knowledge.
- Explain **when** and **where** the energy emergency is occurring or has occurred.

- Explain **what** immediate actions are being taken to mitigate or respond to the energy emergency.
- Avoid explaining **why** the energy emergency occurred unless complete information is available.
- Provide the public with **instructing information** on how to keep safe and avoid bodily injury.

The first priority in an emergency is to protect the health and safety of the citizens. This requires leveraging existing emergency protocols, disseminating accurate, timely information, and utilizing the private sector energy contacts and media contacts that have been cultivated in the past. All crisis communication protocols should be revisited and updated at least annually. These updates provide excellent opportunities to discuss how to communicate with the public during an energy emergency. (Also see section 3.9 for more information.)

Assessing the Extent, Magnitude and Duration of a Disruption

EAPs should have a strategy for assessing the severity of energy emergencies and their potential impact on the community. This will allow emergency response personnel to identify appropriate messages to relay, leverage relevant stakeholders and partnerships, and develop and execute recommendations to manage the situation. The California Energy Commission's *Local Government Planning Handbook* (2004)[6] outlined four key categories for a crisis communications/management team (CMT) to consider during this assessment:

1. **Ground surveys**: This assessment—performed by the energy emergency coordinator and the rest of the emergency services staff—provides information on direct damage to energy production, transportation, storage, and related facilities (i.e., assessments of levels of energy usage within the damaged area). Ground surveys should also assess direct damage to community members and day-to-day living. Aerial reconnaissance during this assessment may be beneficial to determine the extent of damage. Key questions include:

    - What is the immediate damage of the energy emergency, and what city infrastructure does it impact?
    - Who in the community is currently impacted by the energy emergency?
    - Who may be impacted in the future?
    - What is the extent of the damage?
    - Is there risk that the energy emergency will spread if not managed properly?
    - Is it possible to provide the community access to a "safe place" unaffected by the energy emergency if needed?
    - Are there any immediate steps the local government can take to mitigate the problem?

2. **Operational information**: This assessment determines the nature of operational problems and the immediate fuel and energy needs of emergency service providers.

    - How long will it take to restore the community to pre-emergency conditions?
    - Are there backup resources for the community to use? This includes items such as blankets, food, first-aid supplies and equipment, and the like.
    - Can neighboring counties or governments help mitigate any localized impact?

[6] http://www.energy.ca.gov/emergencies/documents/2004-03-11_GOV_EMRGNCY_HNDB.PDF.

3. **Economic impact information**: This information assesses the economic consequences of the energy disruption.

    - How much money will this cost the community?
    - Will the community see a spike in energy costs?
    - What demand-reduction strategies are most effective and appropriate?

4. **Recovery planning information**: This assessment determines short- and long-range recovery efforts.

    - Are there energy systems (electricity, natural gas infrastructure, etc.) that are shut down or delayed due to the energy emergency? How will this impact community productivity?
    - What services need to be restored first? (See section 3.8.)
    - Does the energy emergency leave a lasting hazard in the community (chemical leaks, water contamination, etc.)?

It may be necessary to coordinate or leverage public and private-sector partnerships to acquire key data before moving forward in stabilizing the community. This is the time to tap already-established contacts in the public and private sector that may have helped to develop the EAP, other emergency response plans, continuity of operations plans and risk communications plans before the energy emergency occurred. At the onset of an emergency, these partnerships should be immediately leveraged to help assess the nature of the emergency and to help manage the developing situation.

2.6 Understanding the Impacts of New and Alternative Technologies on Energy Assurance Planning

Technology is a crucial, powerful ally in any energy assurance effort. This section addresses three areas regarding the role of new and alternative energy technologies in local energy assurance planning efforts:

2.6.1. The Smart Grid
2.6.2. Renewable Energy Technologies
2.6.3. Energy Efficiency/Distributed Generation and Energy Assurance

2.6.1 The Smart Grid

The term smart grid refers to a modernization of the electricity delivery system that monitors, protects and automatically optimizes the operation of its interconnected elements—from central and distributed generators through the high-voltage network and distribution system, to industrial users and commercial building automation systems, to energy storage installations, and to residential consumers and their thermostats, electric vehicles, appliances, and other household devices. Some find it easier to grasp the concept of the smart grid as the "Internet for energy"—with hardware and software connected via intelligent communications systems.

The smart grid is generally characterized by a two-way flow of electricity and the data necessary to create an automated, widely distributed energy delivery network. It incorporates into the grid the benefits of distributed computing and communications to deliver real-time information, enabling operators to understand and optimize their systems and facilitating the ability of intelligent devices to take action based on that information. Smart grid technologies include advanced sensors, system communication infrastructure, advanced power delivery equipment and controls, and advanced modeling and simulation techniques.

As envisioned thus far, the smart grid will allow greater integration of renewables and distributed generation energy resources. Future operators of the smart grid will have the ability to switch energy sources and reroute energy supply to meet demand *in advance* of an energy emergency instead of only after the emergency. Working in concert with electricity utilities in the future, local governments may have the ability to better match energy demand with energy supplies before, during and after an emergency. Smaller-scale distributed energy resources will be easier to tap into and exploit for energy emergency needs, with the smarter controls that come with the new smart grid. Again, energy assurance is about diversifying energy supplies and spreading risk across multiple energy resources.

Advanced Metering Infrastructure technologies are *already available* to help local governments reduce peak demand and manage electricity load. For example, meter modules can be added to existing meters to send real-time data to vehicle-based mobile collection systems, radio-equipped handheld computers, and advanced "fixed network" systems. These metering technologies can be deployed over geographic areas that can range in size from a small neighborhood or apartment complex to a large metropolitan area. Other advanced metering technologies make efficient use of existing telephone and cellular communication networks to communicate with the meter and send data to the utility company. While the costs of this technology will vary for local government applications, the average cost of a meter module that is attached to an existing meter is approximately $50 for a meter on a residential home, and $500 for commercial or industrial facilities. More than 85 percent of meters in the U.S. can be retrofitted with these meter modules and do not require the purchase and installation of a new meter.[7]

The safety and security of the local energy supply should benefit from the deployment of smart grid technologies. For example, terrorists and saboteurs have less ability to impact power supplies when a new, smarter electricity system automatically reroutes energy supply sources to where they are needed in an emergency. A smart grid can also be used to reduce peak electricity through load management, which in turn reduces the stress on the grid. Reducing peak power demand in this manner has the potential to reduce the cost of energy production, and therefore the price to the consumer. Advanced metering technology can facilitate the implementation of time-of-use rates, which can help level out the 24-hour load profile. This also can have a positive effect on energy bills, and can reduce the need for continued power generation capacity building.

It makes good business sense to contact the local utility to learn about any planned or existing smart grid projects. This new information can be incorporated into EAP efforts, and it might also provide planners with the opportunity to learn more about local government applications of smart grid technologies.

2.6.2 Renewable Energy Technologies

Renewable energy comes from sources that renew themselves constantly over short periods of time—minutes, days, or months, instead of centuries. These sources of energy usually include water, wind, solar, biomass, and geothermal heat from the earth's interior. While quickly replenished, these resources tend to be intermittent on either a daily or seasonal basis (e.g., the wind does not always blow and the sun does not always shine). This section highlights three real-life case studies to illustrate renewable energy options that support energy assurance activities.

Fuel routing challenges have proved formidable for many local governments during recent hurricanes and other natural disasters—these governments had stockpiled ample supplies of diesel fuel, but found it difficult to get the fuel to the places where it was needed. For example, in Louisiana streets turned to rivers during Hurricane Katrina, and boats were needed to transport the fuel instead of trucks. On-site distributed renewable energy technologies, including solar photovoltaics, are now being considered by cities to provide power generation to key assets and services when transport of fuel for backup electricity generators might be hampered by weather or other conditions.

[7] ITRON, *The Critical Role of Advanced Metering Technology in Optimizing Energy Delivery and Efficiency: A Report to the U.S. Department of Energy*, undated, circa 2010.

Case Study 1. PV Supporting Emergency AM Radio Transmissions

KBET Radio, with assistance from Southern California Edison and the U.S. Department of Energy, installed a 10-kW grid-connected photovoltaic (PV) system at its new station building in Santa Clarita, 35 miles north of downtown Los Angeles. If a power outage occurs, the system will instantly become an emergency power source for the station's AM radio transmitter. KBET is a key local Emergency Operations Center communications facility, providing a critical link between police, fire, and other disaster response contacts.

Benefits of Renewable Energy to Key Assets

Key assets that can benefit from the use of renewable energy technologies include "911" call centers, airports, emergency shelters, hospitals, first responder facilities (Emergency Operations Centers), water supply, and telecommunications infrastructure. Many cities are exploring renewable energy technologies such as photovoltaics for replacing or complementing traditional backup power supplies.

Solar Technology Options

Using solar power to produce electricity is not the same as using solar to produce heat. Solar *thermal* principles are applied to produce hot fluids or air. *Photovoltaic* principles are used to produce electricity. A solar (photovoltaic, or "PV") panel is made of the natural element silicon, which becomes charged electrically when subjected to sunlight.[8] In all there are three major solar technology areas:

- **Solar Photovoltaics:** Photovoltaics are semiconductor devices that when exposed to the sun, create electricity. They are assembled into modules, and then placed on buildings, on the ground, or on parking structures. They can be tied into the electricity grid or used off-grid to power individual structures. There was a 40 percent increase in electricity grid-tied PV from 2008 to 2009.
- **Concentrated Solar Power (CSP):** CSP uses lenses or mirrors to concentrate the sun's rays on a small area. Four new CSP plants were connected to the grid in 2009, located in Hawaii, California, and Arizona. A CSP apparatus is shown in Figure 2.
- **Solar Thermal:** Solar thermal technology uses the sun—via flat plates, tubes or collectors—to heat water to used for heating and cooling buildings, or provide hot water to the building tenants. Markets for solar thermal have grown each year since 2006, with a 40 percent increase in 2008 and a 10 percent increase in 2009. How can solar be used to cool a

Figure 2. Concentrated Solar Power

CSP in Kramer Junction, California
Photo courtesy of NREL.

[8] The Solar Energy Industries Association, September 2010.

building? Air can be passed over a common, solid desiccant (such as a silica gel) to draw moisture from the air, which allows an efficient evaporative cooling cycle. The desiccant is then regenerated by using solar thermal energy to effectively dry it out, in a cost-effective, low-energy-consumption, continuously repeating cycle.

Case Study 2. Solar Energy Used to Power Water Treatment Plant in Pennsylvania

- 4,400 solar panels provide 1/3 of facility's electrical needs
- Plant is saving 1.2 million kWh and $77,000 a year

Aqua Pennsylvania, Inc. installed a 1 MW solar farm at its Ingram's Mill Water Treatment Plant in East Bradford, Pennsylvania. The solar project is saving the water company $77,000 per year. It takes a lot of energy to run a water treatment plant round-the-clock. Pumping 35 million gallons of water a day to hundreds of thousands of businesses and residents can get expensive. Because of that, Aqua Pennsylvania, Inc. (Aqua), which operates the Ingram's Mill Water Treatment Plant in East Bradford, Pa., is always looking for ways to take less energy from the grid. This time, they looked up. For the last 10 months, 30 percent of the facility's hefty electrical needs have been met through its 1 MW solar farm.

Green Water – More Savings

Aqua has taken other steps to save costs. They replaced older water pumps with more energy efficient ones and are always making improvements in the water treatment process. Tapping into those 4,400 solar panels, which are generating 1.2 million kWh of clean energy per year, is now saving the company about $77,000 annually. According to published estimates, it is also offsetting the need for the equivalent of 3,000 barrels of oil per year or reducing carbon dioxide emissions by 1.4 million pounds per year.

"We're in the water business, we are concerned for the environment and want to employ green technologies," says Bob McNulty, the energy manager at Aqua America, the parent company. "It's the combination of that, and trying to do whatever makes sense energy wise." The solar farm also is alleviating congestion on the grid, which reduces line losses and congestion charges, and ultimately saves consumers money.

The panels sit on a 4-acre piece of land just behind the water treatment plant. The project took Conergy, a global solar company, about nine weeks to build and was completed in December 2009.

Source: Condensed from the U.S. Department of Energy's *Energy Empowers* web site, January 5, 2010.

Wind Energy Options

Developing and capitalizing on domestic energy sources with known and stable costs can significantly improve local energy reliability. Wind power is one of the most abundant fuel supplies available, and one of the most cost competitive renewable energy resources. Total wind power capacity now operating in the U.S. is over 35,000 megawatts (MW), generating enough to power the equivalent of 9.7 million homes.[9]

Wind energy is big business. About 10 years ago, the wind industry began to experience major growth in the United States, thanks in a large part to State and Federal tax incentives, State-level renewable energy requirements and—beginning around 2001—rising fossil fuel prices. Wind is now the fastest growing source of electricity in the world. In 2008, more than 27,000 megawatts (MW) of new wind capacity were installed worldwide, representing a total investment of more than $51 billion, and 8,500 MW of this was in the U.S.—a 36 percent increase over 2007. Nearly 10,000 MW of new wind capacity was added in the U.S. in 2009, despite a recession. More wind power was installed in the U.S. in 2007-2008 than in the previous 20 years combined—a $27 billion investment.[10]

How can wind energy help energy assurance efforts? Wind energy can assist local governments in diversifying their fuel supply and increasing their resilience. Electric system operators utilize wind energy to reduce the output required from fossil-fueled power plants. In addition, wind energy can assist through:

- **Diversification:** It diversifies the electricity portfolio and represents an indigenous energy source with stable prices not subject to fuel volatility.
- **Water savings:** The United States Geological Survey (USGS) estimates that electricity generation is responsible for 50 percent of all water withdrawals in the U.S., followed by irrigation at 30 percent. Wind energy does not require water cooling, so it saves significant quantities of water.
- **Environmental improvement:** In addition to water savings, wind energy helps avoid air pollution and emissions from conventional power sources.
- **Economic benefits:** Wind energy reduces demand for traditional fossil fuels, which in turn reduces fuel prices and helps to stabilize electricity rates. Plus, it creates a new income source for landowners and tax revenues for the local government.

Opponents of wind projects usually point to avian (bird) mortality, aesthetic concerns, and noise pollution related to turbines. These issues are relevant and worth reviewing, and are usually easy to address through the permitting process. Conditions under which a project will operate can be spelled out. For example, a project permit might limit the sound level or require a setback distance from roads, houses, or property lines.

As part of a local energy assurance effort, planners can create a separate ordinance to permit wind energy facilities. In Pike County, Illinois, the County Board created a permitted use ordinance that lays out standard conditions for wind projects. Decision-makers in Klickitat County, Washington, designated specific areas to encourage and guide wind energy development. The local authorities in Kern County, California, conducted a countywide environmental impact review to enable development of the Tehachapi Wind Resource Area.

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[9] David Von Walland, "Wind Power, A Gust of Alternative Energy," January 31, 2011, (http://ezinearticles.com/?Wind-Power,-A-Gust-Of-Alternative-Energy&id=5828920).

[10] The American Wind Energy Association, November 2010.

There are a number of ways that local planners can allow for wind energy in their communities, including an outright permitted use; with a special use permit; subject to site plan review; and as an accessory use.[11]

Not all wind turbines are large enough to trigger the concerns discussed above. Distributed wind technology (DWT) applications refer to smaller turbine installations on the customer side of the utility meter. These machines range in size from less than one (1) kW to multi-megawatt, utility-scale machines used to offset electricity consumption at the retail rate. DWT can help energy assurance efforts through battery charging, powering remote telecommunications sites, and other applications.

Key Questions

…in Addressing Renewable Energy Technologies

1. What are local utilities doing in the renewables area, and is it possible to participate in any of the programs that they are managing?
2. Is it feasible to partner with other regional governments on a mass purchase of renewables that will bring down energy costs?
3. What renewable technologies are already in place within the local jurisdiction and what type of experience has it (including other city departments) had with them?
4. Which renewable technologies are best for the locality (wind, solar, geothermal, etc.)?
5. Are there State, Federal, or private sector incentives offered for renewable technologies that could be used at the local level?
6. Is there a public education program that should be implemented along with the renewable technologies that are under consideration?

2.6.3. Energy Efficiency, Distributed Generation, and Energy Assurance

Energy efficiency and distributed generation are important to an EAP because cost-effectiveness is central to developing and implementing the plan. Because energy assurance is an emerging concern, it must compete for funding with many established programs, projects and services that local governments and the resident population and businesses rely on. The net effect is that energy assurance must find meaningful linkages to other priorities in order to leverage effectiveness and contain costs. Both energy efficiency and distributed generation have the capability of reducing the capital costs for any energy assurance investment, while also reducing ongoing operational costs by reducing facility demand for energy.

Energy efficiency increases energy assurance by decreasing reliance on supplied energy, thereby resulting in a higher level of self-reliance. Distributed generation makes a positive contribution to energy assurance because these systems are typically relatively independent of the grid and can be used as primary or secondary sources of power. Emergency backup power as a form of distributed generation is an energy assurance asset because it can be dispatched in real time and with little effort in the event of a grid or onsite power generation emergency.

[11] NYSERDA, "Wind Energy: Model Ordinance Options," October 2005.

Energy Efficiency

Efficient energy use, sometimes simply called energy efficiency, is using less energy to meet the same need. Energy efficiency is often referred to as the "first fuel" supply to tap when looking for new generation sources, since it is the most cost-effective choice. Energy efficiency applications are relatively easy to understand. For example, insulating a home allows a building to use less heating and cooling energy to achieve and maintain a comfortable temperature. Many efficiency technologies, including light emitting diodes (LEDs), compact fluorescent lighting (CFLs), and efficient heating, ventilation, and air conditioning (HVAC) systems—as well as the use of design elements such as day-lighting, passive solar heating, and natural ventilation—reduce the amount of electricity needed to operate facilities in all situations. In an emergency, efficient facilities require less backup power.

Lighting generally forms a significant part of a local government's electricity budget, and the exciting and increasing number of applications for LED lighting provide a way for major gains in efficiency. The efficacy (lumen/watt) of currently available LED lighting ranges from about 25-45 lm/Watt, with efficacies of 50-100 already demonstrated. In contrast, incandescent lighting is about 10-12 lm/Watt. LEDs, therefore, can reduce lighting expenses to one-half or even one-quarter of the costs for incandescent lighting and one-tenth the cost is on the horizon.

In addition to energy efficiency, LED technology delivers longer lamp life than incandescent (25,000 hours rather than 1,000 hours); lower heat output (reducing cooling loads) and improved durability. Applications of LED lighting include traffic signals (one of the earliest uses), exit signs, accent lights, signage, outdoor lighting, residential task and spot lighting, and store display cases—and the list is steadily increasing.

Certain LED lighting fixtures for the residential sector are ENERGY STAR® certified, and include under cabinet lighting, desk task lights and outdoor pathway lights. Details on the specific lighting types and their performances are listed on the ENERGY STAR website, www.energystar.gov/purchasing. Using this technology in the residential, commercial and industrial sectors can lead to major energy efficiency improvements.

Energy-efficient technologies enjoy significant market share in many areas. For example, the sales of ENERGY STAR-certified CFLs are doubling each year, according to estimates by the U.S. Environmental Protection Agency (EPA). Many communities purchase and/or sell CFLs along with their local utility in formal campaigns to raise energy efficiency awareness. CFLs generally use around 1/3 the electricity of traditional incandescent bulbs while lasting eight to ten times as long. Lighting can account for 60 percent of the energy consumed in commercial buildings; much of this energy is used to cool spaces heated through the use of inefficient lighting.

Energy efficiency investments should be considered a cost-effective complement to investments in other more traditional energy supplies. In addition to reducing the cost of day-to-day operations, energy efficiency programs can prove effective in reducing peak electricity demand, lowering consumption when the power grid is most stressed, and thereby reducing the likelihood of an outage.[12]

[12] American Council for an Energy-Efficient Economy, *Examining the Peak Demand Impacts of Energy Efficiency: A Review of Program Experience and Industry Practices*, February 2007.

Strengthen Building Codes

One of the easiest ways to improve local government energy efficiency is to make sure that buildings of all types are performing in an efficient manner. DOE and EPA have a free program called *Portfolio Manager*[13] that helps local governments track the energy usage in their entire building portfolio. The stakes are huge and the potential savings are even larger. California's building efficiency standards (along with those for energy efficient appliances) have saved more than $56 billion in electricity and natural gas costs since 1978. It is estimated the standards will save an additional $23 billion by 2013.[14]

Distributed Generation

Most electricity in the U.S. is generated through large centralized facilities—typically coal, nuclear or hydropower plants. These plants enjoy economies of scale, but usually transmit electricity over long distances involving significant power losses. Distributed generation (DG), also called onsite power generation, is another approach. It reduces the amount of power lost in transmitting electricity because the electricity is generated very near where it is used, sometimes in the same building. DG resources are typically small scale, such as solar panels on the roofs of buildings or small wind turbines. Local governments can use DG to minimize power losses during outages to mission critical computer and communication facilities and police and fire stations. There are also distributed co-generation sources that use natural gas-fired microturbines to turn generators, with the waste heat used for space or water heating, as in combined heat and power systems.

Cogeneration/Combined Heat and Power

Cogeneration, also called combined heat and power (CHP), is an increasingly popular local government energy assurance technology. It is the use of an engine or power station to simultaneously produce electricity and useful heat. All power plants produce waste heat while producing electricity. CHP utilizes this heat for productive purposes, effectively increasing the efficiency of power-generating technology. An automobile is an excellent example of CHP in the winter time when it distributes excess engine heat to the car's interior to help keep passengers warm. Large scale CHP applications often involve utilities, and can be elaborate enough to require interconnection agreements. Small scale CHP applications are much more numerous, and might include hotels, industrial plants, local governments and universities that redirect waste heat away from onsite power generation sources (or from other heat sources) to a different area.

CHP has been around for a long time. Thomas Edison used CHP in the late 1800s in the first official commercial power plant in the U.S. to provide heat to neighboring buildings. Conventional power plants typically generate a lot of waste heat during electricity production, and efficiency ratings for the most efficient plants now tend to be around 50 percent. This indicates that almost half of the energy is lost in the form of waste heat. By incorporating CHP and "capturing" otherwise wasted heat, these same plants can achieve efficiency ratings of close to 90 percent.

It is possible to use the waste heat for heating purposes and to produce hot water for "district heating." Con Edison distributes 350 degree (Fahrenheit) heat to 100,000 buildings in New York City, reportedly the biggest steam district in the world. Scandinavia is famous for its district heating as well. Cogeneration plants are commonly found in district heating systems in hospitals, colleges, prisons, and industrial plants. CHP is most efficient when the distances traveled for the heat are short.

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[13] http://www.energystar.gov/index.cfm?c=evaluate_performance.bus.

[14] California Energy Commission, 2008.

CHP is acknowledged as a proven, valuable technology to governments during emergencies. Recognizing this, Texas law required CHP feasibility studies as of September 2009 for all critical governmental facilities and buildings. Essentially, to comply with the law, all government entities must do at least three things:

- Identify which government owned buildings and facilities are critical in an emergency situation
- Obtain a feasibility study to consider the technical opportunities and economic value of implementing CHP prior to constructing or making extensive renovations to a critical governmental facility
- Equip the facility with a combined heating and power system when the expected energy savings of the CHP system exceed the expected costs of purchasing, operating, and maintaining the system over a 20-year period

To meet the requirements of the Texas law, CHP systems must be able to provide all of the electricity needed for the facility's critical emergency operations for at least 14 days and at an overall efficiency exceeding 60 percent. For emergencies where the electricity grid is down for days or weeks, CHP systems are much more reliable than conventional diesel backup generators.[15]

Fuel Cells

Fuel cells are similar to batteries. Fuel cells can be used in a variety of applications ranging from powering cars, trucks, and buses to powering portable devices such as cell phones and laptop computers. Today, fuel cells are used most widely as a stationary source of backup power, and are often fueled with natural gas. Of course, natural gas is susceptible to price fluctuations. A few municipal water treatment facilities are experimenting with fuel cells using methane-rich gases that are by-products of the sewage treatment process.

Over the past decade, the Federal government has spent billions of dollars on hydrogen fuel cell research as part of its Hydrogen Fuel Initiative. Hydrogen fuel cells can be used to power small hand-held devices, as well as larger devices such as portable generators used for backup power. Hydrogen fuel cells are valued because after converting the chemical energy in hydrogen to electricity, the only waste is (pure) water and heat. Hydrogen fuel cells are also prized for their high efficiency, typically 60 percent, versus traditional power sources such as coal, which deliver power at roughly 35 percent efficiencies.[16] When combined with CHP, efficiency ratings for hydrogen fuel cells can go significantly above 60 percent.

[15] http://www.txsecurepower.org/.

[16] EIA, U.S. Department of Energy, 2010.

Case Study 3. Hydrogen Fuel Cells Providing Critical Backup Power

Customers of AT&T Wireless and Pacific Gas & Electric Company will enjoy service that is both cleaner and more reliable, thanks to backup power provided by about 200 hydrogen fuel cells. The two companies are becoming early adopters of hydrogen fuel cells as backups for the main power grid. Both projects were funded by a DOE grant to ReliOn, Inc. of Spokane, Washington, which specializes in hydrogen fuel cell backups for businesses that need to stay functional during power failures. Telecom companies like AT&T need backup power to keep cellular towers working during an electricity outage.

But Sandra Saathoff of ReliOn says the project is also an attempt to transform the market by speeding up businesses' acceptance of fuel cells. "Fuel cells are a new technology to most of our customers. Because it's new and it's really important to keep equipment functioning, they're really cautious about introducing new technology to their networks."

As a rule, Saathoff says, businesses that need these backups prefer to slowly introduce the technology after much testing. Companies typically budget for backup power, but in the form of batteries or diesel generators. Paying for fuel cells means raiding other parts of the budget. All of this makes businesses reluctant to become early adopters. The project seeks to reassure businesses by demonstrating that the equipment will perform well and be cost-effective. Some cells will be analyzed for performance.

Saathoff says fuel cells can be cheaper than conventional backups in the long run, in part because of incentives and lower maintenance costs. "If you're looking at maintenance costs for a ReliOn fuel cell, it's changing an air filter every 400 run-hours. That ends up being a couple hundred dollars," she says. "Maintenance costs on generators are in the thousands per year." Hydrogen fuel cells are also cleaner. Generators used for backup usually burn diesel fuel. In fuel cells like ReliOn's, hydrogen is broken down into electrons and positively charged ions, producing electricity. The two particles are later recombined and mixed with oxygen from the air, generating water as the only waste product.

Source: Condensed from the U.S. Department of Energy's *Energy Empowers* web site at www.energyempowers.gov, January 5, 2010.

Fuel cells have the potential to help reduce greenhouse gas emissions and air pollution, although they are not yet cost competitive with traditional technologies. In 2005, the most widely deployed fuel cells cost about $4,500 per kW; by contrast, a diesel generator costs $800 to $1,500 per kW, and a natural gas turbine[17] can cost even less, especially since gas prices are currently low, and generally have less volatility than in past decades. However, fuel cells can be a cost-effective replacement for battery backup systems. Batteries can fail without warning, and they require regular, often expensive maintenance to provide reliable backup power. Increasingly, communication network operators are using fuel cell systems in critical communication applications in the wireless, utility, and government sectors.

[17] The difference between a natural gas-fired fuel cell and a similarly fired microturbine is that the former uses the hydrogen from natural gas in a battery-like process to produce electricity whereas the latter produces electricity directly via a small turbine from the combustion of natural gas.

Case Study 4. 30-Kilowatt Natural Gas-Powered Microturbine System

A 30 kW natural gas-powered microturbine system, installed by Pacific Northwest National Laboratory at theApplied Process Engineering Laboratory, can be started remotely by the Bonneville Power Administration to produce electricity for the building during times of peak electrical demand. This onsite distributed generation helps reduce stress on transmission lines by supplying some of the power for the building directly instead of pulling from the regional power grid.

Microturbines

Microturbines are small combustion turbines, approximately the size of a refrigerator, which can generate outputs of 25 kW to 500 kW of electricity, and can be located on sites with space limitations for power production. Microturbines are composed of a compressor, combustor, turbine, alternator, recuperator, and generator. Microturbines are essentially small electricity generators that burn gaseous and liquid fuels to create high-speed rotation that turns an electrical generator. Microturbines run at high speeds and, like larger gas turbines, can be used in power-only generation or in CHP systems. Waste heat recovery can be used in CHP systems to achieve energy efficiency levels greater than 80 percent. Microturbines are able to operate on a variety of fuels, including natural gas, sour gases (high sulfur, low Btu content) and liquid fuels such as gasoline, kerosene, and diesel fuel/distillate heating oil.[18]

Microturbines offer a number of potential advantages compared to other technologies for small-scale power generation.[19] These advantages are:

- Small number of moving parts
- Compact size
- Light weight
- High efficiency
- Low emissions
- Low electricity costs
- Potential for low cost mass production
- Opportunities to use waste fuels
- Easy application in both peak and backup power generation

[18] The difference between a natural gas-fired fuel cell and a similarly fired micro-turbine is that the former uses the hydrogen from natural gas in a battery-like process to produce electricity whereas the latter produces electricity directly via a small turbine from the combustion of natural gas.

[19] http://www.eere.energy.gov/de/pdfs/microturbine_advanced_systems_program.pdf.

Key Questions

...in Addressing Energy Efficiency and Distributed Generation

1. What energy efficiency technologies does the Energy Manager (or equivalent expert) believe are the best suited for the jurisdiction?
2. What policies are in place to promote end-use energy efficiency?
3. What energy efficiency policies are not in place now, but would make a good fit to help with energy assurance efforts?
4. What energy efficiency programs have the local utilities implemented recently?
5. Has anyone exhaustively identified existing local energy efficiency programs? If so, who did it, when, and where is the list?
6. Is there a local government in the region with extensive energy efficiency experience that will share lessons learned?
7. What public and private organizations are available to help with energy efficiency research?
8. What State and Federal agencies can help with local energy efficiency efforts?

2.7 Cyber Security and Energy Assurance Planning

Cyber security is the protection of all things pertaining to the Internet, from networks themselves to the information stored in computer databases and other applications, to devices that control equipment operations via network connections. Vulnerabilities are present in nearly every aspect of the modern community energy infrastructure. Effective local government EAPs will investigate and address these vulnerabilities. Typically, when the public and local government officials consider disruptions to energy supply and related critical services, they attribute the losses to events such as storm damage, flooding, fires, and energy demand that outstrips available supplies. This document provides a brief overview of why cyber security should also be considered when assessing energy infrastructure vulnerabilities.

While often dismissed as an issue only for information technology departments and Internet-focused industries, cyber security is an area of increasing concern for energy assurance planners. Variables that may influence the cyber security aspects of a local EAP include the relationship between an energy service provider and the local government, the presence of critical infrastructure in the community, the size of the community, and the amount of funds available to the local government to provide more secure information. The degree to which a large city needs to investigate and plan for cyber security threats is likely to be significantly different than what is needed or affordable for a small rural community. As systems become increasingly interconnected and interdependent, however, the level of security necessary for all communities is increasingly equalized.

Several key areas that should be investigated and addressed in a local EAP include direct threats to electricity generation routing/transmission and distribution; ancillary threats to personal or proprietary information; and communication. Cyber security as an aspect of energy assurance planning is probed in greater detail in a recent report by the National Association of State Energy Officials (NASEO), *Smart Grid & Cyber Security for Energy Assurance: Planning Elements for Consideration in States' Energy Assurance Plans,* December 2010.[20]

[20] http://naseo.org/energyassurance/Smart_Grid_and_Cyber_Security_for_Energy_Assurance-NASEO_December_2010.pdf.

Direct Threats

The most obvious cyber security risks to an energy distribution system are those that, if not mitigated, could result in an inability to meet customers' demand for energy. For example, threats to electricity generation have recently been in the headlines, with new details about the Stuxnet virus coming out regularly. The Stuxnet virus was reported to have an impact on Siemens control systems and process equipment, which are used in some U.S. electricity generation infrastructure.

In addition to generation capacity, the transmission and distribution system that routes power from the generator to the users is potentially vulnerable to cyber attack. Misrouting of power, spoofed reports of power problems, and other malicious attacks could result in inducing power outages where the system was actually performing properly. In a worst-case scenario, such an event could trigger a cascading failure where one outage results in a power surge that triggers a larger outage.

Finally, outages can be triggered directly at customer facilities. In some instances, these outages may be triggered if vulnerabilities in remote management tools are exploited. This is worth additional consideration in areas where smart grid technologies are being rolled out. Some early metering technologies have demonstrated vulnerabilities to computer viruses. While significant resources are being directed to mitigating these direct threats, the possibility of an outage being triggered at one or more customer facilities due to a cyber security weakness exists, and each direct threat is worthy of consideration as part of the energy assurance planning process.

Ancillary Threats

While not as immediate in their impacts as the direct threats, ancillary threats are of critical concern. Examples of ancillary threats include data breaches whereby unauthorized users gain access to personal or other confidential information, which may include billing and account information or even meter data. Protecting all of these types of data is essential for maintaining customer confidence in the power distribution system. In recent years, several States have devised stringent requirements for protecting customer information and for providing notifications of security breaches.

Mitigating Cyber Security Threats

There are a number of protocols and techniques for mitigating cyber security threats that may be appropriate to adopt and address in an EAP, many of which are already common in the information technology industry. The first step is to understand the vulnerabilities. In many cases it may be possible to develop a better understanding of the specific vulnerabilities a community faces through dialogue with the local energy service provider.

Once threats are identified, some common methods of mitigating them include:

- **Instituting access control policies:** Restricting access to key terminals, files, and networks to individuals who have the training and the need to work with those resources.
- **Adopting security protocols:** In some cases, failure to use industry-standard antivirus software and failure to install security patches and upgrades have resulted in severe consequences.
- **Monitoring systems:** Constant monitoring of system usage and assessing abnormal usage patterns on systems can help identify vulnerabilities and attacks before major problems occur.

- **Training:** Individuals responsible for ensuring the reliability of the system need to be trained to recognize and respond to security threats, as even the most advanced security technology can be undermined by lack of awareness.
- **Testing:** Security protocols and procedures need to be tested, and it may make sense for the planning process to include regular exercises (some of which simulate cyber attacks and responses), as well as penetration tests/ security evaluations by third parties to identify potential vulnerabilities.
- **Verifying information:** In some instances, taking major corrective actions in response to news of a problem could trigger unintended consequences if the information is not valid.

In addition to mitigating cyber security vulnerabilities, developing pre-plans for responding to events can be a valuable component of a local EAP. Consider outlining a process for identifying an incident as a cyber incident as part of this pre-planning. Additionally, having an understanding of key assets and services can help prioritize the response to an event, whether or not it is related to cyber security vulnerability.

Key Questions

…in Addressing Cyber Security

1. Do formal administrative and information manuals adequately address cyber security concerns, thus helping protect local government and its employees?
2. Are planners regularly addressing and learning about new cyber security threats and developments through monthly or quarterly meetings, webinars and/or conference calls?
3. Are planners taking advantage of the cyber security resources offered through the State and Federal governments, and others? For example, does the State CIO offer any local government cyber security training?
4. Is there a cyber security expert already on staff who can provide input into the local EAP?
5. If not, is there an expert in another local government in the region who can help with cyber security issues?
6. Are there any non-profit or for-profit cyber security organizations that will volunteer to educate local government on the issue through a webinar or other venue?
7. Is cyber security adequately addressed in the EAP?
8. What are the lessons learned from any cyber attacks that have already taken place in the State or elsewhere?
9. What local government services are usually targeted for cyber attacks, and are there systems in place now to help protect these areas?
10. What are the executives from the leading companies in the region or State doing to address cyber security concerns, and is there a possibility of learning from their efforts?

Source: http://www.naseo.org/energyassurance/Smart_Grid_and_Cyber_Security_for_Energy_Assurance-NASEO_December_2010.pdf.

3 How to Develop or Enhance a Local Energy Assurance Plan

3.1 Introduction to the Ten-Step Local-Level Planning Framework

The Public Technology Institute's original *Local Government Energy Assurance Guidelines* document (Version I, 2009) has been expanded to include a new 10-Step Planning Framework. These 10 steps are only recommendations—not requirements—provided to help local governments with their energy assurance planning efforts. There is no "one size fits all" EAP, and a locality's unique energy assurance initiative may not require each step. The guidance contained in each step is provided simply to help planners consider some of the important issues that are likely to emerge during the energy assurance planning process. Table 4 lists these 10 steps and provides links to the sections that describe them in detail.

Table 4. Ten-Step Energy Assurance Planning Framework

Step Number	Section	Description
1	3.2	Build an Energy Assurance Response and Planning Team
2	3.3	Know the Emergency Authority Framework
3	3.4	Understand Response Roles and Responsibilities
4	3.5	Know the Local Government Energy Profile
5	3.6	Identify Energy Suppliers
6	3.7	Know the Primary Contacts and Related Partners
7	3.8	Identify Key Assets within the Jurisdiction
8	3.9	Develop an Energy Assurance Crisis Communications Protocol
9	3.10	Develop Additional Local, State, Regional and Federal Partnerships for Energy Assurance
10	3.11	Update the Plan on a Consistent Basis

3.2 Step One: Build an Energy Assurance Response and Planning Team

Building a planning team is one of the more important tasks that must be accomplished before any planning work can get started. It involves at least three aspects: designating an energy assurance coordinator, establishing an energy assurance working group and building personnel redundancy into the planning framework.

3.2.1 Designate an Energy Assurance Coordinator

The first step many local governments take toward developing and eventually implementing an EAP is the selection of an official energy assurance coordinator (the coordinator). The coordinator is responsible for building consensus around the EAP, and is usually the EAP's primary architect and internal and external champion. While it is not essential, it is often helpful if the coordinator has an emergency management or energy background and some familiarity with relations between local government and DOE, the U.S. Department of Homeland Security (DHS), and local or State emergency management agencies. Since many energy assurance planning teams can be comprised of department heads, it is also helpful if the coordinator has a direct line of communication to local government senior managers early in the EAP development process, and local political officials later in the planning process. External political support for the EAP is usually not needed until later in the planning process and political officials can be useful allies at this time.

The coordinator often is described informally as the "hub" around which most energy assurance information flows. Most coordinators are public sector officials; some local governments utilized funds provided by the American Recovery and Reinvestment Act to hire coordinators from the private sector. For example, the City of Raleigh, North Carolina, hired its coordinator, now a city employee, from a contractor in the emergency management industry.

If hiring from the outside, consider employing a coordinator on a long-term (one to two year) contract if possible, as most EAPs are designed and implemented over multiple years. A short-term coordinator contract may not be as effective, since the loss of the coordinator could stall or stop the EAP development process. If the coordinator is hired on a short-term basis, try to line up at least one other person who can quickly assume planning responsibilities if the coordinator leaves the position. This personnel redundancy is an important component of the EAP efforts.

Since the coordinator is often charged with briefing people about a relatively new topic or concept (like energy assurance) excellent communication and public speaking skills are recommended. It is not uncommon for the coordinator to lead meetings where a variety of department directors are present. Therefore, the coordinator's ability to explain, engage and motivate, and in some cases inspire local government officials is critically important to the overall success of the EAP.

The EAP will be most effective if the coordinator is able to build strong relationships with local energy suppliers and other critical infrastructure operators. The coordinator will need to enlist diverse stakeholders to advance the EAP, and will be charged with understanding and assimilating often complex technical issues. For that reason, finding a person with excellent organizational, technical, and interpersonal skills is recommended.

Where possible, it is recommended that the coordinator have local government experience. A coordinator who understands the way a particular local government works is more likely to be successful with the EAP because typically, he or she will negotiate the government landscape more easily, effectively, and efficiently. The checks and balances built into the local government decision-making process are there for a reason, and implementing something new can be a slow, frustrating process to someone from the private sector. An EAP is more likely to gain traction quickly if championed by a government employee.

An outside perspective can also be valuable. Hiring a brand new or relatively new government employee as the coordinator may offer a new energy and a fresh look at energy assurance. A new hire from the external world may also bring a different, valuable perspective or energy assurance expertise to the EAP. Regardless of where the coordinator comes from, planners will want someone who can marshal resources, is organized, and can devote considerable time to the creation and execution of the EAP.

The coordinator should be a consensus builder. He or she is likely to participate in many one-on-one meetings with public and private sector representatives, where there will be opportunities to build trust with these officials. The working group developing the EAP may increase its success by utilizing information provided by local utilities, and often it takes time for the utilities to find, generate, and forward the requested information. It is helpful if the coordinator is tactful, patient, persistent, and sensitive to industry concerns.

Because the coordinator is responsible for tailoring energy assurance information to diverse audiences, it is also helpful if he or she has the ability to apply energy assurance concepts across departments and industries. For example, the head of a city water department with stationary water pumps and miles of underground pipeline has drastically different energy assurance concerns than the head of the city transportation department who oversees the traffic light system, above-ground fuel supply routes, and operation of city fleets.

Key Questions

…in Designating an Energy Assurance Coordinator

1. Does the candidate have the ability to forge consensus among diverse groups?
2. Is the candidate familiar with the jurisdiction's energy infrastructure?
3. Does the candidate have a multidisciplinary background that enables him/her to understand the interdependency and complexity of many energy assurance issues?
4. Does the candidate already have the trust of members of the prospective working group? If not, is the candidate likely to build the trust necessary for success?
5. Is the candidate an excellent listener?
6. Is the candidate comfortable with public speaking, and speaking in front of senior managers and industry leaders?
7. Can the candidate marshal and leverage government and private sector resources to help advance the EAP?
8. Does the candidate have enough seniority to command the attention and respect necessary to lead the energy assurance planning efforts?
9. Can the candidate work effectively with private sector energy assurance partners?
10. Is the candidate willing to research and learn about the many facets of energy assurance?

3.2.2 Establish an Energy Assurance Working Group

The coordinator will often be responsible for establishing a local energy assurance working group or task force. This working group is sometimes responsible for the development and implementation of the EAP. Working groups often start out with a small group of people and grow or contract as necessary. For example, the City of San Jose, California (population, 948,000) has 13 city departments represented on its working group. The City of Tucson, Arizona (population, 541,000) energy assurance working group is comprised of eight people.

The following public agencies, where present, are often represented on energy assurance working groups:

- Emergency Management
- Environment
- General Services
- Communications/Public Affairs
- Fleet Management
- Facilities Management
- Fire Department
- Police Department
- Public Works
- Health Services
- Energy Management
- Procurement
- Electricity/Gas/Water Utilities
- Information Technology (IT)

Local Voices

Tucson, Arizona

City of Tucson officials stress that bringing in and interfacing with emergency management and electric and gas utility officials familiar with the Federal requirements associated with energy assurance is one of the most important things planners can do when starting their working group. Says one senior city official, "Utilities need to know that your energy assurance plan is not going to be another layer of needless bureaucracy, and that means you have to educate them early. They have the data, and very few people in local government even know about the data they have. You need to bring them to the table quickly. You also need to work with the U.S. Department of Homeland Security and U.S. Department of Energy where you can…they know about energy assurance protocols and can make the process easier for you."

It can be helpful to involve State energy assurance representatives (from the State Energy Office or Public Utility Commission) and regional government leaders in the working group. These individuals may not be able to attend every working group meeting, but keeping them abreast of local government efforts and involving them as resources and advocates can yield many benefits for the planning process. For example, State energy assurance contacts can help local planners interface with important Federal agencies such as DOE and DHS. They can also introduce local planners to existing Federal energy assurance protocols and resources. Regional government representatives can be familiar with complex issues that often cross government geographic boundaries, especially during energy and natural disasters.

Every local government has different ideas about the subcommittee needs of its working group. Subcommittees may not be necessary at all, depending on the group's needs and objectives. It may be possible to meet all objectives through one working group. Considering the subcommittee needs up-front might make it easier to select working group members.

It may be useful to include the following subcommittees in the energy assurance working group.

- **Communications:** To organize internal and external crisis and non-crisis communications.
- **Energy Infrastructure:** To gather energy supply and demand data, including the locations of key pipelines, power plants, distribution networks, energy profile information, etc. and create a city energy profile.
- **Executive Committee:** To chart the direction of the working group; this subcommittee is often comprised of a core group of senior managers and the coordinator.
- **Legal Issues:** To determine local legal authorities and their relationship to State and Federal authorities.
- **Key Assets:** To identify Key Assets as part of the EAP.
- **Partnerships:** To build private and public sector partnerships for a successful energy assurance planning effort.

The City of Tucson, Arizona decided to create two energy assurance working groups, one comprised of internal city staff and the other comprised of external experts and utility representatives. City staffers say that the internal working group will do the lion's share of the early energy assurance research and groundwork for the city over the first few months, and then the external group will get involved and utilize the data assembled by the internal group to develop components of the plan. Tucson officials say that both groups will work together to develop and implement their plan.

It may be necessary for some local government staff to sit on multiple subcommittees. The City of Raleigh, North Carolina's coordinator included the directors of Public Works and Facilities on almost every subcommittee, as their expertise is needed across many substantive issues. It was easier to involve them in the discussions in "real time" instead of coming to them later with questions. Notably, Raleigh's Emergency Management director and coordinator also attends each subcommittee meeting.

Local Voices

Raleigh, North Carolina

The Raleigh, North Carolina energy assurance coordinator stated that it was easy getting city leaders interested in participating in the city's energy assurance working group. "Our leaders remember recent ice storms and major hurricanes in the 1990s and how these emergencies impacted our energy supplies. They want us to be prepared for the future."

The coordinator was hired by the city's Emergency Management Director. To keep his working group and others engaged in their energy assurance planning efforts, he holds a short, weekly briefing and has developed a web site dedicated to Raleigh's energy assurance efforts. In addition, he regularly briefs the Assistant City Manager, who is interested in energy assurance issues.

Lessons Learned

The coordinator stresses that it is important to script the energy assurance message very clearly and to "keep it simple" and easy to understand while staying focused on the specific needs of each city department. "If it isn't related to the department, it isn't relevant. Show them how the plan impacts them."

The City of Portland, Oregon, created one energy assurance steering committee. Working under the steering committee are four smaller "focus" subcommittees, including:

- Neighborhoods and small businesses
- Environmental organizations and representatives
- Industry, response agencies, and utilities
- Economy and alternative fuels

Private sector expertise is helpful to most working groups, particularly when addressing electricity, gas, water, and related utilities. It is important to include decision-makers, subject matter experts, or related personnel from relevant utilities where and when appropriate. At a minimum, it is recommended to involve representatives from local gas and electric utilities since they may have access to energy information and related resources to support local planning efforts. Pipeline and storage facility operators may also be useful, as well as water and wastewater treatment utility representatives. It is recommended that planners start by contacting the Office of Government Affairs within the local utility or other energy supplier for a contact person if one is not already in place. It may be worthwhile as well to seek assistance from other partners in the jurisdiction or region to see what utility contacts they have already developed.

It is recommended that planners brief these individuals on their planning efforts and include them as soon as possible in the development of the EAP. If it is not possible to include utility representatives on the working group, outside experts can also be brought in, when appropriate, to brief the working group. It is important to open a clear line of communication with utility officials as soon as possible, because they possess expertise regarding energy infrastructure and planning in the case of an energy emergency. The working group will want to be aware of utility response and restoration plans to the degree possible, since this information is useful to the planning efforts.

Local Voices

Portland, Oregon

"The Portland Office of Emergency Management is the lead agency managing the Portland Local Energy Assurance Plan. Portland is subject to hazards that could compromise our basic functions if our critical infrastructure is not managed and maintained and if our community is not fully aware of their part in protecting the critical energy infrastructure. To minimize damage from potential hazards many disciplines need to identify what they are currently doing to manage use of energy, the risks to their services due to lack of energy, and their plans for restoration of services after a disaster. Through the Local Energy Assurance Planning process, Portland committee members will determine what assets are important, how they will mitigate the impact of hazards on their assets, how they will coordinate response and recovery of the city, and what the impact of an energy outage would be on the economy and environment."

Many local government energy assurance working groups also involve non-governmental organization (NGO) experts in their plan development process. For example, an NGO that works with special needs and disabled populations is an important asset when discussions involve the transportation of these individuals to safe locations during energy and other emergencies.

Key Questions

…in Establishing an Energy Assurance Working Group

1. Does the working group candidate bring needed expertise to the group?
2. Can the candidate speak on behalf of his or her agency or company and obtain access to relevant operational information?
3. Does the candidate have the time to attend working group meetings?
4. Will the candidate actively contribute to the working group?
5. Can the candidate bring additional resources to the working group?
6. Is the candidate likely to stay on the working group through the end of the energy assurance planning process?
7. Is the candidate likely to educate and interest others in local energy assurance efforts over the life of the project and beyond?
8. Does the candidate have experience participating in other similar working groups?
9. Are candidates likely to collaborate and work together?

3.2.3 Build Personnel Redundancy into the Planning Framework

Energy assurance planning can be a multi-year process, and some working group members are likely to be replaced along the way. New job opportunities, retirement, changes in responsibilities, reductions in force, and organizational restructuring will inevitably occur during most energy assurance planning processes. It is necessary to be prepared

for personnel changes. Therefore personnel redundancy is crucial in the energy assurance planning effort—it reduces the likelihood that the planning process will go off track or be delayed due to personnel turnover. In order to ease the transition for replacing working group members, backup personnel can be kept in the loop through the regular dissemination of materials. They can also be routinely invited to group meetings. Going this extra step and involving a second layer, or more, of personnel can bring stability and continuity to the planning process. Have a contingency plan in place to address changes in personnel when they occur.

Finally, specialized and critical knowledge possessed by certain key individuals needs to be passed on to secondary personnel to assure adequate redundancy in the interest of institutional memory. This can be accomplished in any number of ways including resource manuals, training sessions, handouts, periodic briefings, and the like.

Key Questions

…in Building Personnel Redundancy into the Planning Framework

1. How will this person be replaced if/when he leaves the working group?
2. What steps can be taken to minimize the chances of losing the people chosen for the working group?
3. How many backups are needed for each task or role?
4. What personnel redundancies have other local governments implemented for similar tasks or roles?
5. What materials should personnel share with their backups?
6. Is it necessary to include backup personnel occasionally in energy assurance planning activities, to help get them invested and interested in the effort, even if "first line" personnel are present?

3.3 Step Two: Know the Emergency Authority Framework

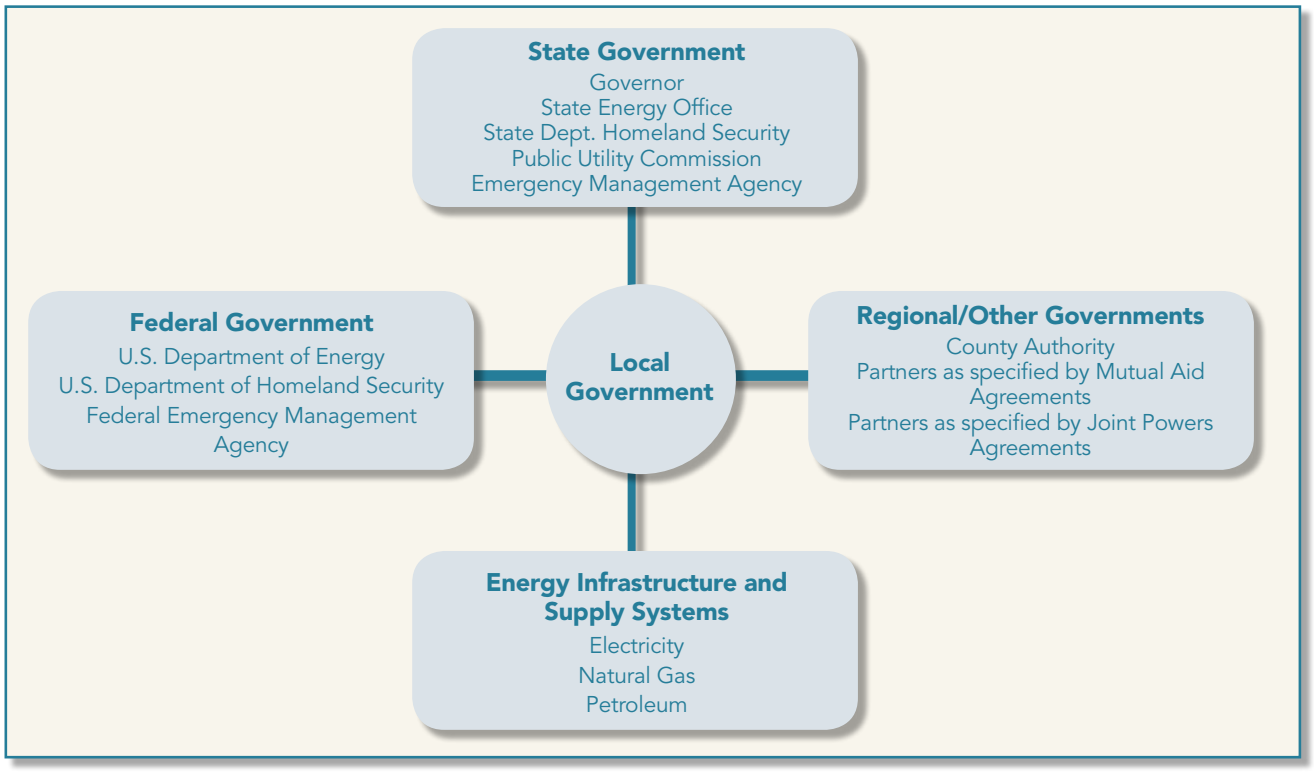
Energy assurance planning involves knowing the relevant emergency authority framework and referencing these authorities in the EAP. The plan should specify and explain the authority that is in place for the implementation of the strategies it outlines. Due to the nature of energy infrastructure, local, State, and Federal laws all can come into play during a major energy emergency. It is important to know which laws relate specifically to the EAP.

Traditional relationships between electricity suppliers and governments have been shifting over time. Therefore, an assessment of the scope of local government energy emergency powers should be done regularly. It is important that local government be familiar with the possible legal authorities that come into play in an energy emergency because during an emergency, critical infrastructure may be inoperable, and the Internet, phone, and computers that counsel would normally use for legal research and assistance may be unavailable.[21]

Figure 3 illustrates energy sector partners whose legal responsibilities and authorities will need to be understood by local energy assurance planners in case of an energy emergency.

[21] American Bar Association, Homeland Security and Energy Management Committee, "Checklist for State and Local Government Attorneys to Prepare for Possible Disasters," April 6, 2005. http://www.masgc.org/pdf/coastalstorms/checklist.pdf.

Figure 3. Public and Private Energy Sector Partners



Understanding emergency authorities early in the planning process will help avoid unforeseen problems with the EAP. Because there is a contractual relationship between energy providers and local government, knowledge of emergency authorities will also help planners understand the roles and responsibilities of their energy providers (see Section 3.4). Including legal counsel on the energy assurance planning team or a subcommittee may be a good idea.

Federal Authority

The *National Response Framework*[22] provides the primary means through which Federal emergency response resources are applied, with the Federal Emergency Management Agency (FEMA) taking a lead role in coordinating Federal response. For additional information on Federal energy assurance planning and response initiatives, see Appendix C.

State Authority

The legal questions local governments consider when developing EAPs in many cases will be framed by relevant State-level laws and regulations. Some States pass "special acts" related to emergency management; it is important that local governments know their legal authority under these acts, if applicable. Some States may also require that local governments supply continuous energy to the blind, elderly, and disabled populations. Fire and police departments operate under many levels of authority regardless of the cause of the energy emergency, but other departments may only be involved after an official State declaration of emergency status. It is important to know when an energy emergency officially starts, and who can, and must, be involved in response.

[22] http://www.fema.gov/emergency/nrf/.

The State may also have regulations that govern a locality and set forth limits that prescribe mandated activities or proscribe what cannot take place in the jurisdiction.

Local Authority

Local governments have legal responsibilities and authority vested through existing franchise agreements with utilities, and others, for the use of streets, highways, and public places. For example, a local electric utility may have the exclusive right to use a locality's public streets to replace lighting in an energy emergency. Also, depending on existing franchise agreements, some local governments are allowed to produce their own electricity and sell any surplus on the open market; some are not. Due to the changing electricity supply market, it may be advisable to incorporate future energy-related franchise agreements into the EAP. The tools available to direct or expedite local emergency response actions include but are not limited to:

- Executive order (typically issued by the chief executive such as mayor, city manager/administrator, and the like)
- Emergency rule (which may be a legal instrument passed by the local legislative body, such as city council or county commissioners)
- Administrative order (executed by a department head or cabinet-level appointee)
- Resolution (issued by the legislative body)
- Proclamation (issued by the chief executive; an example of a proclamation might be the declaration of a health emergency)

Jurisdictions that have 'home rule' authority have a distinct advantage in emergency planning, response and recovery. Home rule cities are not burdened by the limitations of Dillon's rule, which dictates that a unit of local government may exercise only those powers that the State expressly grants.[23] The citizens of a home rule city are free to choose their own form of municipal government, and among a host of other choices, they are also free to establish their own way of conducting the business of their jurisdiction concerning emergencies, unless expressly prohibited by the State.

[23] http://www.nlc.org/about_cities/cities_101/153.aspx.

Key Questions

…in Knowing Emergency Authorities

There are many legal authority questions a local government should identify and answer. The questions, and their answers, will vary based on the jurisdiction and the type of energy emergency. What follows is a list of questions that serve as a starting point. Depending on the extent and nature of the local EAP, some of these questions might be relevant and others might assist in identifying other germane questions.

1. In an energy emergency, who is in charge of response—the elected official, the local body or governing board, or a previously appointed administrative official?
2. What legal contracts and unofficial arrangements with energy sector service providers must be followed during an energy emergency, and should these contracts be updated as part of the EAP?
3. Is there in place a local incident command system that is recognized by the Federal government as being consistent with the NIMS, thus making the locality eligible for Federal emergency funding?
4. Who has the authority to declare an energy emergency, and what laws and actions relevant to energy supply are triggered when that person acts?
5. Has the locality reviewed its police authority to protect critical infrastructure (buildings, water processing facilities, communications facilities and towers, tunnels, utility transmission lines and distribution stations, bridges, roads, etc.), and if so, how does this authority work?
6. Are there any emergency legal restrictions in any unique areas (utility easements, waterways, wetlands, private roads, private land, etc.) that should be considered during an energy emergency?
7. How do Freedom of Information and Open Meeting laws apply to energy emergencies and energy planning?
8. What limits are there on boards, city councils, or executive officials when it comes to making energy decisions during an emergency?
9. What triggers special contracting authority—for a mutual aid agreement for example— in an energy emergency? This can be necessary to ensure that response/recovery resources from neighboring jurisdictions can be acquired and compensated as required.
10. Has the extent of government liability during an energy emergency been fully determined?
11. Do local planners know, and have they assembled in one place, all applicable State and Federal laws that come into play during an energy emergency?
12. Is the local government home rule?

3.4 Step Three: Understand Response Roles and Responsibilities

Local governments interact with a variety of regional, State, and Federal agencies to help protect the general public during an energy emergency. The private sector also plays an important role in response to local level energy emergencies. After identifying legal authorities related to developing an EAP, organizational and individual roles will become easier to outline and assess. This knowledge about legal roles and responsibilities, and knowledge of when partners must be involved, can help planners demarcate, define, and in some cases re-define existing local energy emergency roles and responsibilities. Energy assurance and energy emergency planning is a constantly changing field, requiring that planners revisit roles and responsibilities on a regular basis.

Coordinating an energy emergency response requires that planners know who is responsible, and for what. It also includes working with various agencies and organizations to understand roles and responsibilities. Outlining the relevant roles and responsibilities for each private and public sector organization early in the planning stages has the added benefit of reducing unnecessary, wasteful duplication of effort during an emergency.

Local Voices

Chicago, Illinois

In order to achieve the highest possible state of readiness and efficiency, clearly defined roles and responsibilities of various city departments, support agencies, and utility companies must be established, accepted, and rehearsed.

Public sector responses to energy emergencies are usually coordinated by the local Office of Emergency Management (OEM), Emergency Management Agency (EMA), or another agency (e.g., police or fire departments) designated for this purpose. The local response typically also will involve an elected official (usually the mayor), a previously appointed administrative official, the local body or governing board, and/or other agencies as needed. If applicable, it helps to review past energy emergencies and how the local government responded. Planners often can find internal and/or external evaluations of government performance during the emergency that can help them avoid past mistakes and repeat successful response actions.

The jurisdiction may want to consider creating or enhancing any relevant organizational structures—as feasible—to be more responsive for effective energy assurance preparedness, response and recovery/restoration.

For emergency response, defining the responsibilities of key agencies within the local government is one of the most important tasks to address in the EAP. Understanding and determining the specific duties of the local EMA (or comparable agency) and energy assurance coordinator is part of that process. Learn as much as possible from the local Emergency Operations Center (EOC) Director early on and to set up a strong link between the working group and the EOC Director as soon as possible. Both organizations can learn from each other. Revisit roles and responsibilities regularly, and be prepared to update them as technology, energy supply contracts, and personnel change.

Cooperation with the Private Sector

The most effective energy emergency responses in the past have been characterized by close cooperation between the public and private sector. Local governments cannot do the work alone in most cases. It makes sense to

involve private sector energy emergency experts early in the planning process to help accurately define roles and responsibilities.

Private sector organizations typically involved in emergency response are the ones that own, lease, and/or operate energy supply systems located within or serving the local jurisdiction. Examples could include natural gas and electric utilities and petroleum pipeline and terminal operators. It is important to learn about private sector emergency response plans within the jurisdiction to the extent possible. An EAP working group might find it helpful to pull together a handful of relevant private sector emergency response plans—as available—to help coordinate the local government energy emergency response with private sector responses. The point of this coordination is to avoid duplicating, accidentally contradicting, or counteracting the actions of private sector response plans. While some private companies have valid security reasons not to share all of this information with governments (such as electric utilities that are concerned about terrorist knowledge of vulnerable electricity supplies), most are very willing to share lessons learned with local governments. Working with company personnel on this issue in advance of an emergency also helps establish trust and familiarity that will prove helpful during actual emergencies.

Regional, State, and Federal Government Roles and Responsibilities

State and Federal government roles and responsibilities are discussed in more detail in Step Nine: Developing Additional Local, State, Regional, and Federal Partnerships (Section 3.10). It is important, however, to mention some information on these roles here. In addition to having a fundamental understanding of roles and responsibilities, it is equally important that localities stay abreast of larger regional, State, and Federal energy issues on a regular basis. This awareness can provide much needed context during an energy emergency, while also contributing ultimately to a more efficient response.

Information on where local government energy emergency responsibilities begin and end, and where regional, State, and Federal government responsibilities begin and end, is crucial information and should be a part of the EAP.

The regional Council of Government (COG) may offer significant energy planning expertise. The National Association of Regional Councils (NARC) can help connect local government planners to their respective COGs. NARC serves as the national voice for regionalism through its member councils of government and metropolitan planning organizations (MPOs) that offer a wealth of energy-related expertise. NARC staff is actively involved in regional energy planning, and is likely to know energy experts at the closest COG or MPO. Further information is available at http://narc.org.

In addition to finding out how the COG can be of assistance in developing a local EAP, planners should be aware of the different phases under which emergency response often takes place. Typically, the first phase of response involves local and regional jurisdictions, with State, Federal, and NGO resources involved—depending on the severity of the event—as the response effort continues. Of course, each emergency is unique in terms of its scope, duration and effects. In broad terms, however, the response process often roughly follows the chronology below and involves different jurisdictions and organizations at the local, State, and Federal level:

- **First 24 hours:** Local and regional authorities may be dispatched to affected areas. Such authorities would include law enforcement (sheriff or police officers), firefighters, emergency medical technicians (ambulance), and municipal service workers. The local Red Cross may also begin gathering disaster response teams to help assess the location and scale of damage. If the damage is widespread and affects many homes, temporary shelters may be set up in a predetermined location, such as a community center, school or church. The media may play an important role in disseminating relevant information to the public.

- **24 to 72 hours:** Local law enforcement and agencies may continue to redirect traffic, secure particularly hard-hit areas and provide first-responder emergency services. The State's governor may make a determination on whether the disaster qualifies as an emergency. If the governor declares a state of emergency, State personnel, equipment, and facilities will be authorized for use in the response effort. State Energy Offices and/or Public Utility Commissions may also begin implementing resource-specific contingency plans and coordinating with Federal authorities regarding driver hour and fuel waivers, as well as other Federal response resources (via ESF-12 and other mechanisms—see Appendix C for further information). The State's National Guard may also be deployed. Volunteers from many organizations and from the general public may begin to assist with the cleanup effort, as needed.
- **72+ hours:** organizations involved in disaster relief may transition from meeting immediate needs such as food, clothing, and shelter to longer-term support services. The Federal Emergency Management Agency (FEMA) and the President of the United States may decide whether the emergency should be declared a Federal disaster, a decision that may take days, weeks or even months.

Ideally, an EAP should assign its energy assurance coordinator an important coordinating role during an energy emergency. It should be the coordinator's responsibility to help ensure that interaction between agencies and departments and the public and private sector is as efficient and effective as possible during emergencies. It will take time for a new coordinator to develop the trust and experience needed to perform this important function, so the sooner a coordinator is designated or hired, the better.

Many States rely on their emergency management (e.g., homeland security or civil defense) organizations for energy emergency response. Other States may focus energy emergency responsibilities on one or more groups that might be involved. These responsibilities can be grouped into four broad categories.

- **Monitoring** the energy supply system in order to detect any unusual imbalances that indicate the potential for an energy emergency, and if so, advising the appropriate State officials
- **Developing, administering, or coordinating** energy emergency contingency plans
- **Communicating** with Federal, State, and local agencies related to energy emergency planning and management
- **Maintaining** ongoing contact with components of the energy industry, including regulated utilities, cooperatives, municipally-owned, and unregulated providers[24]

While these responsibilities apply generally to State agencies, they also provide a useful template for framing local government responsibilities. Working with the local government EMA or comparable agency and grouping some of the local responsibilities into similar categories may be a useful way to start breaking down and outlining key roles and responsibilities in the EAP. If possible, the energy assurance coordinator should work on this task directly with the EMA. The local EAP is not meant to replace or diminish any EMA work; it is meant to supplement and augment existing EMA work.

As noted in NASEO's *State Energy Assurance Guidelines, Version 3.1*,[25] State emergency or disaster plans are designed to delineate responsibilities among State agencies and between State and local governments. These plans generally seek to define the relationship between both State and local response mechanisms and the Federal emergency management system.

[24] NASEO *State Energy Assurance Guidelines*, Version 3.1, 2009, page 30.

[25] http://www.naseo.org/eaguidelines/.

The *National Response Framework (NRF)*[26] and its Emergency Support Functions (ESF) include information on local government roles and responsibilities, and how they interface with Federal response actions. This information can also be found in Appendix C of this document. The ESFs under the *NRF* provide guidance on these relationships. The *NRF* 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 function of the *NRF* is to assist in the homeland security mission of preventing terrorist attacks within the U.S., reducing vulnerability to all natural and man-made hazards, minimizing the damage from any type of incident that occurs, and assisting in recovery. The *NRF* also incorporates best practices and procedures from incident management disciplines (homeland security, emergency management, law enforcement, firefighting, public works, public health, response- and recovery-worker health and safety, emergency medical services, and the private sector), and integrates them into a unified structure. The need to interact with Federal agencies is an important theme in the ESF requirements for local governments under the *NRF*.[27]

Local Voices

Denver, Colorado

In June of 2010, a substation owned by a local electric utility in Denver, Colorado exploded, cutting off power to over 31,000 customers. Denver's Office of Emergency Management took the lead in coordinating response efforts. The Fire Department was dispatched to the substation, where it took over one hour to extinguish the 70-foot high flames. The Department also contained the runoff, which potentially contained PCBs and other hazardous chemicals, preventing it from entering the storm sewer system.

At nearby Rose Medical Center, 15 critical care patients had to be moved to other hospitals because the facility's backup generator failed to provide power; emergency power was provided by limited battery power until the emergency generators were able to come on line. Because Colorado hospitals are subject to emergency power standards as set by the National Fire Protection Association, the Colorado Department of Public Health and Environment reviewed the inspection records to assure that testing of the emergency generators had occurred as required.

Since power was cut off for a prolonged period of time, non-functional traffic signals caused traffic jams at intersections, requiring response from traffic operations within Denver's Department of Public Works.

These are but a few of the response actions this incident required—all standard operating procedures coordinated by the Emergency Operations Center in the Office of Emergency Management.

Underscoring the severity and chronic impacts that such an event can cause, one week after this incident, another problem at the same substation shut power off to over 6,000 addresses. More recently power was once again curtailed to 25,000 customers from malfunctions at the substation.

[26] http://www.fema.gov/emergency/nrf/.

[27] The key response function related to energy is outlined in Emergency Support Function #12 (ESF-12) http://www.oe.energy.gov/emerg_response.htm.

Under the *NRF*, DOE/OE is the lead Federal agency for responding to energy emergencies, once Emergency Support Function 12 is activated. (See Appendix C for additional information.) State and local governments should work closely with DOE/OE in sharing energy emergency and shortage information as well as seeking technical support.

DOE/OE's primary responsibilities under ESF-12 include:

- Deploying response teams to affected areas to assist in response and restoration efforts
- Monitoring energy system damage and repair work and identifying the support resources needed for their restoration
- Collecting, assessing, and providing information on energy supply, demand, and prices as well as contributing to situation and after-action reports
- Prioritizing plans and actions for the restoration of energy during response and recovery actions
- Serving as the focal point for issues and policy decisions relating to energy in all response and restoration efforts

Key Questions

…in Understanding Response Roles and Responsibilities

1. What role should the energy assurance coordinator play in an energy emergency?
2. Which local private sector companies should be approached about sharing their emergency response plans if possible, and what is the best way to coordinate with these plans?
3. Who is the current local government lead in an energy emergency, and should it remain the same person?
4. Who is the primary State government contact during an energy emergency?
5. Is there a comprehensive list of local government agencies that will be responsible for at least one function during an energy emergency?
6. Has the energy emergency knowledge and expertise offered by the COG and/or MPO staff been incorporated into the EAP?
7. What is the best way to define very clear roles between local government and local energy service providers, while also maximizing the information exchange between all groups (without compromising valid security concerns on both sides)?
8. With respect to local government roles and responsibilities, how does the EAP interact with the local COOP or similar response framework, and are the two plans are complementary and consistent?
9. How does the jurisdiction coordinate with regional, State, and Federal partners to make emergency response decisions?
10. Who from the local government is responsible for the first call(s) to private sector energy suppliers in an energy emergency, and how will information gathered from that call be transferred to others in the local government?
11. Are there updated flow-charts and/or organizational charts that show all relevant local government roles and responsibilities during an energy emergency?

3.5 Step Four: Know the Local Government Energy Profile

It may be surprising to learn how little most people know about where their energy comes from and how it is used. A recent national study by the Washington, DC-based Sustainable Energy Coalition discovered that only 23 percent of those surveyed knew which primary fuel (coal, natural gas, hydropower, nuclear, solar, wind, etc.) was used to generate their electricity. As part of the local EAP, it is important to put together a local energy profile. Information on State[28] and national level[29] energy profiles is fairly accessible, but finding local energy profile data may take a little more research. Once planners have a general understanding of how their jurisdiction uses energy, the working group will be better prepared to comprehensively evaluate the future energy assurance options available to the local government.

Before determining response measures to an energy emergency, it is necessary to know the three elements that comprise the local energy profile:

- Where the energy supply comes from
- How the energy is used across the jurisdiction
- Any seasonal fluctuations in supply, demand, and price trends

Once planners understand these issues, they can start to assess the vulnerabilities associated with their energy profile and how the community will respond to an energy emergency.

Local Voices

Windham, Connecticut

Energy assurance is important to us because we want to help avoid electric outages and we want to get power back up as soon as possible if there is an outage. Energy assurance means strengthening our community, especially those for residents and businesses that are vulnerable to electricity outages. It also means improving the reliability of our electrical system.

Energy assurance means having a more reliable supply of power in an emergency, when we really need it.

Data Sources

Putting together an accurate energy profile requires the collection of existing energy data. This data is likely to come from multiple public and private sector sources. The local electric and natural gas utilities are excellent places to begin with energy profile data collection. If the local government contracts with an energy services company (ESCO) that is responsible for managing some of the local energy use, energy data is usually easy to obtain from that source. Some jurisdictions have a formal energy manager or sustainability coordinator; if so, these officials will sometimes have the best energy data available. The public works manager may also have a rich supply of energy data. If the local government has put together a recent greenhouse gas reduction plan, a greenhouse gas emissions inventory, a community energy plan, or a climate change action plan, an exhaustive energy profile was probably created during these initiatives. The local metropolitan planning organization (MPO) and regional council of government (COG) may also be sources of reliable energy data.

[28] http://www.eia.doe.gov/State/.

[29] http://www.eia.doe.gov/country/country_energy_data.cfm?fips=US.

The quality and the format of the acquired energy data can be as varied as local governments themselves. It is not uncommon to find small- and medium-sized local governments with one public works employee who may only keep hand-written energy consumption and supply data in a personal file and/or on homemade spreadsheets; this happens with larger local governments also. If energy data has not been valued in the past, it may be harder to find. Many local governments now use U.S. EPA's *Portfolio Manager* or other proprietary software that can produce useful reports related to their energy profiles.[30]

3.6 Step Five: Identify Energy Suppliers

The *National Infrastructure Protection Plan, Energy Sector Specific Plan* provides a useful overview of energy infrastructure issues:[31]

> The Energy Sector includes assets related to three key energy resources: electric power, petroleum, and natural gas. Each of these resources requires a unique set of supporting activities and assets, as shown in the table below [Table 5]. Petroleum and natural gas share similarities in methods of extraction, fuel cycles, and transport, but the facilities and commodities are separately regulated and have multiple stakeholders and trade associations. The electric power industry is diverse in its ownership, geography, and asset types and is regulated by multiple levels of government.
>
> Energy assets and critical infrastructure components are owned by private, Federal, State, and local entities, as well as by some types of energy consumers, such as large industries and financial institutions (often for backup power purposes).

Table 5. Segments of the Energy Sector

Electricity	Petroleum	Natural Gas
• Generation —Fossil Fuel Power Plants >Coal >Natural Gas >Oil —Nuclear Power Plants —Hydroelectric Dams —Renewable Energy • Transmission —Substations —Lines —Control Centers • Distribution —Substations —Lines —Control Centers • Control Systems • Electricity Markets	• Crude Oil —Onshore Fields —Offshore Fields —Terminals —Transport (pipelines)[a] —Storage • Petroleum Processing Facilities —Refineries —Terminals —Transport (pipelines)[a] —Storage —Control Systems —Petroleum Markets	• Production —Onshore Fields —Offshore Fields • Processing • Transport (pipelines) • Distribution (pipelines) • Storage[b] • Liquefied Natural Gas[b] Facilities • Control Systems • Gas Markets

Notes:
a. Hydroelectric dams, nuclear facilities, rail, and pipeline transportation are covered in other SSPs.
b. Certain infrastructures of this asset type are regulated by the Chemical Facility Anti-Terrorism Standards (CFATS). The final tiering of the facilities covered by the CFATS was not completed at the time of this report.

Source: http://www.dhs.gov/xlibrary/assets/nipp-ssp-energy-2010.pdf.

[30] http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfoliomanager.

[31] http://www.dhs.gov/xlibrary/assets/nipp-ssp-energy-2010.pdf.

Local Voices

Asheville, North Carolina

Getting to know and networking with your energy suppliers early in your planning process will help you understand what your suppliers' capabilities are, and help you know what you can expect from them in terms of energy deliveries before an emergency strikes. By incorporating your key energy suppliers' contact information into your plan, you have information available immediately if an emergency strikes, and you have a relationship built on mutual trust.

3.6.1 Local Energy Suppliers/Infrastructure Operators and Contracts

Identifying energy suppliers is not as easy as it once was. It used to be possible to identify the energy supplier by simply looking at the energy bill. It was most likely that the same company that sent the bill was also the one that generated, transmitted, distributed, or otherwise delivered energy to the door step of the consumer.

After the utility industry began to restructure (almost 20 years ago), local governments in some States had the option of opening up their systems to competition. Where they did, many local governments shopped around, comparing electricity prices and services and buying from the supplier who best met their needs. Services could be bundled or unbundled depending on how the State restructured. This competition brought new energy suppliers into the market, and with that came many more players and possible combinations of power suppliers. The upshot is that localities may now have multiple entities that provide energy, each delivering a different service.

How might this new energy delivery model impact the EAP? The process, as a result, is more difficult. It is more important than ever to know who the key energy suppliers are, how they operate, what their capabilities and limitations are, and how they can assist with the EAP.

Some of the energy suppliers to be aware of are: electric generating stations, owners/operators of related transmission and distribution lines, natural gas pipeline owners/operators and their associated storage and distribution network managers, and any local petroleum refinery and pipeline operators. Understanding renewable energy resources, smart grid investments, energy efficiency programs, and other similar initiatives, if present in the local jurisdiction, can also be an important part of energy assurance planning in an all-hazards environment.

Identifying energy suppliers goes hand-in-hand with the energy profile work referred to in Step Four. Ideally, pertinent information has been entered into a user-friendly database that the energy assurance coordinator and working group can access easily. If this information is not already at hand, it should be collected during this phase of the planning process.

Sources of electricity are usually investor-owned utilities (IOUs) and electric cooperative utilities (co-ops). Independent Power Producers (IPPs) are also key electricity suppliers to localities in some parts of the U.S. For most localities these utilities supply electricity from natural gas, coal, nuclear, and in some cases renewable sources (wind, geothermal, biomass, hydropower, and solar).

As noted earlier, electricity generation and transmission and distribution services are not always performed by the same company. Electrical distribution is the final stage in the delivery of electricity to the locality. Therefore, getting

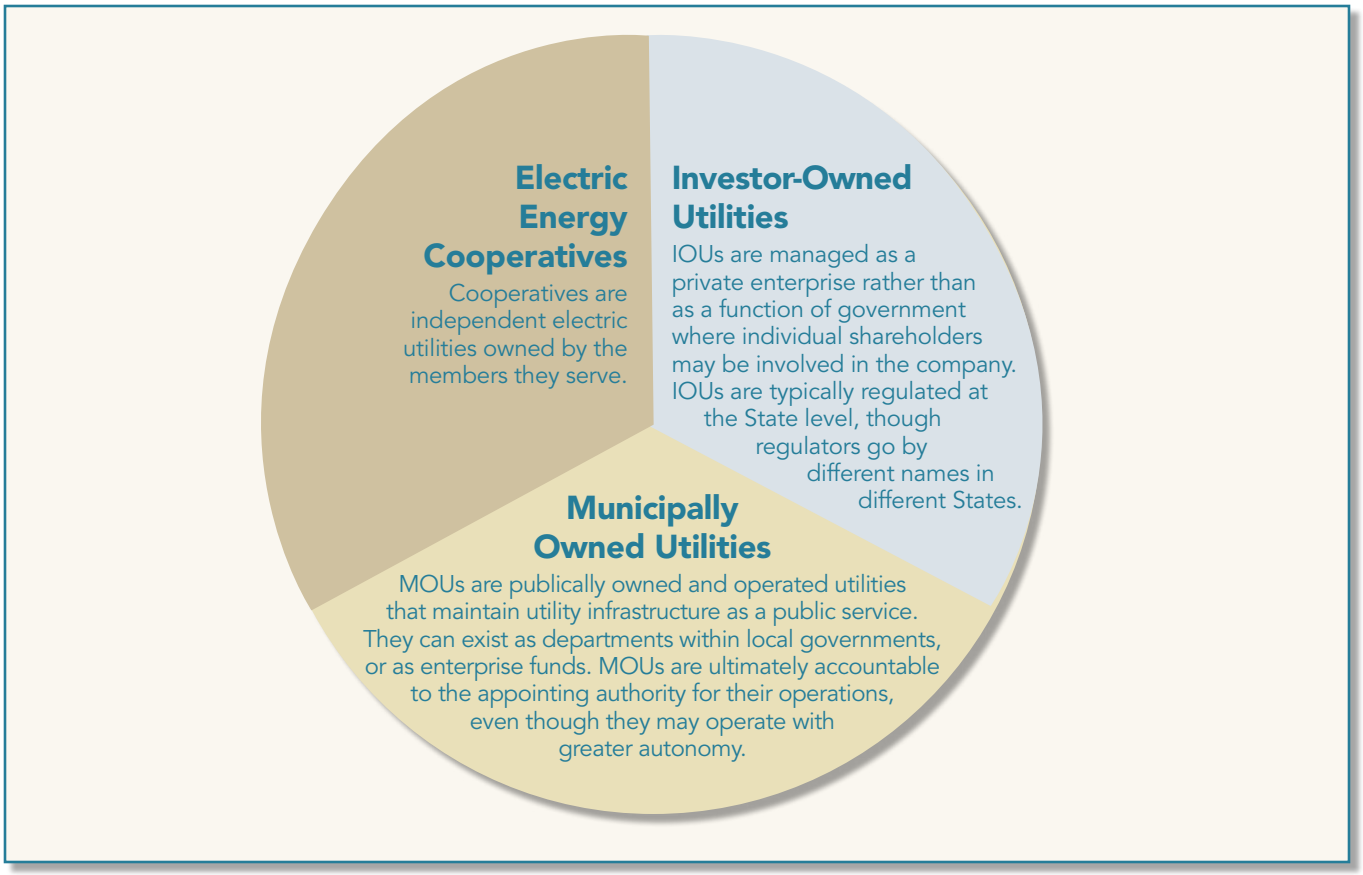
to know the local electric distribution utility is crucial at the beginning of energy supply research. This utility will have energy supply and use data that may be useful in developing the EAP.

If planners are not familiar with their electric distribution utility, there are many worthwhile websites that can help in identifying it. Some of these services will also report on the local fuel mix and/or how the electricity used in a particular zip code or region compares to national averages. The U.S. EPA's *Power Profiler*,[32] for example, is useful for this general purpose. The local legal counsel is another good source of energy information, as that office is responsible for the contracts used between the local government and energy suppliers.

Because of the potential intricacies of energy supply, it also is very helpful to partner with petroleum, natural, gas and other fuel suppliers, as well as with the businesses responsible for maintaining energy infrastructure and related services. Natural gas pipeline operators, propane and diesel dealers, and other fuel supply businesses are most likely to know who uses fuel in the community, how much is used, and where supplies can be found during an emergency.

Every jurisdiction will have at least one contract with an energy supplier outlining services provided—how and when the energy is delivered, in what form (natural gas, propane, electricity, etc.), and at what cost. If there are multiple suppliers, it is important to have full knowledge of the terms and conditions of each contract. Understanding energy suppliers' contractual responsibilities can help local jurisdictions plan for energy supply disruptions more effectively.

Figure 4. Three Types of Electric Utility Ownership



[32] http://www.epa.gov/cleanenergy/energy-and-you/how-clean.html.

Working with an Investor Owned Utility (IOU)

It is likely that most of the local energy is provided by an IOU. Most IOUs are large organizations with numerous departments. Larger IOUs will have a staff person, usually within the government relations department, whose sole responsibility is to ensure that local governments are satisfied customers. Regardless of the size of the IOU, the chances are favorable that someone from the utility is present at city council or county board of supervisors meetings. Most IOUs will help local planners pull together electricity and energy data willingly, to the degree that staff are allowed to share this information, though as for-profit companies with a fiduciary responsibility to investors, many might not be able to release all data to the EAP working group. For more information about a particular IOU, consulting the national trade association for IOUs, the Edison Electric Institute (EEI) may be useful.[33]

Working with an Electric Cooperative Utility

Electric energy cooperatives are non-profit utilities that supply power to their members. Originally created during the New Deal to provide power and phone service to rural areas where services were deemed too expensive for the market to provide, electric cooperatives can include local governments, businesses, and private individual members. Once an electric cooperative has been identified as a key energy supplier and planners have contacted the utility, the staff is likely to be very customer-oriented and willing to help with the EAP. Co-ops tend to be much smaller in size than most IOUs, and known for their customer service efforts. For more information about a particular electric cooperative utility, consult the national trade association for electric cooperative utilities, the National Rural Electric Cooperative Association (NRECA).[34]

Working with a Municipal Utility

Local jurisdictions with municipal utilities will probably find access to decision-makers and primary contacts within the utility relatively easy to obtain. Like electric cooperative utilities, municipal utilities tend to be smaller and more customer-oriented, and thus easier to engage in an energy assurance discussion. For more information about a local municipal utility, consult the national trade association for municipal utilities, the American Public Power Association (APPA).[35]

Look to State Energy Assurance Contacts

Each State has an emergency operating plan that takes account of roles and responsibilities for key energy industries. Working closely with the State energy assurance contact is an excellent way to get to know the major energy suppliers. Relevant staff may be located in the State Energy Office, or another State agency involved in emergency or energy management. Due to Federal laws and emergency response regulations, State governments have worked with energy utilities much more often than most local governments. These State experts are usually well-connected to many of the relevant major energy suppliers. They also tend to have excellent access to Federal energy assurance expertise, since States are charged with channeling Federal energy assurance down to local governments.

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[33] http://www.eei.org.

[34] http://www.nreca.org.

[35] http://publicpower.org.

3.6.2 Local Energy Infrastructure/Energy Usage Characteristics

Typically, energy uses are grouped into the following sectors: *residential, commercial, institutional/governmental, industrial, agricultural,* and *transportation*. Following the energy supply carefully through these different sectors will provide a comprehensive knowledge of a locality's energy picture, one that is necessary to include in the EAP.

It is helpful to be aware of and document the locality's existing energy supply/use conditions so that the EAP takes into account the unique aspects of the local supply/use mix. For example, if the jurisdiction receives 50 percent of its electricity from the combustion of coal, and the other 50 percent is produced directly from nuclear, the chance of a complete blackout is likely more remote than for a jurisdiction that receives 100 percent of its electricity from a single source.

When electricity fails, certain fuels are a primary backup supply to generator-supported electricity. Getting fuel to key assets such as emergency operations centers, hospitals, food supply dealers, water supply plants, and telecommunication networks can be essential during an energy emergency. Another challenge pertinent to fuels is assuring that gasoline and diesel fuel are available in ample quantities for emergency response and other vehicles. This likely will require bulk fuel storage of gasoline and diesel in multiple locations around the jurisdiction. It also will require that these fuels be kept fresh by continual use and turnover of inventory. Establishing relationships with the public and private sector bodies responsible for the distribution, tracking and regulation of these fuels is a worthwhile endeavor to pursue as part of the EAP. (See Section 3.8.2 for related information.)

Identifying energy supply systems and infrastructure—electricity, natural gas, petroleum, and renewable resources—is a crucial task. By learning the specific roles and responsibilities of organizations within each of these systems, planners will gain more detailed and valuable knowledge of the overall energy situation in their region and/or local government. This knowledge can help them deal more effectively with an energy supply disruption. Once a supply disruption occurs, each of the energy infrastructure systems will have a pre-determined response, which jurisdictions need to expect and build in to their energy assurance response efforts. For example, planners need to know what happens to their emergency diesel fuel supply when normal fuel supply to their State is curtailed due to an international or domestic supply disruption. It is necessary to know what happens to the electricity supply when the local electric utility loses access to coal or natural gas due to a rail or pipeline disaster event. When emergency generators need to be refueled by truck, and trucks cannot navigate local streets due to extensive flooding, another fuel transportation method must be readily available. An EAP can help address issues such as these.

Key Questions

…in Identifying Local Energy Infrastructure/Energy Usage Characteristics

1. What role has energy price volatility played in the local government's past?
2. What happens when local suppliers cannot meet the jurisdiction's energy needs?
3. Why is it necessary to continue to pay attention to energy markets after a contract is in place with a supplier?
4. How long do the existing energy supply contracts run?
5. How long should new energy supply contracts run?
6. Who regulates the local government energy prices/rates, and how does this process work?
7. Is the State or local energy supply market being restructured currently, and if so, how does this affect future supply options?
8. What are the local energy consumption (use) patterns?
9. What times of day are local energy prices the highest?
10. Has the jurisdiction completed a recent energy audit of government facilities and equipment, and if so, where are the results and recommendations?

3.7 Step Six: Know the Primary Contacts and Related Partners

Responding effectively and efficiently to an energy emergency once it begins involves knowing which private and public sector experts to contact as soon as possible. Developing and keeping an up-to-date list of primary contacts can be an important part of a local EAP. This list of primary contacts can include critical service providers, local government decision-makers, and State, Federal, and regional government authorities and energy suppliers. It can also be useful to include on the list leadership from other local and regional government councils that depend on the same energy supplies and infrastructure. These are the people who can be reached during an emergency to provide current information on the jurisdiction's energy resources and infrastructure.

The list of contacts should include 24-hour phone numbers and backup phone numbers for all key personnel. It can also include titles, responsibilities during an energy emergency, past energy emergency experience, email addresses, physical addresses, and designated alternates if primary contacts cannot be reached. The list should be provided electronically and as hard copy to everyone who will be charged with implementing EAP elements in response to an energy disruption.

Many energy shortages and potential emergencies can be resolved via direct communication with key industry and/or public sector decision-makers. Most shortages and supply disruptions are addressed without the declaration of an emergency. It is important to know which entities and individuals are responsible for managing specific tasks related to an energy emergency. This reduces unnecessary redundancy and the potential spread of misinformation while responding to the emergency.

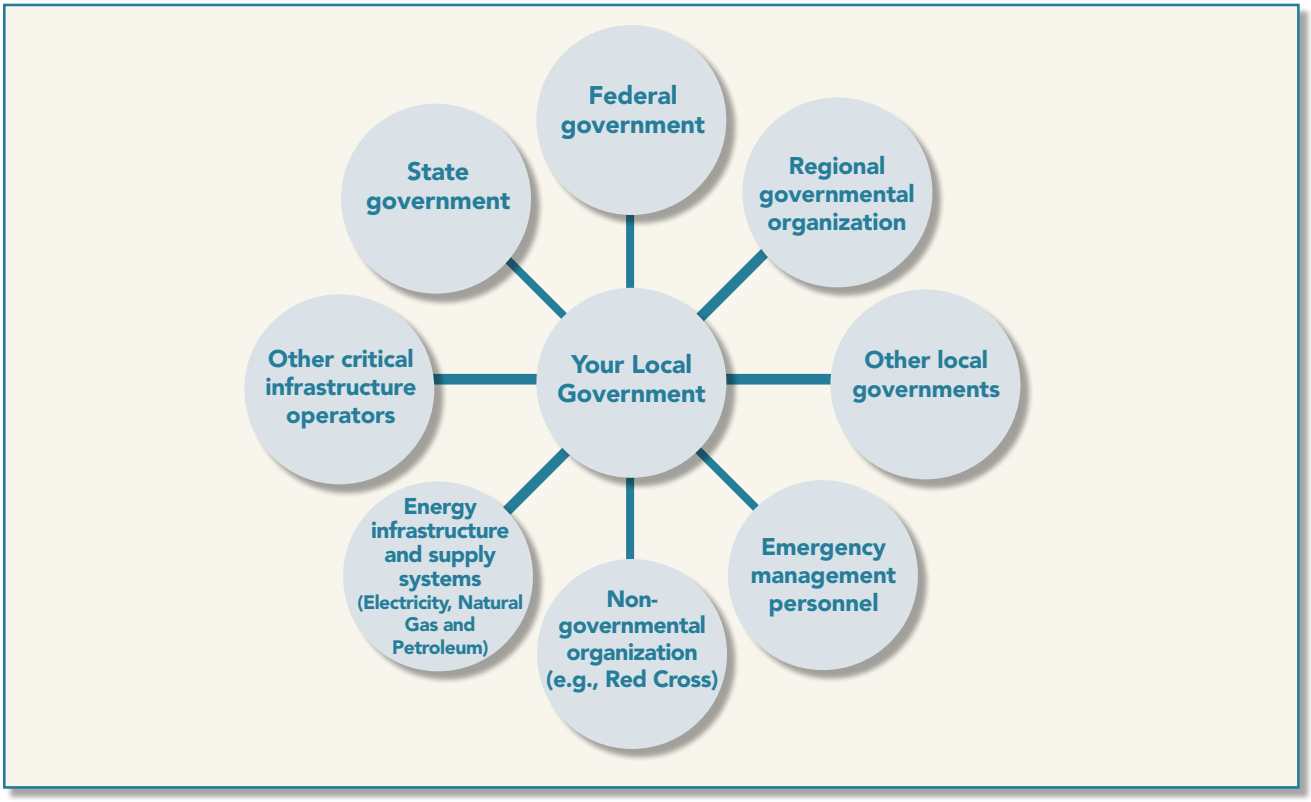
Local Voices

San Jose, California

Identifying primary contacts from the public and private sectors that can play an active role in the Energy Assurance Plan development process is essential for local jurisdictions. Public and private sector representatives can assist in establishing primary goals and objectives for the Energy Assurance Plan. From there, these representatives can identify strategies and opportunities in the planning process, as well as constraints and other potential issues. These key members may also provide critical information for the development of the plan. Public representatives, such as city personnel, can offer information regarding critical facilities and existing emergency planning documentation. Representatives from the private industry, such as local utilities, can offer pertinent electrical and fuel pipeline infrastructure information for a jurisdiction. After the plan is complete and implemented, these primary contacts can assist in measuring its ultimate success and participate in continual updates and refinements.

Knowing all of the relevant primary contacts that relate to the EAP is much more complicated than it may seem at first. Between Federal, State, regional, and other local governments, utility companies and other energy suppliers, emergency management personnel, and related critical infrastructure operators and service providers, this task can seem overwhelming. Planners are urged to consider the following graphic when starting the process of identifying primary contacts.

Figure 5. Primary Contacts and Related Partners



The sections below reference NASEO's *State Energy Assurance Guidelines*, with an emphasis on organizing EAP information to make it most relevant to local governments.[36]

Local Government Contacts

Finding the local government agency responsible for emergency management and/or implementation of the local emergency operations plan (EOP) is an excellent start to building a contact list. (The State EOP is the framework within which local EOPs are created, and through which the Federal government becomes involved in an emergency.) Emergency management personnel will often have valuable energy expertise to offer to the EAP efforts. Other potentially useful local government contacts include the following:

- Hazard mitigation planner/coordinator
- Public works agency (especially for water and wastewater issues—not just energy)
- Energy manager(s)
- Public Information Officer (PIO)
- Chief Financial Officer
- Heads of any centralized procurement agencies
- City/county legal counsel
- Utility manager (if the jurisdiction has its own municipal utility)

Emergency managers and agency representatives from neighboring local governments are also valuable contacts, since planners will coordinate mutual aid, as needed, through these people. Be sure to include any relevant people from the local government who may work on or with Metropolitan Planning Organizations (MPOs) and regional Councils of Governments (COGs). They sometimes have valuable energy assurance expertise, or access to this much-valued expertise.

State Government Contacts

- ***Emergency Management Agency (EMA):*** The primary emergency response agency in most States is the State emergency management agency or similar authority. The State emergency management agency has important access to State emergency response resources, and it serves as a key link to Federal resources, making it a critical partner in energy assurance efforts.
- ***State Energy Office (SEO):*** Most State Energy Offices (SEOs) were established during the early 1970s in response to the oil embargo. As a result, most SEOs are involved in monitoring petroleum supply issues. Since the late 1980s, many SEOs have been placed within other State agencies that may or may not have the responsibility for energy emergency management.
- ***Public Service Commission/Public Utility Commission (PUC):*** PUCs are regulatory agencies which monitor regulated utilities and associated energy suppliers. States with non-regulated rural electric cooperatives and/or municipally-owned utilities may also develop reporting/monitoring requirements for such systems. Electric and gas utilities are generally required by PUCs 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 are almost universally required for licensing purposes. Most State emergency management agencies now incorporate utility and PUC responders in their emergency response frameworks.

[36] http://www.naseo.org/eaguidelines/.

- ***Office of the Governor:*** Governors and governors' offices have the ultimate responsibility for energy emergency planning. In December 2006, the National Governors Association Center for Best Practices released the *Governors Guide to Energy Assurance* to assist governors in protecting their States' critical energy infrastructure and effectively responding to energy emergencies. The level of involvement of a governor's office during an energy emergency varies from State to State based on the severity of the situation and the roles assigned in the State's emergency plan. Regardless of the hierarchy or degree of the problem, the governor's office will usually want to be informed expeditiously.
- ***State Department of Agriculture Division of Weights and Measures (ADWM):*** The ADWM inspects pumps and meters used for measuring any type of liquid (gasoline, fuel oil, propane) fuel or solid commodities sold in the State.
- ***State Department of Environmental Protection:*** Many States have an agency or department with the mission to gather and provide information on energy conservation, energy efficiency, and renewable energy, in addition to supplying information, statistics, and data on more traditional energy sources. The scope and reach of topics that are addressed by environmental agencies varies widely from State to State. Many State-level environmental agencies also regulate air pollutants often produced by energy generation and consumption, such as carbon monoxide, lead, nitrogen, and the like.

Federal Government Contacts

- ***U.S. Department of Energy (DOE):*** The Office of Electricity Delivery and Energy Reliability (OE) and the Energy Information Administration (EIA) are the primary offices concerned with energy assurance within the U.S. Department of Energy. OE is the primary DOE office that deals with energy emergency planning and local government EAPs. EIA is the statistics arm of DOE. It has up-to-the-minute energy supply information available on its website and excellent State energy background information for local EAPs. OE will be a good resource during EAP development, and EIA may have useful information for this process as well. However, response-oriented partnerships will be found primarily at the regional or State level. The reason for this is that Federal resources are typically implemented at the State level.
- ***The Energy Emergency Assurance Coordinators (EEAC) Website:*** OE maintains a password-protected EEAC website through which authorized (key) State and local energy emergency coordinators may access valuable energy security information and resources, including daily news summaries, emergency situation reports, lessons learned from other cities and States, links to outage and curtailment information, and the ability to email messages to colleagues in other jurisdictions. The EEAC website is a cooperative effort among a number of State and local government associations. Each State has designated at least one primary and one secondary designee for three energy sources (electricity, natural gas, and petroleum) that local planners may want to establish contact with. The EEAC bulletin board provides a great way for energy assurance coordinators to share information and best practices. (See Appendix C for further information.)
- ***U.S. Department of Homeland Security (DHS):*** DHS leads the national effort to protect and secure the country. Some States have developed their own homeland security agencies since September 11, 2001. The Federal Emergency Management Agency (FEMA) is an agency within DHS that can provide emergency response support to States, and processes requests for disaster reimbursement. During an energy emergency, coordination will likely occur with FEMA through the State Emergency Operations Center.

Energy Supplier Contacts

Section 3.6 covered the three most likely electricity suppliers to a local government: *private investor-owned utilities (IOUs), electric cooperative utilities* and *municipal utilities*. As part of a local jurisdiction's effort to identify expert contacts for its list, it will be useful for planners to find out which energy suppliers provide the locality with electricity, natural gas, and petroleum. Most urban local governments receive their electricity and natural gas from IOUs. Some jurisdictions obtain their electricity from cooperatives. Electric cooperatives can include local governments, businesses, and private individual members. Jurisdictions that rely on municipal utilities will probably find access to decision-makers and primary contacts within the utility relatively easy to obtain. Like electric cooperative utilities, municipal utilities tend to be smaller and more customer-oriented, and thus easier to engage in an energy assurance discussion. (Not all municipal utilities are small, however; the Los Angeles Department of Water and Power is a municipal utility that serves 1.4 million citizens.) As noted earlier, the local electricity provider probably sends employees to the city council and county board of supervisor meetings.

Obtaining key energy supplier information that is not public (such as personnel contact information) may require discussions with the Public Works Department or (for localities fortunate enough to have one) the Sustainability or Energy Manager's Office, which may already have established industry contacts.

Energy Consumers

Traditional consumers of energy in any region can be divided into the *residential, commercial, institutional, industrial, agricultural,* and *transportation sectors*. Planners should identify the major users of energy across each of these sectors. For example, major energy intensive industries (such as manufacturing plants) will need to be identified. There may be new or old residential areas that are responsible for major energy use. Airports and train systems tend to require large amounts of energy in the transportation sector. Large public buildings including event centers and sporting venues are generally large users in the commercial sector. By reaching out to these groups of energy consumers, it may be possible to enlist their help with the EAP. They may be able to help curb energy use during an emergency. For example, one of the contacts may be a large homeowners' association that can mobilize a phone tree on the jurisdiction's behalf to encourage members to conserve energy during a shortage or supply disruption.

Other Sources

Local government leaders have provided input on other contacts they considered important in their EAP efforts, aside from the traditional State, regional, and Federal partners and private sector energy service providers. The following non-traditional contacts were suggested: *independent power producers (IPPs); environmental and consumer groups; universities; experts from the general public; local businesses,* and *non-governmental organizations (NGOs) in the energy business*. Most of these groups, if present in the jurisdiction, may be able to help during an energy emergency. They may also be able to provide useful data, analysis and feedback for the EAP during its development.

Key Questions

…on Primary Contacts and Related Partners

1. What list does the Office of Emergency Management use for its primary contacts?
2. Are there existing key contact lists for energy emergencies that are already available, and if so, who has them?
3. What format would be best for the contact list (Excel, Access, etc.)?
4. How often should the list be updated, and who is responsible for the updates?
5. During an energy emergency, what is the order of calls made from the list?
6. Are there at least two phone numbers (including 24 hour contact information) for each person on the list?
7. Does each contact have a designated alternate, in case the primary contact cannot be reached?
8. Is every relevant energy supplier covered on the contact list?
9. Is every major energy user covered on the contact list?
10. Have electronic and hard copies of the contact list been distributed to all working group members who will help implement the EAP in response to an energy disruption?
11. Are divisions of labor regarding the list necessary? (For example, should the mayor or someone else contact the IOU during an energy emergency, and at what level in the company should that contact be made?)
12. Does every key contact on the list know whom to contact within the local government during an energy emergency?

3.8 Step Seven: Identify Key Assets within the Jurisdiction

3.8.1 Identify the Infrastructure Providing Essential Local Services

Identifying government and private sector key assets is one of the most important elements in an EAP. Key assets are those deemed most important to local, regional, State, and national concerns, namely those that maintain heath, safety, welfare, economic vitality, and other essential services for which the local government is responsible. These can include fire and police department buildings, the mayor's office, the office of emergency management, 911 call centers, and many others, as determined by local needs and priorities.

Local Voices

Casper, Wyoming

From our perspective energy assurance efforts that help identify key assets are an extension of our Business Continuity Planning efforts and will allow us to evaluate important City support facilities and services to make certain that we can continue to deliver these essential services to our citizens during an emergency. Our original planning discussions with regard to energy assurance relied on assumptions developed during the Y2K evaluation that indicated any service interruption would be for a limited time frame. However more recent discussions have called into play several other scenarios which could result in significant outages for extended periods of time. Casper is located in isolation from major metropolitan areas and must rely on its own emergency response resources to handle the kinds of situations that could result from threats of extreme weather changes, flooding, equipment failure, acts of vandalism or anti-government terrorism. We house the regional response team for Homeland Security in a large land area of Wyoming that includes some important Federal facilities as well.

The first step in this process is to determine which assets are critical. Start by defining critical asset categories in preparation for developing an inventory and database. Most local emergency management offices collect and maintain information on certain categories of key assets. This information may provide a starting point for a local key assets inventory.

The Chicago Metropolitan Area Critical Infrastructure Protection Program published a document, *Planning for Electrical Power Disruptions: Critical Infrastructure Assurance for Municipal Governments* (February 2001), which lists examples of key assets and criteria for determining their criticality. Table 6 summarizes this information.

Table 6. Sample Key Assets

Type of Asset[a]	Example[a]	Typical Criteria that Can Be Applied to Determine Criticality[b]
Emergency Services	Police stations, fire stations, paramedic stations, emergency communication transmitters	All facilities considered critical
Water System	Water supply pumping stations, wastewater pumping stations, and treatment plants	Facilities needed to provide sufficient pumping capacity to maintain minimum flow rates and minimum pressure
Transportation	Traffic intersections, aviation terminals and air traffic control, railroad crossings, electric rail systems	Major traffic intersections, aviation facilities, protected rail crossings, electric rail systems
Medical	Hospitals, nursing homes, mental health treatment facilities, specialized treatment centers (out-patient surgery, dialysis, cancer therapy), rehabilitation, and blood donation centers	All facilities that require a State license to operate, facilities with any patients on electrically powered life support equipment
Schools	Nursery schools, kindergarten, elementary schools, high schools, colleges, business and trade schools	All schools when in session
Day Care	Day care facilities, sitter services, after school centers	Facilities requiring State license to operate

Type of Asset[a]	Example[a]	Typical Criteria that Can Be Applied to Determine Criticality[b]
Senior	Senior citizen centers, retirement communities	Facilities requiring a State license to operate
Social Service	Homeless/transient shelters, missions and soup kitchens, youth, family, and battered person shelters, heating and cooling shelters	Facilities that require regular municipal fire safety inspections
Detention Centers	Jails, youth detention centers	All facilities
Community Centers	Libraries, civic centers, recreational facilities	Facilities that require regular municipal fire safety inspections
Public Assembly	Sports stadiums, concert auditoriums, theaters, cinemas, religious facilities, shopping malls, conference centers, museums, art centers	Facilities that require regular municipal fire safety inspections
Hotels	Hotels, motels, boarding houses	Facilities required to register under tax laws
High-rise Buildings	Apartments, condos, office buildings	Buildings seven stories or higher
Food Service	Restaurants, grocery stores, supermarkets, food processing facilities	Facilities required to register under tax laws, facilities with significant food quantities stored on the premises
Industry	Hazardous material handling	All facilities

Notes:

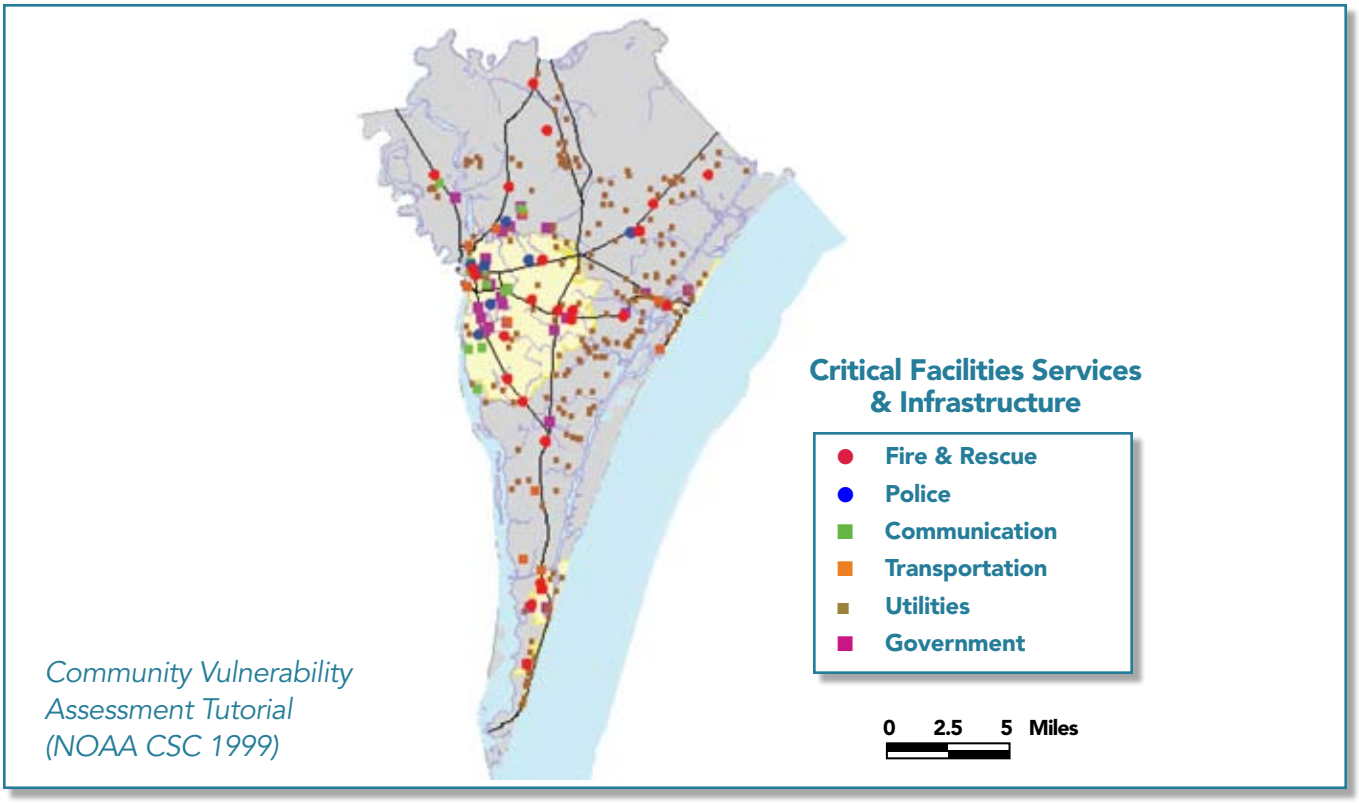
a. The types of assets and examples are illustrative rather than comprehensive.

b. These specific criteria are illustrative. There is no universal agreement on the numbers or types of assets shown here. Local governments must adjust these criteria to meet local needs.

It is important to inventory key assets and any others that may be important to maintaining essential services that the local jurisdiction is responsible for, even if the local government does not own or operate them (as in the case of electricity generating power plants that may be miles away from the jurisdiction's geographic border). The same should be done for any/all other non-city assets, such as regional hospitals, State/Federal government buildings, large commercial buildings, and industrial facilities. *As part of the inventory, identify the entity having primary responsibility for providing energy to each asset, and the type of energy provided.* Determine and log who has primacy for the entity—whether it is the local government or a different entity. This information is some of the most valuable that can be collected as part of the EAP.

Mapping out key assets in a user-friendly graphic, as shown in Figure 6 (developed by the National Oceanic and Atmospheric Administration [NOAA] as part of its "community assessment tool"), is another effective element to consider during EAP development.

Figure 6. Critical Facilities, Services and Infrastructure



Source: http://www.csc.noaa.gov/products/nchaz/htm/case3.htm.

3.8.2 Develop an Understanding of Existing Public and Private Sector Response Plans to Determine Which Key Assets Are Most Vulnerable to an Energy Supply Disruption or Emergency

It is important to establish key asset priorities, independent of, but in concert with, local energy suppliers. Identify key services and work to ensure that related customers are considered priority customers by the suppliers. It is easy to overlook this last point. If the jurisdiction and suppliers do not discuss priority customers (like the emergency operations center) then when a supply shortage or disruption occurs, the companies may not restore energy rapidly to the facilities that are deemed as essential by the jurisdiction. Be aware that groups with different vested interests will have different and sometimes competing priorities. The facilities that each local jurisdiction deems critical are important, but are only one set of elements on a long list of priorities.

As one example, electric utilities will usually repair generation capacity first, along with bulk transmission lines. Local distribution lines usually are repaired next, after which comes restoration of service to other individual assets. Florida Power and Light, for instance, maintains the following order of restoration (supported by the Florida Public Service Commission):[37]

- Hospitals
- Public service entities including emergency operations centers, critical government facilities, and Red Cross facilities
- Communications infrastructure serving emergency responders, including police and fire and others such as telecommunications and the media
- Water and sewage facilities
- Transportation infrastructure
- Gas supply utilities
- Electric company facilities
- Schools, nursing homes, and critical care facilities
- Others as designated in coordination with government and the emergency operation centers

It is recommended that, to the extent possible, planners coordinate their EAPs with their local energy providers' restoration plans and other relevant private sector response plans. This coordination should include a discussion with local energy suppliers regarding their restoration priorities and the response resources that may already be in place, in order to determine which assets are most vulnerable in an emergency. Understanding which facilities have backup generators in place and which ones maintain emergency fuel supply options or contracts to guard against an energy shortage can be an important part of this consideration.

When a power outage is detected, most large IOUs, for example, send a technician to the scene to conduct a site assessment. This helps the utility assign the right resources and people to the restoration effort. Restoration plans maintained by utilities and other suppliers generally rely on the same rule: *Restore service to the greatest number of people safely, and as soon as possible.* They restore service based on this principle, but only *after* service is restored to power plants and other critical energy supply infrastructure. The local EAP can bring key assets and other related issues to the attention of the local energy suppliers, giving them useful information related to local government responsibilities and priorities.

In working with energy suppliers to develop a common or coordinated understanding of key assets, local governments may benefit from considering the following criteria for prioritizing assets for service restoration:[38]

[37] U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability, NASEO, *Florida State's Energy Emergency Response to the 2004 Hurricanes*, June 2005.

[38] Adapted from: Chicago Metropolitan Area Critical Infrastructure Protection Program, *Planning for Electrical Power Disruptions: Critical Infrastructure Assurance for Municipal Governments*, February 2001.

- **Length of time before the occurrence of serious impacts:** Critical facilities that might experience effects from a supply disruption almost immediately may warrant rapid response.
- **Nature of potential impacts:** Critical facilities that involve potential public safety impacts may warrant a more rapid response than those with only potential inconvenience impacts.
- **Number and groups of people potentially affected:** Critical facilities where a large number of people would be affected may warrant a more rapid response than those where only a few would be affected. Also, critical facilities that serve primarily seniors or children might require more rapid response than those that serve primarily able-bodied adults.

Another important issue concerns the scale of the energy supply disruption. It is imperative to know the geographic reach of any energy emergency. For example, if an electricity brownout is local only, it may relate only to the distribution system, or even more specifically, to just one asset or building. If the brownout is regional or larger in scope, it may involve electricity transmission and/or generation. In any case, the energy provider is going to prioritize its response, in part, based on the scale and scope of the emergency. Local governments may be left to resolve their own energy supply issues through backup generators, conservation, efficiency, or other energy resource allocation methods. This in fact is what drives the need for a locally responsive EAP.

Most States prioritize restoration of energy supplies to key assets through utility outage and restoration rules or through a critical user list which can inform their related discussions with energy providers.[39] States may take a number of measures under emergency conditions to help mitigate the effects of supply disruptions on key assets and other infrastructure, as governed by the legal authorities granted them. Such measures could include:

- Imposing restrictions on the hours during which commercial, industrial, public, and school buildings may be open
- Imposing restrictions on lighting levels in commercial, industrial, public, and school buildings
- Imposing restrictions on interior temperature in commercial, industrial, public, and school buildings
- Imposing restrictions on the use of display and decorative lighting
- Requiring mandatory interruption of selected customers
- Curtailing sales of electricity outside the utility service areas
- Granting waivers to utilities that have generators operating at less than their technical limits due to environmental or other restrictions
- Starting up State-owned backup generators to provide additional capacity
- Directing utilities to use pre-determined customer restoration priority lists to the degree the physical distribution system permits

Other State actions can include coordinating with the U.S. EPA or the Federal Motor Carrier Safety Administration to waive certain motor fuel or driver-hour requirements as a means of alleviating fuel supply shortages. (See Appendix E, and also NASEO *State Energy Assurance Guidelines* for additional information).

[39] http://www.naseo.org/eaguidelines/State_Energy_Assurance_Guidelines_Version_3.1.pdf.

Local jurisdictions will benefit from understanding the scope of these potential State measures and coordinating their planning and response efforts with these actions to the extent possible.

It is important to review available COOPs in the local government, region, and/or State. Local governments should consider developing and/or updating contingency plans for the continuity of operations of vital government functions. It is also a good idea to review any homeland security plan(s) adopted by the local government as part of Statewide efforts.

Major energy intensive industries may also have formal COOPs in place. It is wise to solicit input from them and other local businesses in the area that have developed their own COOPs. Lessons learned through private sector COOPs can help with local EAPs. (See Section 2.4 for additional information.)

Key Questions

…in Developing an Understanding of Existing Public and Private Response Plans

1. Have key energy supply infrastructure and other key assets been identified and mapped?
2. Have all generators and backup power sources and fuels for all key assets been identified?
3. Are planners familiar with the local utilities' restoration plans?
4. Is the local EAP consistent with utility restoration plans to the extent possible?
5. Does the working group have access to all past work done related to identifying and prioritizing key assets?
6. Are planners familiar with relevant private sector COOPs? What elements from the COOPs can be applied to the local EAP?

3.9 Step Eight: Develop an Energy Assurance Crisis Communications Protocol

Coordinate the Protocol within the Broader Emergency Management Strategy

The energy assurance communications protocol should be part of the broader local government emergency management strategy. This emergency management strategy should already call for specific methods of communication with the media, general public, and the private sector, and planners should be familiar with these established communication protocols. The simplest approach is to look into all existing communications protocols used in the jurisdiction to see if one of these can be modified and used as the EAP communications protocol.

Depending on the complexity and severity of the energy emergency, it also may be necessary to coordinate with other impacted local governments through a joint information center or other regional mechanism created for this purpose. Working with other local governments in the region is often required during an energy emergency. For this reason, planners should look at the larger picture and determine how their overall communication strategy fits in with their regional partners' protocols.

3.9.1 Internal Protocols/Message Coordination

Internal protocols and message coordination during a crisis are often ingrained, well-established routines for local governments with disaster experience. However, for local governments with little or no such experience, such routines may not have yet been established. EAP development provides an opportunity to refine well-established protocols where they already exist and develop new procedures where they are missing.

3.9.2 External—Communicating with the Public and the Media

As noted earlier, communicating with the general public has always been a high priority of local governments during energy emergencies. Media coverage of disasters has increased public expectations for government response. Generally, the public expects quick information from local officials and energy suppliers during an energy emergency. It is important that the public is informed of the details and impact of the disruption, why it happened, who is responsible for restoring energy delivery, when services will be restored, what steps (if any) they need to take, and where they should turn for current information. This requires significant work on the part of local planners in advance of energy emergencies, and much of this work can be done as part of the EAP. Developing a crisis communication protocol now can help local governments later with their energy sector partners, the general public, and the media.

Virtually every local, State, and Federal government crisis communications protocol designates one official spokesperson, preferably trained and experienced in dealing with the general public and the media during energy emergencies. For a spokesperson that does not have this experience, professional training may be useful for providing the skills necessary.

Local Voices

Virginia Beach, Virginia

We found during our energy assurance planning that communicating with the energy industry early in the emergency is important. Information learned from industry can then be confirmed, and shared as appropriate with the general public and our media. Knowing who to call at your electricity provider is very important.

Providing emergency information internally and externally via the Internet can also be very important. Some people forget that internal staff also needs to be informed during an emergency. It depends on the severity of the emergency of course, and the power may be out, but people will find a way to get to the Internet during an emergency using their phones and other means. People depend on their phones now, and many have Internet capabilities. Information can be uploaded remotely, so this should be a part of your communication protocol.

Emphasize Local Energy Stakeholders

Communications protocols are a component of energy emergency protocols. Historically, States and the Federal government have focused on regular communication and strong relationship building with energy suppliers. As a result, State/Federal communications protocols and relationships tend to be well-established and mature. Local jurisdictions, on the other hand, have generally focused more on communicating with the general public, utilizing the

media in their effort to respond to energy emergencies. With a few notable exceptions (e.g. Chicago, Philadelphia, New York, or other cities located near ports, nuclear reactors, refineries, and other major energy infrastructure), communication with key energy industry representatives generally has received less emphasis from local governments. Local planners may want to consider being more inclusive of these other stakeholders in developing and implementing communication and outreach protocols as part of their EAPs.

Adding the electric, natural gas, petroleum, and other major energy industries to the communications network before, during, and after an energy emergency is good business. It is important that both the message and response efforts be coordinated with these stakeholders.

Dissemination of Accurate Information

The media can play a helpful role in assisting local governments prior to an energy emergency by disseminating information about preparedness and response ahead of time. The key to preventing panic during an energy emergency is to disseminate accurate information as quickly as possible to the general public, and to any other potentially affected entities, using the media where appropriate. This information dissemination will involve many topics, including:

- Public assistance programs where the general public may obtain needed resources
- The scope, severity, and potential duration of the energy disruption
- Regional and State energy resource-specific contingency plans

Use of Social Media/Web-Based Communication

Posting energy-related information on the local government website during a crisis is not only an important part of communicating with the media and the public, but also can establish a valuable link to other local, State, and Federal government departments, as well as non-governmental organizations (NGOs) and associations that are affected by or involved in the management of the energy crisis. The energy assurance coordinator may want to establish relationship with the local government webmaster and public information officer (or equivalent personnel) to establish the types of web materials that will be required, and desired in a future energy emergency. Obviously, this means of communication will only be viable if electricity is still operational and the Web is accessible. The important point here is that jurisdictions need to plan for and enable all forms and means of communication prior to an event so that if/when one communication mode is rendered inoperable there remain other viable, backup communications systems.

Most local governments are using social media such as YouTube, Facebook, and Twitter, albeit primarily as marketing channels for their communities. It is very common to find these social media sites listed on city and county homepages. These same sites can be useful channels for sending out current and accurate information during an energy emergency. Texting is an increasingly important form of communication across many age groups, and as such needs to be considered a key part of an EAP communication strategy. When an emergency occurs, the public may communicate via texting, email, and other just-in-time communications options. Local planners should be well-versed in these and social media sites as well such as Facebook and Twitter. These media provide an inexpensive, effective way to reach many people quickly. These same methods can also be used for service restoration activities; local governments can develop free mass text notification services and e-alerts for emergency situations and events, to which constituents can subscribe to receive status updates.

The Energy Assurance Coordinator's Clearinghouse Function

Local emergency response personnel (such as the public information officer or equivalent) are responsible for receiving, interpreting, and distributing information to the public during an emergency, and are the primary points of contact for any emergency. They are trained to handle technical information, translating it into lay terms for general consumption. For that reason, it should be the role of the energy assurance coordinator to provide timely, accurate energy disruption information to the PIO so he or she can provide useful information to interested parties and entities. Emergency response officials have multiple other issues to consider, so the coordinator's local energy expertise may be helpful.

Communication Technologies

Recent disasters, especially Hurricane Katrina, have amplified the need for diversified communications. Communication lines should be set up far in advance of any emergency. Potential radio frequency incompatibilities require that workable communication links be tested and established in advance, and that backup power for these devices be established. This communication equipment will link energy emergency management personnel with energy suppliers, and effectively serve as a bridge to the general public. Communications equipment to consider includes telephones, two-way pagers, cell phones, satellite television systems, faxes, computers, and radio systems.

NASEO's *State Energy Assurance Guidelines, Version 3.1* offers the following guiding principles for implementing public information programs during an energy emergency (adapted here for greater relevance to local governments):

- **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, Federal government agencies, and key energy industry representatives.
- **Ensure Accuracy:** Information must be verified before release. Regularly scheduled meetings with the press help relieve any pressure to answer questions prematurely without adequate verification.
- **Prepare Press Kits:** Handouts for press conferences and written statements for broadcast appearances are excellent tools for disseminating information, such as fuel supply and use issues, data, responder actions, and comparisons with previous emergencies.
- **Use National and State Information:** Use data from EIA and/or OE, plus other sources, to describe the external forces (e.g., international markets, shipping issues, transportation, refinery outages, and weather) that might affect the energy situation. Utilize industry experts to the extent possible 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 local and State agencies as needed. Ask these individuals, when possible, to answer substantive questions from the media.
- **Inform the Public:** Assist the media in informing 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 inappropriate private and public response.

- **Use Contacts in Private Organizations and Industry Associations:** Enlist private organizations to distribute information. For example, the Automobile Association of America distributes information about gasoline and diesel fuel prices. Fuel oil and propane dealer associations are invaluable for providing information and speaking on behalf of the petroleum industry.

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 to prevent panic. The second is to encourage appropriate responses, including conservation and energy use reduction programs. It is essential that the local public information program be coordinated across multiple agencies and in close cooperation with private sector energy companies. Extensive pre-crisis coordination through the EAP will pay huge dividends during an actual energy emergency.

Key Questions

…in Developing a Crisis Communications Protocol

1. Is the energy assurance communication protocol consistent with other relevant, existing government emergency protocols?
2. What is the communications role of the energy assurance coordinator during an energy emergency?
3. What primary communication channels will be used to communicate with the general public during an energy emergency?
4. Have COOPs maintained by other local governments been reviewed and their communication protocol taken into account?
5. Who is the primary local government representative responsible for dealing with the media during an energy emergency?
6. Who is the primary local government representative responsible for dealing with local energy suppliers and other private sector partners during an energy emergency?
7. What internal communication protocol systems are in place for communicating with local government employees during an energy emergency?
8. What type of web-based communications protocols are in place now for an energy emergency, and is it necessary to add any new protocols?
9. Are there any records on past energy emergencies where local communication protocols were tested, and if so, what are the lessons learned?
10. What regional government entities are currently included in the local communications protocols, and are there any regional entities that are missing?
11. Does every one of the local (internal) department heads know the energy emergency communications protocol chain-of-command and all pre-delegated backup responsibilities?
12. What local laws need to be considered when sharing any energy intelligence or energy disaster information with other governments, the media, or general public?

3.10 Step Nine: Develop Additional Local, State, Regional, and Federal Partnerships for Energy Assurance

The primary goals of partnering on the EAP include improved readiness and a quicker, more effective response to an energy emergency. Energy interdependencies often reach significantly beyond local government geographic boundaries. In most cases, local energy supply comes from distant locations. For example, consider one major part of any energy infrastructure, petroleum fuel supply. Fuels such as gasoline, diesel, kerosene, propane, and aviation jet fuel are transported to the jurisdiction from various terminals and fuel suppliers around the region. Fuel transport is conducted both by and from in-State and out-of-State sources.

The most effective energy assurance planning requires establishing numerous public partnerships across local, regional, State, and Federal governments. Despite the obvious need for cooperation, many communities fail to coordinate their energy emergency efforts with those of other governments. Reasons for this lack of cooperation can include the time-consuming nature of establishing these important external relationships, a lack of government funding for the meetings and travel that can result in better external relationships, and traditional stove-pipe concerns of individual local governments.

The safety of the general public and the continuity of local government services can demand an aggressive partnership strategy with other governments. Effective partnering in developing and implementing the local EAP can also ultimately result in increased public trust and improved public relations.

Local Voices

Raleigh, North Carolina

Energy assurance requires creativity, collaboration, and flexibility, but our most powerful tool is the brotherhood of common interest.

3.10.1 Public Sector Partnerships

Due to the nature of energy emergencies, public sector partnership building needs to be a primary focus of the local EAP. Primary public sector partners for the EAP can be grouped into five categories:

- The Local Government
- Other Local Governments
- Regional Government Organizations
- State Government
- Federal Government

Please note that some of these partners were also discussed in detail in Section 3.7.

The Local Government

This category is included for a very important reason. Occasionally, a local government will spend a great deal of time looking for external energy emergency expertise as part of their EAP, at the expense of internal energy experts who had been within their own local government the entire time. Sometimes these internal experts were located in the very same building, and on the very same floor.

There is no need to "reinvent the wheel." Take advantage of the people and the partnerships already built within other parts of the local government. There is a good chance that there are very capable energy planners, energy managers, and other energy experts within the city or county who have developed trusted, strong public and private sector relationships over many years. The energy assurance coordinator's job may be to find out who those people are and involve them in the planning process. The coordinator and the working group should discuss how to leverage public sector partnerships for dispatching emergency generators, securing fuel storage, identifying transportation routes, preserving vital records, and the like.

Potential internal partnerships are possible with many entities, including city management, city or county executive officers, city council, emergency management, law enforcement, fire services, emergency medical services, human services (county welfare or city community services, etc.), public health agencies, public works departments, municipal utilities, and many others. During EAP development, key issues will arise, leading to the need for a partnership with one or more local agencies; the energy assurance coordinator and working group should work toward securing the necessary partnerships. For example, if it is discovered while assembling the EAP that the preservation of vital records during an energy emergency is a top priority for the working group, that can lead to establishing a strong partnership with the local government's information technology (IT) department. Know that many, if not, all of these entities may already be participating in the working group. If not, it may be beneficial to include them up front.

Other Local Governments

Other local governments within the region and outside of the region can also be valuable energy assurance partners. Regional local governments may offer unique insight into, and understanding of, the local EAP. Many will have a vested interest in the same desired outcomes. Regional local governments located along key fuel routes are excellent candidates for partnerships.

Local government associations can also help, especially the ones that have focused on energy best practices, such as the United States Conference of Mayors (USCM), International City/County Managers Association (ICMA), the National League of Cities (NLC), and the National Association of Counties (NACO). PTI works with all of these organizations, and they each have information to offer in the energy assurance area.

Regional Government Organizations

Due to their inherent mission statements and often long-standing reputations for having energy expertise, regional government organizations can be valuable energy assurance partners. Regional COGs and MPOs can be important allies in local EAP efforts. There are more than 500 regional COGs across the U.S. The National Association of Regional Councils[40] helps lead regional energy planning efforts in many of these COGs, and can be another useful EAP partner.

[40] http://narc.org.

State Government

- ***Emergency Management Agency (EMA):*** The primary emergency response agency in most States is the State emergency management agency or similar authority. The State emergency management agency has important access to State emergency response resources, and it serves as a key link to Federal resources, making it a critical partner in energy assurance efforts.
- ***State Energy Office (SEO):*** Most State energy offices (SEOs) are involved in energy assurance efforts (particularly regarding petroleum supply issues), and are also leaders on the energy efficiency and energy emergency fronts. In addition, Federal funding for State energy assurance education has gone to the Washington, DC-based NASEO, the trade association for SEOs. NASEO and its members have significant information and resources that can contribute to local EAPs.
- ***State Homeland Security Office (SHSO):*** In some States, the agency with the primary responsibility and authority for directing statewide activities pertaining to the prevention of, and protection from, terrorist related events is the SHSO as opposed to the EMA. Responsibilities can range from the development and implementation of a comprehensive and coordinated strategy to secure the state from terrorist threats and attacks to serving as a liaison between Federal, State and local agencies, and the private sector on matters relating to the security of the State and its citizens.
- ***Public Utility Commission (PUC):*** PUCs are regulatory agencies which monitor regulated utilities and associated energy suppliers. States with non-regulated rural electric cooperatives and/or municipally-owned utilities may also develop reporting/monitoring requirements for such systems. Since most utilities fall under some regulation, either by the PUC or a county or municipal government that owns and operates a municipal utility, these organizations can be important partners in local EAPs.
- ***Office of the Governor:*** Governors and governors' offices have the ultimate responsibility for energy emergency planning. A State governor usually has the ability to declare an energy emergency. Most governors' offices have excellent ties to major energy suppliers and the media. Therefore, the governor's office can be a key partner.

Federal Government

The following Federal government agencies are potential partners in the local EAP effort:

- ***U.S. Department of Energy (DOE):*** As mentioned earlier in this document, the Office of Electricity Delivery and Energy Reliability (OE) and the Energy Information Administration (EIA) are the primary offices concerned with energy assurance within the U.S. Department of Energy. OE is the primary DOE office that deals with energy emergency planning and local government EAPs. EIA is the statistics arm of DOE. It has up-to-the-minute energy supply information available on its website and excellent State energy background information for local EAPs. OE also maintains the password-protected Energy Emergency Assurance Coordinators (EEAC) website described in Section 3.7. OE will be a good resource during EAP development, and EIA may have useful information for this process as well. However, response-oriented partnerships will be found primarily at the regional or State level. The reason for this is that Federal resources are typically implemented at the State level.
- ***U.S. Department of Homeland Security (DHS):*** The State may have developed its own homeland security agency since September 11, 2001. However, the Federal Emergency Management Agency (FEMA) is an agency within the U.S. DHS that supports State and local governments with emergency response and disaster relief. During an energy emergency, coordination will likely occur with FEMA through the State Emergency Operations Center.

Voluntary Pre-Event Collaboration: Create and/or Update Mutual Aid Agreements Where Appropriate

Voluntary pre-event collaboration between local jurisdictions and other public sector partners can save lives while also ensuring rapid recovery from an energy emergency. Voluntary mutual aid agreements (MAAs) can help formalize partnerships with other public sector entities. While MAAs typically have not been developed to address energy supply disruptions, they may be used as a template and adapted to address an energy emergency. One of the most important aspects of a mutual aid agreement is that it is entirely voluntary. Mutual aid agreements can cover topics such as dispatching emergency power generation resources, fuel storage and transportation agreements, service redundancies, and emergency personnel support. Typical non-energy mutual aid agreements include topics such as search and rescue, sandbagging, emergency medical care, and debris removal.

A mutual aid agreement is a written understanding between governments on how, when, and the extent to which aid will be given from one local government to another upon request. These agreements typically apply to response activities, not planning or recovery. MAAs are practical and cost-effective, as units of government do not have to hire staff and purchase equipment for events and situations that may occur only rarely, as in an energy emergency. Instead of having to carry the costs associated with permanent staff (and other resources necessary for an effective response action) on a sustained basis, the requesting jurisdiction reimburses the lending jurisdiction for 'loaning' staff and resources (such as hazmat vehicles) to the requesting jurisdiction on an 'as needed' basis. The costs for this 'loan' are agreed upon in advance and written into the MAA.

In the vast majority of incidents, local and State resources and regional mutual aid will provide the first line of emergency response and incident management support. Tribal and local authorities, not Federal agencies, have the primary responsibility for preventing, responding to, and recovering from energy-related emergencies and disasters. Mutual aid agreements can help line up resources far in advance of a disaster. An organization devoted exclusively to mutual aid agreements is the Emergency Management Assistance Compact (EMAC). It was established in 1996 as a partnership between member States. Communities developing EAPs may find much of EMAC's work to be transferrable to local governments.[41]

3.10.2 Non-Governmental Organization (NGO) and Other Partnerships

Non-governmental organizations are often overlooked in the planning and response phases of an emergency, and are frequently sought out and deployed only in the recovery phase. Although few would argue that they are not effective in this role, their resources could be leveraged even more effectively if they were included in planning and response team meetings and decisions. There are numerous entities that fall under the general categories of non-profits, faith-based, and charitable organizations that serve the disabled and other vulnerable populations. Organizations such as food/housing/business co-ops also could add value to the efforts of the Salvation Army, Red Cross, and other allied entities in the recovery stage of an emergency.

[41] http://www.emacweb.org/?150.

Local Voices

The Salvation Army

The Salvation Army continues to work closely with Federal, State, and local authorities to assist in responding to natural and man-made disasters wherever and whenever they occur. In the last few years alone, the Salvation Army has provided onsite support during major emergency situations including the Virginia Tech shootings, the Minnesota bridge collapse, the southern California wildfires, and the Midwest floods. These are just a few examples of the dozens of emergencies to which the Salvation Army responds each and every year.

Source: http://www.salvationarmyusa.org/usn/www_usn_2.nsf/vw-text-dynamic-arrays/190F4B74F5ED5E81852574B70000119F?openDocument.

Key Questions

…in Developing Partnerships

1. Are there any mutual aid agreements in place or are there joint powers agreements with other local governments that are triggered by an energy emergency, and what are the current responsibilities under these legal agreements? Should they be updated as part of the local EAP?
2. Are new mutual aid agreements needed, and if so, in what areas?
3. Who are the key (internal) local government energy assurance partners, and why?
4. Who are the key State energy assurance partners, and why?
5. Who are the key Federal energy assurance partners, and why?
6. Who are the key regional government organization partners, and why?
7. Where should the energy assurance partners list be kept, in what format, and who is primarily responsible for keeping (and updating) it?
8. How often should our energy assurance partners list be updated?
9. What is the best way to divide the labor associated with contacting and interacting with the key local, regional, State, and Federal government energy assurance partners?
10. With respect to pre-event preparedness, who are the most important government partners, and why?
11. Have all relevant local and national NGO partners been located and contacted?

3.11 Step Ten: Update the Plan on a Consistent Basis

3.11.1 Incorporate Lessons Learned

The local EAP is a living document requiring regular updates and adjustments. To ensure that it remains relevant in response to new data and lessons learned, the EAP should be revisited frequently and evaluated for its effectiveness. Incorporating any lessons learned since the energy assurance efforts began is much easier to achieve as part of a formal update to the EAP.

How Often to Update the Plan

Revisiting the EAP and measuring its impacts and outcomes can also help minimize the chances that it will sit on the shelves of potential readers without action. It is important to build early support for regularly scheduled updates as part of the first EAP. Every local government is different, with different energy assurance needs, but as a rule of thumb, energy assurance experts recommend that in most cases EAPs be reviewed annually and updated at least every two years. Planners should allow 60-90 days for the update process, which involves pulling together energy supply and demand data, and other relevant critical infrastructure and asset information. In the event that the local government experienced a major energy emergency since the last EAP was released, it may be advisable to review and/or update the plan more regularly. A thorough post-energy emergency debriefing is typical for most local governments, and the EAP review can coincide with any formal energy emergency post mortem activities. This helps guarantee that any lessons learned from experience will be incorporated sooner into relevant policies and procedures.

Obtaining support for an EAP update will not always be easy, especially in challenging economic times with fiscal constraints and dwindling local government revenues. Part of this difficulty comes from the fact that planners are essentially advocating for the future revision of a new, untested plan whose value may be, quite frankly, unknown at the time. It is normal for questions to be raised about the efficacy of an updated EAP. This concern requires that the plan's relevance and benefits be as clear as possible.

Gaining Support for the Plan Update

Planners will face the challenge of how to capture the attention of dozens of department heads, political officials, energy industry representatives, emergency operations personnel, and other stakeholders, and get them interested in updating the EAP. A good start is to explain that the EAP can help save lives and result in a quicker response and recovery from energy emergencies. It is also important to communicate the economic savings and/or impacts of the EAP as effectively as possible. Details and hard data will be necessary to support these arguments.

Formally Evaluate the Plan

At the two-year mark, or at whatever point in time planners decide to review the EAP, it likely will be possible to document which parts of the plan have worked, and which parts have not worked. If an unexpectedly significant energy-related event occurred during the first year after the EAP was developed, document it, file it, and make sure to address it in the first review of the plan. It is best to have a formal analysis of successful plan components, as well as those that should be refined or revised. A full program evaluation is not expected, but anecdotal evidence alone is not likely to help gain support for plan updates or other subsequent phases of the energy assurance effort.

Local Voices

Roswell, Georgia

The re-evaluation of any management plan is an essential component of its continuous development process. Energy assurance planning is dynamic—so when a community or organization updates its energy assurance plan, it will help to provide insight into any external and internal factors which may impact its response to an energy supply disruption. Changes to an organization's structure or the introduction of technological advancements are just two examples of factors that would modify the framework of an energy assurance plan.

Include a Budget for the Plan Update

One local government maxim tends to be accurate: If it is important, it will usually have a budget. There is no question that an EAP update will cost money. To an extent, it will be possible to estimate the labor and hours required for the update based on the amount it took to develop the first EAP. Where possible and/or required, ensure that the EAP update budget amount is included in the relevant department budget for the year in question. Without a budget, new initiatives tend to lose traction or disappear entirely.

Research the Literature for Updated Energy Assurance Information

At the time of the EAP update, it is important to review all existing energy assurance information available through DOE/OE. This office is responsible for local and State government energy assurance efforts, and OE staff should have an excellent idea about where to find success stories and lessons learned from other cities and counties. PTI also will have more case studies completed as local governments start to gain more experience with implementing their EAPs. Energy assurance planning is a new process for most local governments at this time. With each passing year, the field grows, and new information improves energy assurance efforts. It is clearly in a jurisdiction's best interest to exhaustively search for new information—especially energy supply, critical infrastructure, and asset data—as part of the EAP update.

Update the Primary Contacts Section

One important reason to update the EAP is to ensure that its list of key energy assurance and energy emergency contacts (see Section 3.7) is updated and accurate. Retiring employees, job changes, promotions, and normal job attrition contribute to a rapidly changing key energy assurance contact list. Someone, such as the energy assurance coordinator, will usually be responsible for keeping the list of primary contacts updated on a monthly or quarterly basis, absent an EAP update. Regardless of this effort, it is a good practice to revisit the key energy assurance contact list during the EAP update to ensure that the people, titles, and contact information are current. Quick response and recovery depend on this list being accurate.

3.11.2 Update Energy Supply and Asset Data

Traditional relationships between energy suppliers and local governments are changing rapidly with the introduction of smart grid technologies, sophisticated energy control systems and grid-independent generation options. Projecting future energy demand and supply is not as simple as it used to be. As new technologies and practices are introduced, these things will need to be reflected on both the supply and demand side of the energy assurance equation.

Energy supply and asset data should be revisited regularly by the energy assurance coordinator and/or a subcommittee of the energy assurance working group. The local government will need to continuously add assets to the EAP's database/list of key assets and energy infrastructure as these important elements are constructed or added to the local portfolio. As new buildings are constructed and put into operation, their criticality and vulnerability will need to be assessed as part of the EAP. The same applies to local energy infrastructure. As major new transmission lines and distribution centers, storage tanks, pipelines, and related assets are added to the local energy infrastructure, each should be accounted for, to the extent possible, as part of the EAP effort. This requires vigilance and a long-term commitment to energy assurance.

Key Questions

…in Updating Energy Supply and Asset Data

1. How often are other emergency plans reviewed within the local government?
2. How often should the EAP be updated?
3. What is the cost associated with EAP update, and where will the funds come from for the first update?
4. How often should information on local energy supply and critical infrastructure be updated—quarterly, semi-annually, annually?
5. Who is responsible for collecting the energy supply and demand data?
6. Who should receive a copy of the EAP update?
7. How much time should be allowed for the EAP update?
8. Has the local energy profile information changed since the first EAP, and if so, how?
9. Is there any new energy data that has become available for the EAP update that was not available for the first EAP?
10. Has the jurisdiction experienced any minor or major energy emergencies since the release of its first EAP, and if so, what were the lessons learned?
11. Have planners reviewed all of the new energy assurance information, including lessons learned from local governments, available through DOE/OE and through PTI?
12. Who is updating the "Primary Contacts" section, and are these names and numbers still relevant?

3.12 Ongoing: Keep Current

3.12.1 Tabletop/Disruption Planning Exercises

A tabletop exercise is an effective means for testing a local government EAP. Exercises can also be used to raise awareness among public and private stakeholders of regional energy vulnerabilities and preparedness shortfalls associated with all-hazards incidents and disasters. In this regard, tabletops are particularly useful in examining regional infrastructure interdependencies that could cause prolonged, cascading impacts that exacerbate response and recovery. Frequently, tabletop exercises are held for a day or half a day and do not include any live action. One advantage of a tabletop exercise is that it allows participants to test a hypothetical situation without causing a disruption within the community like a live action exercise would do.

During a tabletop exercise, a facilitator lays out the terms of a scenario and frequently offers significant background information so that all participants start from the same understanding. The participants, who may be from a single group or agency, or may represent diverse groups, verbally share their responses to the presented scenario. The exercise should test cooperation, readiness, planning, response, restoration, and recovery.

Appropriate stakeholders need to be involved in these exercises, including private sector critical service providers, energy providers, and in some cases elected officials. The role of the chief elected official is crucial during an energy emergency. Providing some real-world training to this official and others through tabletop exercises can be an excellent educational tool, especially if these decision-makers have never been through an energy emergency. While

developing these tabletop exercises, it is a good idea to begin the invitation list with the energy assurance primary contacts (see Section 3.7). This list will usually include most of the people that will be needed around the table at these exercises.

Tabletop exercises should be used to test the parameters of the EAP, and to identify gaps and areas of concern that need to be addressed and revised so that all those involved will be ready to respond to an energy emergency. These exercises are also an excellent vehicle to promote collaborative thinking and team-building, and a way to share lessons learned and best practices. It is recommended that while an EAP is being developed, it be vetted using training and exercises to assure that all responsible parties know their roles and responsibilities and that any major flaws in the EAP be corrected before an incident. The website for the National Association of Regulatory Utility Commissioners (NARUC)[42] contains tabletop resources, which may make a useful starting point for cities to use in planning tabletops. The Homeland Security Exercise and Evaluation Program (HSEEP)[43] also provides material, including information on varying types of exercises and commonly used terms and definitions. HSEEP is not a required process for energy assurance tabletops—only one methodology for developing exercises.

Common exercise types include discussion-based exercises and operations-based exercises. Table 7 describes different exercise types and their sub-types, and also describes the types of briefings that follow exercises.

Table 7. Types of Exercises

Discussion-Based Exercises familiarize participants with current plans, policies, agreements, and procedures, or may be used to develop new plans, policies, agreements, and procedures.	
Seminar	A seminar is an informal discussion, designed to orient participants to new or updated plans, policies, or procedures (e.g., a seminar to review a new evacuation standard operating procedure).
Workshop	A workshop resembles a seminar, but is employed to build specific products, such as a draft plan or policy (e.g., a training and exercise plan workshop is used to develop a multi-year training and exercise plan).
Tabletop Exercise	A tabletop exercise involves key personnel discussing simulated scenarios in an informal setting. Tabletop exercises can be used to assess plans, policies, and procedures.
Game	A game is a simulation of operations that often involves two or more teams, usually in a competitive environment, using rules, data, and procedure designed to depict an actual or assumed real-life situation.
Operations-based Exercises validate plans, policies, agreements, and procedures, clarify roles and responsibilities, and identify resource gaps in an operational environment.	
Drill	A drill is a coordinated, supervised activity usually employed to test a single, specific operation or function within a single entity (e.g., a fire department conducts a decontamination drill).
Functional Exercise	A functional exercise examines and/or validates the coordination, command, and control between various multi-agency coordination centers (e.g., emergency operation center, joint field office, etc.). A functional exercise does not involve any "boots on the ground" (i.e., first responders or emergency officials responding to an incident in real time).
Full-Scale Exercises	A full-scale exercise is a multi-agency, multi-jurisdictional, multi-discipline exercise involving functional (e.g., joint field office, emergency operation centers, etc.) and "boots on the ground" response (e.g., firefighters decontaminating mock victims).
Briefings - there are two common types of briefings that may occur after an exercise:	
Hot Wash	This occurs within one to two hours after an exercise, and is designed to allow the participants to be debriefed and go over what went right and wrong, and what needs to be changed prior to the next exercise.
Warm Wash	Is the same as a hot wash except that it occurs one to two days after an exercise.

[42] http://www.naruc.org/grants/programs.cfm?page=3.

[43] http://hseep.dhs.gov/.

3.12.2 Keep Abreast of Ongoing Market/Supply Chain Issues

Once the EAP is completed and implementation has begun, it is time to begin the process of keeping current on energy assurance topics and energy markets in general. This can be a rewarding, educational, and exciting task if approached correctly.

Incorporate energy assurance educational efforts into routines by setting aside time for reading, attending informational webinars and stakeholder meetings, and researching other related ways to stay abreast of energy assurance developments. Between rapidly changing energy supply and demand technologies, event-spurred energy price changes, lessons learned on a weekly basis by other local governments, new funding opportunities, new State and Federal energy assurance initiatives, new energy emergencies, and changes in the local government energy picture, there are plenty of topics that are worth monitoring.

The Energy Information Administration[44] is an excellent resource for staying current. The EIA has a yearly 'energy outlook' website[45] that contains forward-looking information ontrends and issues germane to energy markets.

DOE/OE produces the "Energy Assurance Daily" (available free of charge at: http://www.oe.netl.doe.gov/ead.aspx), which planners can access to keep their knowledge of changing conditions current.[46] The EAD covers several areas:

- Major energy developments
- Electricity, petroleum, and natural gas industries
- Other relevant news
- Energy prices

Preparing a Brief, Electronic "Energy Assurance Update" Newsletter

The energy assurance coordinator can be responsible for keeping current with these topics and others, and it is helpful when the coordinator forwards relevant electronic and hard copy information to the working group members, and/or the core group of energy assurance stakeholders going forward. It is a good idea to start, and institutionalize, a short bi-weekly or monthly electronic "energy assurance newsletter" that can be sent to the people and organizations that should stay connected to the energy assurance project well into the future.

Keeping key energy assurance organizations and individuals current requires time and effort. The goal is to create an educated, active community of individuals and organizations interested in supporting and keeping abreast of local energy assurance efforts. Quarterly informal or formal meetings may be useful in keeping energy assurance on the radar screens of key individuals and organizations. The energy assurance coordinator can also bring information to these individuals and organizations through energy-related course curricula, webinars, meetings, workshops, blogs, training exercises, and other avenues.

Conducting/Developing Curricula, Webinars, Meetings, Workshops, Blogs, Training Tools, and Exercises

When possible, it makes sense for the coordinator to attend community college and/or four-year college classes related to energy assurance. The information learned from this curriculum can be used to inform and educate others

[44] http://www.eia.doe.gov/.

[45] http://www.eia.doe.gov/forecasts/aeo/index.cfm?featureclicked=1&.

[46] http://www.oe.netl.doe.gov/ead.aspx.

within the local government. Where allowed, materials can be shared with the working group members. Practical curricula can include regional energy planning, sustainable energy initiatives, green building courses, and many more.

Check the DOE/OE website (http://www.oe.energy.gov/) and PTI's energy assurance website (http://www.energyassurance.us/) regularly for helpful webinars and energy assurance planning exercises. As local governments develop their EAPs, expect more useful case studies to populate the PTI website.

Local and State government associations such as PTI, NASEO, the National League of Cities (NLC), and the U.S. Conference of Mayors (USCM) often offer energy workshops during the year that can feed into local energy assurance efforts. Energy-related blogs can be helpful tools for EAP efforts also. Finding an active blog can take some time, but it is often worth the effort. PTI manages a list serve for the benefit of planners.

Training helps government personnel become familiar with their responsibilities and acquire the skills necessary to perform assigned tasks. State governments can be valuable resources for training, as they typically publish their own planning guides, conduct workshops and training courses, and can assign their planners to work with local planners. FEMA supports State training efforts through its Emergency Management Institute and offers a range of courses. FEMA also publishes many documents relating to planning for specific functions and hazards.

Local jurisdictions may also develop their own tools, based on their unique needs. When it comes to local government training and tools, one of the best places to look is DOE/OE. That office is responsible for supporting State and local government EAPs, and as such, is very interested in linking local planners to new tools and exercises.

Key Questions

…in Keeping Current

1. What Internet and paper sources should be considered when building a regular energy assurance reading list?
2. What are the helpful, active energy-related blogs?
3. What is the best way to organize a tabletop exercise to vet the EAP, and who should be called for assistance in designing and implementing the exercise?
4. Who should be invited to the tabletop exercise?
5. What type of energy assurance communications should be circulated to local elected officials going forward, in what format, and on what schedule?
6. What individuals and organizations should be included on the energy assurance distribution list moving forward?
7. How often should planners hold formal and/or informal energy assurance meetings after the EAP is released?
8. What types of external meetings should the energy assurance coordinator attend to keep up with energy assurance developments?
9. What topic(s) should be covered first at an energy assurance workshop, and why?
10. Are there any local universities, colleges, or trade schools that have valuable energy assurance-related expertise to offer, and if so, how can planners involve them in a workshop or tabletop exercise?

Appendix A. Glossary of Key Terms

Ten-Step Local-Level Planning Framework	A Department of Energy-developed process to facilitate local government development of effective EAPs in cooperation with energy providers, other public and private sector organizations, and State and Federal partners.
All-Hazards	Any incident caused by terrorism, natural disasters, or any chemical, biological, radiological, nuclear, or explosive (CBRNE) accident. Such incidents require a multi-jurisdictional and multi-functional response and recovery effort.
American Public Power Association (APPA)	A service organization for the Nation's more than 2,000 community-owned electric utilities.
Combined Heat and Power (CHP)	The use of an engine or power station to simultaneously produce electricity and useful heat.
Cascading Impacts or Effects	Negative effects from an energy disruption that have secondary, tertiary or more negative impacts downward (vertical movement), for example, from the primary disruption of the energy supply infrastructure to the water system infrastructure to the provision of water for fire suppression.
Continuity of Operations Plan (COOP)	A plan providing for the survival of government operations in the case of catastrophic events.
Council of Government (COG)	Regional bodies that exist throughout the United States. They are also sometimes called regional councils, regional commissions, regional planning commissions, planning district commissions, and development districts. A typical council is defined to serve an area of several counties, addressing issues such as regional and municipal planning, economic and community development, cartography and GIS, hazard mitigation and emergency planning services for the elderly, water use, pollution control, transit administration, and transportation planning.
Critical Infrastructure	Systems and assets, whether physical or virtual, so vital that the incapacity or destruction of such may have a debilitating impact on security, the economy, public health or safety, the environment, or any combination of these matters.
Cyber Security	Preventing damage to, unauthorized use of, or exploitation of electronic information and communications systems and the information contained therein to ensure confidentiality, integrity, and availability. Cyber security also includes restoring electronic information and communications systems in the event of a terrorist attack or natural disaster.[47]
Distributed Generation/Energy	Also called onsite generation, dispersed generation, embedded generation, decentralized generation, decentralized energy or distributed energy, generates electricity from many small energy sources.
Electric Utility Cooperative	A type of cooperative that is tasked with the delivery of electricity to its members. Profits are either reinvested for infrastructure or distributed to members in the form of "patronage" or "capital credits," which are dividends essentially paid on a member's investment into the cooperative.
Electromagnetic Pulse	A burst of electromagnetic radiation that results from an explosion (usually from the detonation of a nuclear weapon) and/or a suddenly fluctuating magnetic field. The rapidly changing electric fields or magnetic fields that result may couple with electrical/electronic systems to produce damaging current and voltage surges.

[47] http://www.naseo.org/energyassurance/Smart_Grid_and_Cyber_Security_for_Energy_Assurance-NASEO_December_2010.pdf.

Emergency Management Agency	An agency at the local, regional, or State level that holds responsibility for comprehensively planning for and responding to all manner of disasters, whether man-made or natural.
Emergency Operations Center (EOC)	A central command and control facility responsible for carrying out the principles of emergency preparedness and emergency management, or disaster management functions at a strategic level in an emergency situation, and ensuring the continuity of operations of a company, political subdivision, or other organization.
Emergency Support Functions (ESFs)	Grouping of governmental and certain private sector capabilities into an organizational structure to provide support, resources, program implementation, and services that are most likely needed to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal following domestic incidents.
Energy Assurance	Involves a vast array of activities, and falls into three main categories: preparation and planning, mitigation and response, and education and outreach. Preparation and planning involve identifying key assets and points-of-contact, designing and updating energy emergency response plans, training personnel, and conducting exercises that test the effectiveness of response plans. Mitigation and response activities include monitoring events that may affect energy supplies, assessing the severity of disruptions, providing situational awareness, coordinating restoration efforts, and tracking recoveries. Education and outreach activities include communicating and coordinating with key stakeholders, increasing public awareness, and forming partnerships across sectors and jurisdictions.
Energy Assurance Coordinator	The individual responsible for leading and building consensus around EAP development and implementation.
Energy Assurance Partners	The group of stakeholders that work with the energy assurance coordinator to develop and implement the EAP for a local government.
Energy Efficiency	Using less energy to provide the same level of energy service or to perform the same level of work.
Energy Infrastructure	Pipelines, power plants, distribution networks, transmission lines, and the like.
Energy Supplier	An entity—utility or otherwise—that supplies energy in its various forms (electricity, natural gas, petroleum fuel, etc.) to a local jurisdiction.
Essential Services and Functions	Services a local government must provide and functions performed in order to assure safety, wellbeing, and security for its inhabitants. Most often these services are mandated in a jurisdiction's charter or enabling legislation and paid for by property and/or sales taxes, fees, and the like.
Federal Emergency Management Agency (FEMA)	The Federal Emergency Management Agency coordinates the Federal government's role in preparing for, preventing, mitigating the effects of, responding to, and recovering from all domestic disasters, whether natural or man-made, including acts of terror.
Geomagnetic Disturbance	A temporary disturbance of the Earth's magnetosphere caused by a disturbance in space weather. Associated with solar flares and resultant solar coronal mass ejections (CME), a geomagnetic storm can severely impact electricity transmission and distribution equipment, among other critical infrastructure.
Independent Power Producer (IPP)	An entity that is not a public utility, but which owns facilities to generate electric power for sale to utilities and end users. IPPs may be privately-held facilities, cooperatives such as rural solar or wind energy producers, and other industrial concerns capable of feeding excess energy into the system.
Investor-Owned Utility (IOU)	A business organization providing a product or service regarded as a utility (often termed a public utility regardless of ownership), and managed as a private enterprise rather than as a function of government or a utility cooperative. An IOU is typically a regulated entity at the State level. As such, the regulatory body (e.g., Public Utility Commission) may dictate required responsibilities that differ from State to State.

Key Assets	Health and safety-related assets such as "911" call centers, airports, emergency shelters, hospitals, first responder facilities (EOC), water pumping stations, telecommunications routing facilities, and fire and police facilities.
Local Government	The public authority with leadership responsibility for a jurisdiction such as village, township, tribal area, city, or county, and activities and events that occur within the geographic boundaries of that jurisdiction.
Metropolitan Planning Organization (MPO)	A Federally-mandated and Federally-funded transportation policy-making organization in the U.S. that is made up of representatives from local government and governmental transportation authorities.
Municipally Owned Utility	An electric company owned and operated by a municipality serving residential, commercial, and/or industrial customers, usually within the boundaries of the municipality. These utilities are responsible for customer billing, wire, pole, and meter maintenance, connecting new customers, distribution of electricity, and restoring power after an outage. An IOU is different than an MOU in that the latter is a public entity and the former is not. However, their responsibilities are essentially the same except for those as determined by the IOU's regulatory body. (See IOU above.)
Mutual Aid Agreement	A signed document between units of local government that provides for emergency response services between jurisdictions through specific labor and equipment agreements.
National Association of Regional Councils (NARC)	An entity that serves as the national voice for regionalism. NARC advocates for and provides services to its member councils of government (COGs) and metropolitan planning organizations (MPOs).
National Association of State Energy Officials (NASEO)	A national non-profit organization whose membership includes the governor-designated energy officials from each State and territory. NASEO was formed by the States through an agreement with the National Governors Association in 1986. The organization was created to improve the effectiveness and quality of State energy programs and policies, to provide policy input and analysis, to share successes among the States, and to be a repository of information on issues of particular concern to the States and their citizens. NASEO is an instrumentality of the States and derives basic funding from the States and the Federal government.
National Incident Management System (NIMS)	Provides a systematic, proactive approach to guiding departments and agencies at all levels of government, nongovernmental organizations, and the private sector to work seamlessly to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment.
National Response Framework (NRF)	Presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies—from the smallest incident to the largest catastrophe. The NRF establishes a comprehensive, national, all-hazards approach to domestic incident response.
National Rural Electric Cooperative Association (NRECA)	The service organization dedicated to representing the national interests of cooperative electric utilities and the consumers they serve.
New Energy Technology	For the purposes of this document, any emerging energy technology such as microturbines, smart grid, or fuel cells that has yet to be mainstreamed into common practice.
Non-Governmental Organization (NGO)	A legally constituted organization that operates independently from any government; a term usually used by governments to refer to entities that have no government status.
Portfolio Manager	An interactive energy management tool developed by the U.S. EPA that allows the user to track and assess the energy and water consumption of buildings using a rating system.

Public Utility/Service Commission	The body responsible for regulating investor-owned utilities at the State level.
Renewable Energy Technologies	A suite of technologies that use energy sources that renew themselves constantly over relatively short periods of time—months or years—instead of centuries, as is the case with fossil fuels.
Resiliency	The ability to respond effectively to an energy emergency and to recover quickly from damage. A resilient energy system is not necessarily damage-resistant. Rather, it is able to continue operating despite damage, and to return quickly to normal operations when damage occurs. Since energy systems are not 100 percent damage proof, resiliency is considered to be as important as damage prevention.
Ripple Effect or Impact	Negative effects from an energy disruption that occur between essential services (lateral movement) such as from banking to telecommunications. These are also termed service-to-service effects or impacts.
Smart Grid	An electricity delivery system that monitors, protects, and automatically optimizes the operation of its interconnected elements from central and distributed generators through the high-voltage network and distribution system, to industrial users and commercial building automation systems, to energy storage installations, and to residential consumers and their thermostats, electric vehicles, appliances, and other household devices.
Working Group/Task Force	The team chosen to develop and in some cases implement portions of the EAP.

Appendix B. Local Government Energy Assurance Priority Checklist

The following checklist is for use by local governments in developing EAPs that affect their key assets and services. Local governments have three significant energy assurance priority needs.

- Backup generators, tested and in operating condition, in numbers adequate to power key assets (facilities, systems, and components) and fuel to operate them for a minimum of 72 hours. This necessitates identifying critical government assets (e.g., health and safety-related services—fire, emergency medical services, law enforcement, communications and IT systems, public hospitals, public works, etc.) and determining their respective minimum energy requirements.
- Fuel available for transportation for emergency responders (fire, police, medical, public works, maintenance personnel of publicly-owned utilities, gasoline and diesel fuel trucks, etc.).
- Designated trained personnel to operate generators and perform other emergency services to assure continuity of essential energy-dependent government functions through response and initial recovery.

Local Government Energy Continuity Checklist	
Local Government Critical Asset Energy Use Assessment	**Complete?**
1. Inventory key assets, identifying ownership, management, and a point-of-contact for energy emergencies and coordination of continuity plans.	
2. Identify local government Key Assets based on their essential functions and impacts if disrupted.	
3. Identify energy sources and requirements for these essential functions.	
4. Identify cost-effective backup energy alternatives.	
Assuring Energy Continuity (Electric Power and Fuel Supply)	**Complete?**
5. Maintain adequate inventory of generators in identified locations and alternative procedures to relocate them rapidly in an emergency; develop and implement procedures to regularly test generator functionality.	
6. Arrange for, and continuously monitor fuel storage (diesel and gasoline) in readily accessible locations in adequate capacity to provide a minimum of 72 hours of power to operate key assets.	
7. Set up contracts with fuel suppliers and procedures for emergency purchase authorizations for fuel acquisition during emergencies.	
8. Put in place the capability to deliver fuel citywide by tanker trucks, including personnel (primary and alternate) to operate the refueling equipment and trucks; designate re-fueling routes.	
9. Develop procedures for prioritizing fuel allocations in emergencies that result in prolonged disruptions.	
10. Investigate cost-effective alternative energy sources to serve as backup power sources; identify ways to minimize power use (e.g., cycling systems on and off; curtailing power to non-essential operations; switching to energy- efficient lights; changing the set point for the heating and air conditioning; etc.).	
11. Develop plans to ensure that communications are available covering all energy emergency operations.	

Personnel/Training & Exercises	Complete?
12. Determine essential personnel needs to ensure adequate staff is available to operate critical equipment (generators, refueling, fuel trucks, etc.).	
13. Ensure that personnel are familiar with local government continuity plans, particularly provisions that address energy assurance.	
14. Provide exercise and training opportunities for personnel, both as part of broader local government all-hazards exercises and workshops and through targeted energy assurance activities.	
15. Review energy emergency government continuity plans regularly and update with lessons learned from incidents, disasters, and exercises	

Appendix C. Federal Energy Assurance Planning and Response Initiatives

C.1 National Response Framework

The *National Response Framework (NRF)* presents the guiding principles that enable all response partners to prepare for and provide a unified national response to disasters and emergencies—from the smallest incident to the largest catastrophe. The *NRF* defines the key principles, roles, and structures that organize a coordinated, effective national response. It also describes how communities, tribes, States, the Federal Government, and private-sector and non-governmental partners apply these principles.

The *NRF* is always in effect, and elements can be implemented at any level at any time. The *NRF Local Government Partner Guide*[48] provides a targeted index of the information in the *NRF* core document that is specifically pertinent to local government leaders and emergency management practitioners. This guide is intended to serve as a ready reference for local partners to quickly identify the sections of the *NRF* that are applicable to them. Table C-1 summarizes the *NRF Local Government Partner Guide*.

Table C-1. Summary of the NRF Local Government Partner Guide

Guide Section	Description
Response Doctrine (pages 8-11)	Locates the *NRF's* definition of basic roles, responsibilities, and operational concepts for response across all levels of government.
Roles and Responsibilities (pages 15-26)	Identifies where information can be found within the *NRF* on the roles of local officials and other persons and organizations that local partners will most likely interface with prior to, during, and after an incident. Roles addressed by the *NRF* include: various local officials, State and Federal government, the private sector, nongovernmental organizations, members of Congress, and individuals and households.
Response Actions (pages 27-46)	Provides references to specific *NRF* activities that support the two basic responsibilities of local governments: 1) to plan, organize, train, equip, exercise, and evaluate as part of a "preparedness cycle;" and 2) to conduct an informed response to incidents by deploying the right personnel and resources, with the right training, as part of a single incident management structure, while remaining flexible and adaptable in order to tailor response to the particular needs of the incident.
Requesting Assistance (page 68)	Locates the sections of the *NRF* that describe the conditions under which a local government can request assistance from neighboring jurisdictions, the State, or the Federal Government. Also identifies sections of the *NRF* that address mutual aid and assistance as it pertains to local government.
Local Response Structures (pages 49-50)	Locates the passages of the *NRF* that identify the response structures within which local organizations will participate. Such response structures include the Incident Command System, Multiagency Coordination System, and the State Emergency Operations Center, among others.

[48] http://www.fema.gov/pdf/emergency/nrf/PartnerGuideLocal.pdf.

NRF Resource Center

This Partner Guide and the documents referenced in it, as well as other materials that directly or indirectly support the *NRF*, can be found in the *NRF* Resource Center. To assist readers in implementing the *NRF*, the Resource Center is an online repository of supporting documents, resources, and educational materials. It is intended especially to assist emergency management practitioners. This repository provides a single, web-based portal for documents, information, training materials, and other tools needed for response partners to understand and execute their roles under the *NRF*. The online Resource Center's home page may be found at http://www.fema.gov/NRF.

C.2 Local Governments and Emergency Support Functions

The Emergency Support Functions (ESF) are a set of annexes to the *National Response Framework* that group governmental and certain private sector capabilities and responsibilities into an organizational structure to facilitate implementation of the emergency response actions called for as part of the *NRF*. The ESFs are designed to help responders provide the support, resources, and services that are often needed to save lives, protect property and the environment, restore essential services and critical infrastructure, and help victims and communities return to normal following domestic incidents that require a coordinated Federal response. ESF-12—as the Energy Function—is but one of 15 Emergency Support Functions. The ESF system is a subset of the *NRF* and as such should be viewed in that context. Below is a listing of all the Emergency Support Functions.[49]

ESF-1	Transportation
ESF-2	Communications
ESF-3	Public Works and Engineering
ESF-4	Firefighting
ESF-5	Emergency Management
ESF-6	Mass Care, Housing, and Human Services
ESF-7	Resources Support
ESF-8	Public Health and Medical Services
ESF-9	Urban Search and Rescue
ESF-10	Oil and Hazardous Materials Response
ESF-11	Agriculture and Natural Resources
ESF-12	Energy
ESF-13	Public Safety and Security
ESF-14	Long-term Community Recovery and Mitigation
ESF-15	External Affairs

The ESF that is most relevant to this document is ESF-12 (energy). Via ESF-12, DOE plays a coordinating role that facilitates the application of Federal response resources, in conjunction with State, local, and private sector efforts. ESF-12 establishes DOE as the focal point within the Federal government for gathering and disseminating information on impacts to energy infrastructure, as well as the primary Federal point of contact for the private sector in coordinating response/infrastructure restoration activities. Knowledge of DOE's roles and responsibilities via ESF-12 can provide a basis for understanding how Federal resources can be applied to local energy emergency response, and the ESF-12 framework can serve as a useful model for codifying local energy emergency response roles and responsibilities, if this has not been done already.[50]

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[49] http://www.phe.gov/Preparedness/support/esf8/Pages/default.aspx.

[50] For more information on ESF-12, see: http://www.fema.gov/pdf/emergency/nrf/nrf-esf-12.pdf.

C.3 National Infrastructure Protection Plan—Energy Sector-Specific Plan

The National Infrastructure Protection Plan (NIPP)[51] and supporting Sector-Specific Plans (SSPs)[52] provide a coordinated approach to critical infrastructure and key resources (CI/KR) protection roles and responsibilities for Federal, State, local, tribal, and private sector security partners. The NIPP sets national priorities, goals, and requirements for effective distribution of funding and resources that will help ensure that our government, economy, and public services continue in the event of a terrorist attack or other disaster.

The Department of Homeland Security (DHS) describes the NIPP as providing a unifying structure for the integration of existing and future critical infrastructure and key resources into a single national program that result in a more resilient America. The NIPP promotes building security partnerships, and local governments are key partners in implementing the objectives of the NIPP. Specifically, DHS expects local governments to build regional partnerships across jurisdictions while also developing formal, tailored CI/KR plans as part of their own homeland security efforts. DHS recommends that jurisdictions incorporate the NIPP into their existing security initiatives where possible.

C.4 National Incident Management System (NIMS)

The Secretary of Homeland Security released the National Incident Management System (NIMS) in March 2004. In a September 8, 2004, letter to the Nation's governors, DHS outlined a phased approach to local government implementation of the NIMS, with full compliance required by September 30, 2006. Notably, local jurisdictions are required to meet NIMS implementation requirements put forward in the Federal fiscal year 2006 as a condition of receiving Federal preparedness funding assistance in FY 2007 and beyond. Therefore, it makes sense to learn about NIMS and to move forward on NIMS implementation at the local government level.

Some States have taken actions to ensure that the NIMS is integrated into theiremergency management system. California did this through an executive order. The executive order required the State's Office of Emergency Services to report on the status of NIMS implementation by a certain date. Pennsylvania mandated that NIMS be utilized for all incident management issues within its borders through a proclamation.

The NIMS is a comprehensive system that improves local response operations through the use of the Incident Command System (ICS) and the application of (new) standardized procedures and preparedness measures. The NIMS promotes cross-jurisdictional, statewide and interstate regional mechanisms for coordinating responses and obtaining help during complex incidents.

Oversight of NIMS Implementation

The NIMS Integration Center

The NIMS Integration Center oversees all aspects of the NIMS, including the development of NIMS-related standards and guidelines and the provision of guidance and support to incident management and responder organizations as they implement the system. The Center also will validate compliance with the NIMS and National Response Plan responsibilities, standards and requirements. The NIMS Integration Center is a multi-jurisdictional, multidisciplinary entity made up of Federal stakeholders and over time State, local and tribal incident management and first responder organizations. It is situated at the Department of Homeland Security's Federal Emergency Management Agency (FEMA).[53]

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[51] http://www.dhs.gov/xlibrary/assets/NIPP_Plan.pdf.

[52] Including the Energy Sector-Specific Plan; see: http://www.oe.energy.gov/DocumentsandMedia/Energy_SSP_2010.pdf.

[53] For a Federal fiscal year 2006 NIMS Implementation Matrix for Tribal and Local Jurisdictions please see: http://www.fema.gov/txt/emergency/nims/nims_tribal_local_compliance_activities.txt.

Implementation Timeline

NIMS compliance should be considered and undertaken as a community-wide event. By the end of the Federal Fiscal Year 2006 (September 2006), DHS/FEMA required that NIMS be adopted at the community level for all government departments and agencies (Tribal Government and Local Jurisdiction Compliance Activities: Federal fiscal year 2006). This could be done through a formal executive order, a proclamation, resolution, or legislation. This was to be done in concert with NIMS local government outreach to associations, utilities, non-governmental entities, and private sector incident management and response organizations.[54]
Incident response organizations are numerous and include:

- Public health organizations
- Medical service organizations
- Private sector entities (especially energy utilities)
- Law enforcement officials
- Fire officials
- Public works officials
- Emergency management officials and others

Local Government Goals for NIMS

When NIMS is fully implemented, the local community or jurisdiction will be able to:

- Ensure common and proven incident management doctrine, practices, and principles are used to plan for, protect against, respond to, and recover from emergency incidents and preplanned events.
- Maintain a response operation capable of expanding to meet an escalating situation and the ability to integrate resources and equipment from intrastate and interstate mutual aid agreements, State-provided assistance, and Federal government response.
- Order and track response assets using common resource typing and definitions, and draw on mutual aid agreements for additional assistance.
- Establish staging and allocation plans for the re-distribution of equipment, supplies, and aid coming into the area from other localities, States, or the Federal government through mutual aid agreements.
- Conduct situational assessments and establish the appropriate ICS organizational structure to effectively manage the incident.
- Establish communication processes, procedures, and protocols that will ensure effective interoperable communications among emergency responders, 911 centers, and multi-agency coordination systems (emergency operations centers).

C.5 Energy Emergency Assurance Coordinators System

The Department of Energy's Office of Electricity Delivery and Energy Reliability (DOE/OE) maintains a password-protected Energy Emergency Assurance Coordinators (EEAC) website through which authorized State and local

[54] The NIMS Integration Center is responsible for managing a helpful "NIMS On-Line" web site at http://www.nimsonline.com/.

energy emergency coordinators may access valuable energy information and resources, including daily news summaries, emergency situation reports, lessons learned from other cities and 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 system 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 membership is made up of representatives from State energy offices, Public Utility Commissions, State legislators, emergency management agencies, homeland security offices, and governors' offices.

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 affected jurisdiction, industry, and OE.

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
- 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

Appendix D. Related PTI Guidance Information and Documents

This appendix provides additional resources for jurisdictions to augment EAP development efforts, and highlights valuable information on the Local Government Energy Assurance Program underwritten by the DOE, with program support from PTI.

D.1 PTI Resources and Guidance Documents

Local Government Energy Assurance Planning Website

Through a grant from DOE, PTI offers technical assistance to local governments—large, medium, and small—across the U.S. that want to learn more about creating or refining EAPs for their communities. Once created, these plans will help ensure that local governments can provide life-saving and sustaining services during an energy emergency. On this website, http://www.energyassurance.us/, local governments can take part in and learn more about:

- Free, web-based training opportunities
- Educational programs including seminars, workshops, exercises, and conferences
- Access to valuable publications and other informational resources
- Links to important partner associations, State and regional contacts
- Links to possible funding opportunities
- Opportunities to interact with other jurisdictions undertaking this planning effort
- Access to lessons learned and best practices

PTI Guidance Documents

PTI has been developing stand-alone guidance papers that offer additional information on a range of topics that may be of interest to local governments as they develop EAPs. Topics include:

- Energy 101
- Energy Interdependencies
- Cyber Security and Energy Assurance
- Smart Grid and Energy Assurance
- Working with the Media

See the LEAP website for further information regarding these guidance documents.

D.2 Useful Links

- *National Association of Regulatory Utility Commissioners (NARUC), Committee on Critical Infrastructure*, http://www.naruc.org/committees.cfm?c=46.
- *The National Response Framework,* http://www.fema.gov/emergency/nrf/.
- *NIMS Basic, Introduction and Overview,* http://www.fema.gov/pdf/nims/NIMS_basic_incident_command_system.pdf.
- *State Energy Assurance Guidelines,* National Association of State Energy Officials, Version 3.1, http://www.naseo.org/eaguidelines/.
- *Planning for Natural Gas Disruptions, Critical Infrastructure Assurance Guidelines for Municipal Governments,* Chicago Metropolitan Area Critical Infrastructure Protection Program, http://www.ipd.anl.gov/anlpubs/2003/02/45798.pdf.
- *Electric Power Disruption: Toolkit for Local Government,* State of California, http://www.oes.ca.gov/WebPage/oeswebsite.nsf/ClientOESFileLibrary/Emergency%20Public%20Information/$file/PowerDisruption.pdf.
- *Energy and Environment Best Practices,* U.S. Conference of Mayors, http://www.usmayors.org/bestpractices/EandEBP07.pdf.
- *Energy Security and Emergency Preparedness: How Clean Energy Can Deliver More Reliable Power for Critical Infrastructure and Emergency Response Missions—An Overview for Federal, State and Local Officials, Clean Energy Group,* http://www.cleanenergyStates.org/library/Reports/CEG_Clean_Energy_Security_Oct05.pdf.
- *Energy Assurance Daily,* U.S. Department of Energy, http://www.oe.netl.doe.gov/ead.aspx
- U.S. Fire Administration website, *What is Critical Infrastructure Protection and Why is it Important?* http://www.usfa.dhs.gov/fireservice/subjects/emr-isac/what_is.shtm.
- The NIMS Integration Center website, https://www.fema.gov/nimscast/.
- Infrastructure Security and Energy Restoration (ISER) website, DOE, http://www.oe.energy.gov/our_organization/iser.htm
- Kent Washington Emergency Management. See *Hazard Vulnerability Analysis* document (#3), http://www.ci.kent.wa.us/content.aspx?id=2700.

Appendix E. Additional Agencies and Organizations Relevant to the Energy Assurance Planning Process

Some of these agencies and organizations may not be on the local EAP list of Primary Contacts, but familiarity with their roles and responsibilities and the resources they can provide may be beneficial to the EAP process. It may be useful to develop relationships with these entities if they are relevant to local planning efforts and if doing so is feasible, given time and other constraints.

Federal Agency Contacts

- ***U.S. Department of Agriculture (USDA)***
  The U.S. Department of Agriculture is best accessed via the State's agriculture agency. Relevant Agriculture-related issues 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)***
  The U.S. Department of Commerce has excellent data resources for developing emergency plan demographics. Within DOC, the National Oceanic & Atmospheric Administration (NOAA) provides up-to-the-minute tracking for hurricanes, wildfires, winter storms, and other weather-related emergencies (http://www.noaa.gov).
- ***U.S. Department of the Interior (DOI)***
  Within DOI, the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) oversees the oil and gas production fields in the Gulf of Mexico (http://www.boemre.gov/).
- ***U.S. Environmental Protection Agency (EPA)***
  The U.S. Environmental Protection Agency should be contacted through the State's environmental agency. EPA may need to be contacted if waivers are sought for fuels that do not meet national and local air quality requirements. A fuel waiver can be issued only when the criteria specified in the Clean Air Act Section 211(c)(4)(C) have been met. In general, these criteria allow a fuel waiver only to address a temporary emergency fuel supply shortage that exists throughout a State or region that was caused by an unusual situation such as an act of God, and that could not have been avoided by prudent planning.
- ***U.S. Department of Transportation (DOT)***
  The U.S. Department of Transportation has several sub-agencies that may relate to an energy emergency, including the Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA 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, State and local governments should anticipate a coordinated response through the State emergency operations center.

- ***U. S. Federal Energy Regulatory Commission (FERC)***
  The Federal Energy Regulatory Commission is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also reviews proposals to build liquefied natural gas (LNG) terminals and interstate natural gas pipelines, as well as licensing hydropower projects. It also assists consumers in obtaining reliable, efficient, and sustainable energy services at a reasonable cost through appropriate regulatory and market means.

- ***Federal Highway Administration (FHWA)***
  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 (FMA)***
  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 U.S.-flagged vessels (the Jones Act) would be sought through the Federal Maritime Administration and with DOE assistance.

- ***Federal Motor Carrier Safety Administration (FMCSA)***
  Limits on the number of hours a truck driver can operate a vehicle fall under regulations managed by the Federal Motor Carrier Safety Administration. These limits can be waived under two conditions. First, if an emergency has been declared by the President of the United States, the Governor of a State, or their authorized representative; and second, if the FMCSA Field Administrator has declared that a regional emergency exists that justifies an exemption. This exemption cannot exceed the duration of the motor carrier's or driver's direct assistance in providing emergency relief to the affected area, or 30 days from the date of the initial declaration of the emergency or the exemption, whichever is less.

- ***Federal Aviation Administration (FAA)***
  The Federal Aviation Administration supports the Nation's airports. Depending on the location and airport infrastructure of the local jurisdiction, in the event of an aviation fuel shortage it may be necessary to coordinate with the FAA. This would most likely be handled through the State's transportation agency and coordinated at the State emergency operations center. The FAA also has air transportation data useful for energy assurance planning purposes.

Regional Organizations

Local governments should also become familiar with the variety of regional energy organizations affecting them. These are not just the domain of State agencies. State PUCs usually deal with the Electric Reliability Councils, the Regional Transmission Operators (RTOs), and the Independent System Operators (ISOs) that coordinate the distribution of electricity and handle multi-State emergency electrical procedures. Other examples of regional organizations are the Power Marketing Administrations (PMAs) that operate large hydropower dams under DOE jurisdiction. The 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 Interstate Energy Board may provide important coordination during emergencies. Regional councils of governments (COGs) and metropolitan planning organizations (MPOs) can also have unique expertise with regard to energy emergencies, beyond their traditional transportation focus.

- ***The North American Electric Reliability Corporation (NERC)***
  The North American Electric Reliability Corporation ensures the reliability of the bulk power system in the U.S. and is divided into eight regional entities. Getting to know the membership in NERC may be a useful exercise for the local coordinator. Membership in the regional entities is comprised of individuals from investor-owned utilities, Federal power agencies, rural electric cooperatives, State, municipal and provincial utilities, independent power producers, power marketers, and end-use customers.

- ***The ISO/RTO Council***
  The ISO/RTO Council (IRC) is an industry organization founded in 2003 composed of 10 Independent System Operators and Regional Transmission Organizations in North America. The IRC works collaboratively to develop effective processes, tools, and methods for improving competitive electricity markets across the U.S.

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