Visalia, California
Energy Assurance Plan

Recovery Act: Local Energy Assurance Planning

WORK PERFORMED UNDER AGREEMENT

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PREPARED BY

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SUBMITTED TO

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1.0 General Information

1.1 Purpose

This Energy Assurance Plan (EAP) specifies the policies, procedures, actions and departmental responsibilities and assignments necessary to maintain critical facilities and services in the City of Visalia during the disruption of electricity, natural gas and petroleum supplies. This energy assurance plan is an extension of the Visalia Emergency Operations Plan (EOP). It will be reviewed, exercised periodically, and revised as necessary to meet changing conditions.

1.2 Description

The EAP is intended to assure the continued operation of essential *municipal* services and communications necessary to protect public health, safety, property and the orderly functioning of the community (Continuity of Operations). The planning horizon for the EAP is five (5) years. The plan is not an energy shortage response plan intended to mitigate impacts from disruptions of electricity, natural gas and petroleum supplies on *private* entities in the City of Visalia. However, elements of the plan do entail collaboration with private service providers and the provision of services specifically designed to serve all community residents during an emergency.

This energy assurance plan is organized into nine chapters. This chapter (1) describes the purpose and content of the plan as well as the key enabling authorities and reference documents used by the planning team. Chapter two (2) provides the six-part methodology used to formulate the plan. Chapter three (3) describes the baseline conditions for the plan including: a list of critical municipal and select non-municipal facilities and infrastructure; the emergency electrical and fuel supply systems supporting these facilities and infrastructure; existing continuity of operations plans; and the community's special care and shelter facilities.

Chapter four (4) describes the existing energy assurance vulnerabilities and recommended mitigation measures. Chapter five (5) contains the energy assurance plan itself including a description of strategic goals, objectives and action sets and the necessary financial and administrative capacity to pursue them. Chapter six (6) provides the short-term implementation plan with proposed departmental assignments for all goal-object-action sets and potential funding sources and timeframes for implementation. Chapter seven (7) provides recommended modifications to the City's Emergency Operations Plan (EOP); Chapter eight (8) describes an initiative designed to foster ongoing intergovernmental exchanges to advance plan implementation and energy assurance in the region; Chapter nine (9) describes a conceptual technology framework to advance the City's long-term energy assurance.

The document concludes with an Appendix containing additional details on the plan's enabling authorities, intergovernmental frameworks for emergency management, technical references, critical facility energy equipment and fuel assessments, a position description for a proposed energy assurance coordinator and detailed cost estimates for each goal, objective and action discussed in the plan.

1.3 Enabling Authorities

The City's energy assurance planning is enabled by public legislation and by related federal, state, county and municipal policies and programs cited below. Appendix A. contains an expanded description of the state and federal government legal and planning frameworks in which the City's Energy Assurance Plan operates and a detailed discussion of the interagency relationships and responsibilities.

1.3.1 Municipal

Visalia Municipal Code - Title 2, Chapter 2.28: The declared purposes of this chapter are to provide for the preparation and carrying out of plans for the civil defense of persons and property within this city in the event of a disaster, and to provide for the coordination of the civil defense and disaster functions of this city with all other public agencies and affected private persons, corporations and organizations.

Visalia Municipal Code - Title 2, Chapter 2.32: The purposes of this chapter are to provide for the preparation and carrying out of plans, for disaster and emergency services, the protection of persons and property within the city in the event of disaster, and to provide for the coordination of the disaster and emergency functions of the city with all other affected persons and agencies, both public and private.

Visalia Emergency Operations Plan, 2008 - Chapter 1: The Emergency Operations Plan (EOP) addresses authorities enabling the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the City of Visalia.

Visalia General Plan, 1990 - Safety Element, Ordinance 2475: The element covers education and disaster preparedness and item three (3) states - "It is the policy of the City of Visalia to continue to upgrade preparedness strategies and techniques at all levels of government so as to be prepared when disaster, either natural or man-made, occurs".

City of Visalia Council Resolution, February 2010: The Council authorized the submittal of an application to the U.S. Department of Energy to obtain grant funding for the development of a Local Energy Assurance Plan (LEAP). This resolution directed that the City staff produce and disseminate a model municipal emergency energy system design and plan to assure the operation of critical

community facilities and infrastructure during disruptions of electric and gas supplies.

1.3.2 County

Tulare County Area General Plan, 1975 – Safety Element: The element of the general plan adopted by the Tulare County Association of Governments establishes plans, policies and programs to reduce hazards and conserve economic, environmental and social values within Tulare County.

Tulare County Hazards Mitigation Plan (HMP), 2011: The HMP analyzes a wide range of potential natural and man-made hazards, and prioritizes future projects that will reduce damage and impacts from disasters in the municipalities in Tulare County, including the City of Visalia.

Tulare County Emergency Operations Plan (EOP), 2004: The plan addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the County of Tulare communities. Specifically, the plan establishes the emergency management organization required to mitigate an emergency or disaster; identifies the policies, responsibilities and procedures required to protect the health and safety; and establishes the operational concepts and procedures associated with Initial Response Operations (field response) to emergencies in the County**.**

1.3.3 State

California Emergency Services Act – Articles 9, 11 & 14: Provisions contained in the California Government Code relating to the organization and responsibilities of operational areas, disaster preparedness, mutual aid agreements, and local government emergencies.

California Code of Regulations – Chapter 1, Title 19 and California Government Code 8607 et sec.: These regulations establish the Standardized Emergency Management Systems (SEMS) based on the Incident Command System (ICS). SEMS is intended to standardize response to emergencies involving multiple jurisdictions or multiple agencies and requires the use of basic principles and components of emergency management including ICS, multi-agency or inter-agency coordination, the operation area concept and established mutual aid systems.

California Energy Emergency Response Plan – The Public Resources Code Sections 25216.5(b) and 25700: The code directs the California Energy Commission to prepare and submit to the Governor and Legislature a plan to deal with possible shortages of electrical energy or fuel supplies to protect public health, safety and welfare.

California Energy Commission's Local Government Emergency Planning Handbook: This handbook provides guidance to local governments in developing energy shortage response plans that build upon community resources and

authorities, as well as integrate local management and communications systems with those of the California Energy Commission, Office of Emergency Services and the California Emergency Management Agency.

Emergency Managers Mutual Aid (EMMA) Plan: Pursuant to the Master Mutual Aid Agreement, the California Emergency Council approved the Emergency Managers Mutual Aid Plan on November 21, 1997. The purpose of EMMA is to support disaster operations in affected jurisdictions with professional emergency management personnel from local and state government.

1.3.4 Federal

Department of Homeland Security; Federal Emergency Management Agency - Homeland Security Presidential Directive-5 - the National Incident Management System (NIMS): The Department released NIMS in March, 2004 and outlined a phased approach to local government compliance with the NIMS, with full compliance by September 30, 2006. California integrated the NIMS into its emergency management system through an Executive Order. The NIMS is a comprehensive system that improves local response operations through the use of the Incident Command System (ICS) and the application of standardized procedures and preparedness measures.

Federal Civil Defense Act of 1950 - Public Law 920: As amended.

Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988: Public Law 93-288: As amended.

Federal Disaster Management Act 2000 - Public Law 106-390: This federal law requires every jurisdiction in the United States (seeking federal disaster assistance) to have an approved Hazard Mitigation Plan (HAZMIT plan) to address the management of, and response to, emergency situations.

National Response Framework: The framework is an all-discipline, all-hazards plan that establishes a single, comprehensive approach to domestic incident management. Required by a Homeland Security Presidential Directive (HSPD)-5, the NRF 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.

NRF Emergency Support Function #12: The NRF contains Emergency Support Function (ESF) Annexes that describe the roles and responsibilities of primary and support agencies for key response functions. ESF Annex #12 addresses Energy and designates USDOE as the primary federal agency responsible for providing guidance to governments at all levels, support agencies and organizations in responding to and recovering from shortages and disruptions in the supply and delivery of electricity, natural gas, and other forms of energy and fuels.

National Infrastructure Protection Plan (NIPP): Based on the Homeland Security Act of 2002, the NIPP is a comprehensive, integrated strategy to identify, prioritize and coordinate the protection of critical infrastructure and key resources (CIKR) and delineates how the Department of Homeland Security will work with federal departments and agencies, state and local governments, the private sector and foreign countries and international organizations.

2.0 Planning Methodology

A six-month planning process was initiated in September of 2011 with the formation of the planning team consisting of Visalia municipal officials and the engineering, planning and policy consultants. The team's first task was the recruitment of an informal advisory group to guide the project. The group consisted of key individuals in each of the municipal departments and divisions affected by the plan components contained in Chapter five as well an official of the Tulare County Office of Emergency Management and representatives of the potable water, electricity and natural gas utilities and select privately-owned facilities serving the community. The advisory group roster is provided on Page 1 of this document.

The planning team pursued an eight-part process to produce this plan. Figure 1 outlines the process used and the text below provides a brief description of each part in sequence.

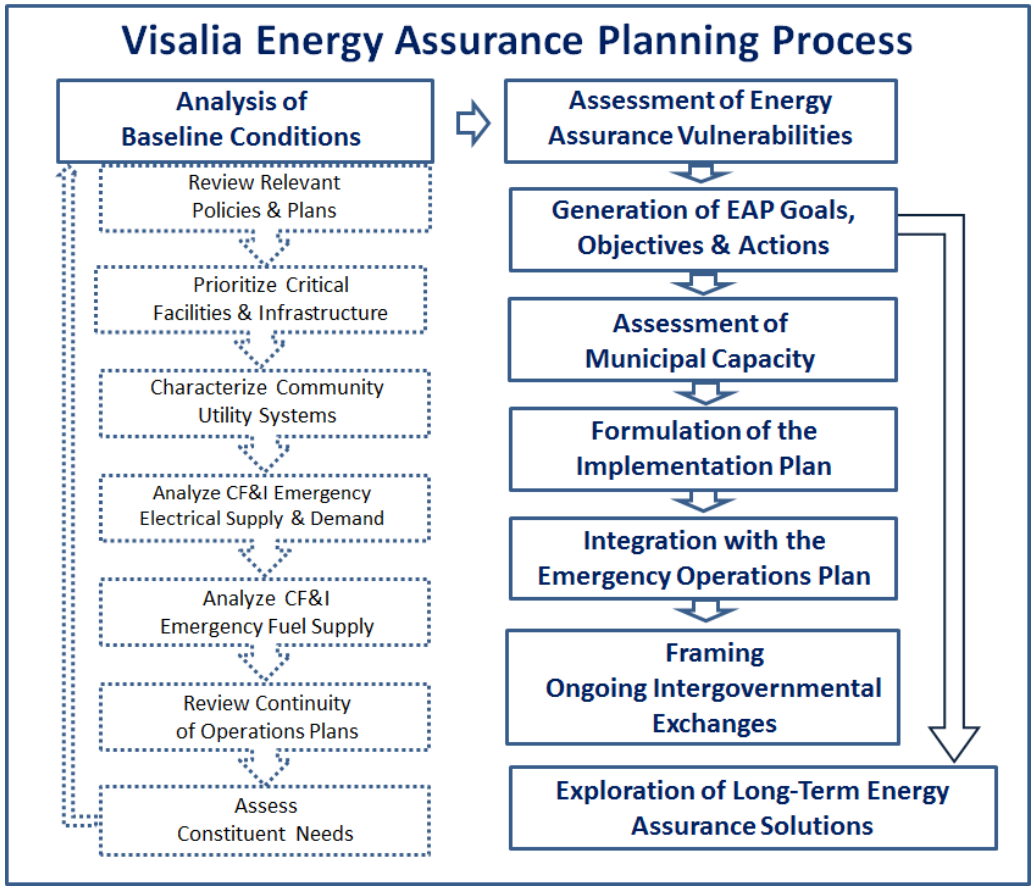

Figure 1. Visalia LEAP Planning Process

2.1 Analysis of Baseline Conditions

The baseline analysis established both the context and the target areas for the strategic plan components that follow. The analysis examined seven essential elements necessary to both inform the planning team and to assess the community's present state of preparedness for an energy emergency.

Review Relevant Policies & Plans - The first element entailed a comprehensive review of the existing federal, state, regional and City of Visalia policies and plans dealing with hazards mitigation, emergency management, emergency shelters and evacuations and energy assurance. As stated earlier, Appendix A. contains a description of the county, state and federal government legal, policy and planning frameworks in which this energy assurance plan will operate and a detailed discussion on interagency relationships and responsibilities. This includes relationships that allow for escalation, when appropriate, of disaster response, leveraging of collective resources and execution of mutual aid. Appendix B. contains a list of the most valuable documents considered during the literature review.

Prioritize Critical Facilities & Infrastructure – The second element of the baseline analysis consisted of identifying and prioritizing critical facilities and infrastructure (CF&I) – those supporting the protection of public health and the

environment, safety, property and the orderly function of the community. Critical community facilities include both municipally-owned and selective privately-owned infrastructure and buildings.

Characterize Community Utility Systems – The third element of the baseline analysis consisted of the characterization of the existing electrical and natural gas supply and emergency petroleum fueling systems supporting the community. The planning team developed an information request based on USDOE guidelines for each utility supporting the community. The information requests were sent to the companies through their Task Force representatives to the project and follow-on briefings were conducted with additional utility personnel at each company to clarify the information requests. Once the information was received, it was analyzed and assimilated into the characterizations that can be found in Sub-section 3.1.2.

In the case of the electrical and gas utilities, the planning team provided the companies the list of rank-ordered critical facilities and infrastructure with the intent of obtaining information on the reliability of the circuits supporting them over the last five years. This information enables a more accurate characterization of the existing utilities, informs the distributed generation studies conducted in the last phase of the planning process and enables the planning team to evaluate the most appropriate location for community shelter facilities.

An Important Note*:* Due to their obligations to the Department of Homeland Security and their internal operating policies, the utilities did not disclose any sensitive information to the planning team regarding system vulnerabilities, hazard mitigation measures or emergency response plans. Therefore, the characterizations that appear in the following section are of a very general nature but remain useful to personnel unfamiliar with the community's primary energy resources.

Analyze CF&I Emergency Electrical Supply & Demand – The fourth element of the baseline analysis consisted of onsite engineering audits of the existing emergency electrical supply systems at the CF&I and their emergency electrical demand. The audits were conducted by the power system consultants from Burns and McDonnell Engineering during the week of September 12, 2011. The audits included building walk-throughs, interviews with building managers and personnel, and inventories and photographs of electrical panels and power generation equipment.

A key aspect of audits typically entail identification of opportunities to employ no-cost/low-cost building envelope and operating equipment enhancements to improve energy efficiency and thereby reduce energy demand. These opportunities were identified for all municipal buildings by a building auditing firm contracted by the City under a separate initiative immediately prior to this planning effort. The findings of this effort are available in an extensive report residing with the City's Natural Resources Conservation office.

Analyze CF&I Emergency Fuel Supply – The fifth element of the baseline analysis consisted of an analysis of the emergency fuel supply systems in place at the CF&Is and the fuel delivery procedures that support them. During the onsite

inspections described above, consulting engineers examined the fuel storage tanks for each generator and inspected fuel level monitors and alarms. Follow-up interviews with the contract vendor for the generators and with the fuel supplier provided additional insight into the existing maintenance and fuel delivery schedules, delivery routes, refueling procedures and related training for vendors and municipal personnel.

Upon completion of the onsite audits, the engineering team analyzed the information collected and calculated engine fuel consumption/burn rates and run-times based on the estimated capacities of onsite fuel tanks in place. This information was then compared to energy assurance planning guidelines and minimum recommended fuel storage specifications and recommendations for enhancements were issued in an internal engineering report.

Review Continuity of Operations Plans (COOP) – The sixth element of the baseline analysis entailed a review of the City's Emergency Operations Plan (EOP), and a review of the related communications protocols. This was a particularly important review to ensure that the framework for the energy assurance plan will nest and be fully integrated into the City's existing EOP.

Assess Constituent Needs -The seventh element of the baseline analysis consisted of an assessment of the essential needs of all constituents prior to, during and after the disruption of conventional energy supplies. A special consideration in the assessment was given to the functional needs population.[1] These include individuals living in institutional settings, the elderly and children, those from diverse cultures, those with limited English proficiency and those without adequate transportation options.

2.2 Assessment of Energy Assurance Vulnerabilities

This assessment, conducted in two parts, enabled the planning team to identify vulnerabilities in the City's ability to assure energy to critical facilities for essential services during the loss of conventional energy supplies.

The first part entailed a detailed review of the hazard profiles and vulnerability assessments contained in the Tulare County Hazards Mitigation Plan which was adopted through a Visalia City Council resolution. This review included an examination of the hazards maps in relation to the locations of the prioritized critical community facilities. Consideration of this geographic information enabled the planning team to conceptualize the best routing for primary and alternative delivery of emergency fuel supplies and the optimal location for the community shelters described later in the plan.

The second part of the assessment entailed a thorough review of the analysis contained in engineering reports from the onsite facility audits and of the information obtained through the reviews and assessments conducted under the

[1] Defined by the California Emergency Management Agency as: "Populations whose members may have additional needs before, during and after an incident in functional areas including but not limited to: maintaining independence, communication, transportation, supervision, and/or medical care."

last four elements of the baseline analysis. These vulnerabilities were then grouped in mutually exclusive target areas and rank-ordered in relation to their importance and the timeframe in which planned actions needed to be taken.

2.3 Generation of EAP Goals, Objectives & Actions

This phase of the planning process generated a set of strategic goals, subordinate objectives and aligned actions for each of the vulnerability target areas identified in the previous planning phase. Goals are defined as long-range, policy-oriented statements representing a future state in which energy is assured to support all critical community facilities and essential services during loss of utility energy supplies. Objectives are statements that detail how the community's energy assurance goals will be achieved, and typically suggest strategies or implementation steps to attain identified goals. Actions include all tactical activities intended to fulfill each supporting objective for each goal.

2.4 Assessment of Municipal Capacity

Before finalizing the actions for each goal and objective set from the previous phase, a critical assessment was conducted to determine the estimated costs, potential sources of funding and the technical capacity to implement them. This *capacity screening* ensured that the final set of actions included in the energy assurance plan were both realistic and implementable.

2.5 Formulation of the Implementation Plan

The next phase of the planning process entailed the distribution of the screened near-term goals, objectives and actions across Visalia departments and offices in specific lead- and support-assignments. In addition, the phase entailed matching existing and potential funding sources with the appointed goal-objective-action sets and establishing the timeframe within which each goal should be accomplished.

2.6 Integration with the Emergency Operations Plan

This phase of the planning process entailed generation of supporting roles that key members of the City's emergency operations organization should play to advance energy assurance during activation of the Emergency Operations Center. This is perhaps the most important phase in the planning process as it serves to integrate energy assurance into the established framework for the community's emergency management. Failure to complete this phase renders the energy assurance plan isolated, potentially academic and underutilized as a result.

2.7 Framing Ongoing Intergovernmental Exchanges

The final phase of the near-term planning process involved framing a mechanism for ongoing communication, information sharing and collaboration about and around energy assurance with local and state government agencies. Such a mechanism can play a critical role in strengthening the City's energy assurance plan

and expanding its resources through collaboration with adjacent communities and Tulare County's Office of Emergency Services. In addition to exchanges with other government agencies, this phase of the process provides an opportunity to consider how energy assurance exchanges with private utilities and other commercial enterprises might be pursued to mutual benefit.

2.8 Exploration of Long-Term Energy Assurance Solutions

While the near-term implementation plan addresses Visalia's energy assurance needs during the next five years, most experts agree, more robust technological solutions are needed to assure long-term community energy assurance and security. Therefore, the final phase of the Visalia LEAP initiative entailed a high-level exploration of alternative energy technology solutions that might be pursued by the City in the future as additional funding and utility partnership opportunities become available. The exploration included consideration of opportunities to deploy renewable and distributed energy technologies; and a very conceptual framework for the application of a dedicated microgrid to serve a central cluster of critical facilities at the City's administrative core.

3.0 Baseline Conditions

This section provides the results of the baseline analysis conducted during the fall of 2011 by the LEAP engineering and planning teams. The components of the analysis included: a review of relevant government policy, legal and planning frameworks (Appendix A contains a summary); the prioritization of critical community facilities and an assessment of their existing emergency electrical systems; characterization of community infrastructures systems; an evaluation of emergency energy equipment maintenance procedures and contract provisions; an energy assurance review of continuity of operations plans and related plans; and an assessment of constituent needs.

3.1 Critical Community Facilities

As previously stated, critical community facilities include public and select private facilities and communications systems supporting essential services that protect public health, the environment, safety, property and maintain the orderly function of the community.[2] The planning team identified the critical community facilities for this plan by compiling a list of all publicly-owned facilities and selected privately-owned facilities and by prioritizing each relative to these four essential services. Tables 1 and 2 contain the critical public and private facilities respectively. Appendix C contains tables detailing the emergency energy systems currently in place at these facilities.

Facilities coded with the letter-A were considered absolutely essential to maintain during an extended energy outage and therefor these facilities received the most in-depth examination and are the subject of the most detailed plan actions presented in Chapter 5 of this document. Facilities coded with the letter-B were considered critical to maintain, but in the event of the very worst-case scenario were considered less essential than those coded with the letter-A. Facilities coded with the letter-C were considered important to maintain, but not essential in the worst-case scenario.

Onsite engineering audits were conducted on the municipally-owned facilities to determine their capacity to maintain essential functions during an energy emergency. Written surveys and follow-up telephone interviews with facility managers were used to determine the same capacity for the privately-owned facilities.

3.1.1 Municipal Facilities

The most critical municipal facilities in Visalia are those that support public administration and emergency operations, police, fire and emergency medical, emergency communications, the transit system and fleet operations.

[2] Critical facilities are distinct from critical infrastructure such as energy utilities and the wastewater treatment/conservation plant which are addressed in Section 3.2.

Table 1. Publicly-Owned Critical Community Facilities

Visalia, California - Critical Community Facilities			
Functional Category & Facility	**Address**	**Priority**	**EES**
Administration & Command			
City Hall - West	707 W. Acequia	A	YES
City Hall - North	425 E. Oak Avenue	A	NO
City Hall - East	315 E. Acequia	A	YES
Emergency Operations	6921 W. Ferguson Ave.	A	NO
Public Safety			
Police - Headquarters	303 S. Johnson	A	YES
Police - Substation District 1	204 NW 3rd Street	A	YES
Police - Substation District 2	4100 S. County Center	A	YES
Police Dept. - Adobe Office	336.N. Ben Maddox Way	A	NO
Fire Administration	707 W. Acequia	A	YES
Fire Station #51	309 S. Johnson	A	YES
Fire - Station #52	2224 W. Monte Vista	A	YES
Fire - Station #53	9500 Airport Drive	A	YES
Fire - Station #54 & North Fire	440 W. Ferguson Ave.	A	YES
Fire - Station #55 / Fire Trng,	6921 W. Ferguson Ave.	A	YES
Critical Communications			
Repeater Site	115 W. Murray	A	YES
Repeater Site	1717 N. McAuliff	A	NO
Repeater Site	9000W Airport	A	NO
Repeater Site	Giddings & Mineral King	A	NO
Transportation & Fleets			
Transit Center	425 E. Oak Ave.	A	NO
Transit Maintenance Facility	525 N Cain	A	NO
Fleet Services - Diesel Fuel	336.N. Ben Maddox Way	A	NO
Facilities & Equipment			
Solid Waste - Admin, Washes, Shop	309 N. Cain St.	A	NO
Traffic Safety - Office & Shop	336.N. Ben Maddox Way	A	NO
Public Works - Admin Offices	336.N. Ben Maddox Way	A	NO
Other Key Facilities			
Visalia Municipal Airport	9501 W. Airport Drive	A	YES
SPCA	29016 Highway 99	B	NO
Convention Center	303 E. Acequia	A	YES
Distrib. Veh. Fuel Tanks	Various Locations	A	NO

3.1.1.1 Administration & Command

Administrative and command facilities include: City Hall-West, located at 707 West Acequia; City Hall-North located at 425 East Oak Avenue; City Hall-East, located at 315 East Acequia; and the Emergency Operations Center (EOC), located at 6921 West Ferguson Avenue in the training center immediately adjacent to Station #55.

As is indicated in Table 1, City Hall-West is supported by a 125 KW diesel emergency energy generator with a 500-gallon above ground storage tank and City Hall-East is supported by a 12 KW natural gas generator. City Hall-North and the EOC are not currently supported by emergency energy systems. However, one has been ordered by the City for the EOC and will consist of a 70 KW natural gas/75 KW propane generator allowing it to operate during a disruption to natural gas supplies. In addition, given its location next to Fire Station #55, the EOC has access to kitchen and sleeping facilities enabling it to operate continuously for extended periods of time.

3.1.1.2 Public Safety

Police

The Visalia Police Department consists of 143 sworn officers, seven reserve sworn officers, 64 civilian officers and 65 volunteers operating out of two geographic districts. Police headquarters is located at 303 South Johnson Street in downtown Visalia. The First District (#1) substation, serves northern Visalia, and is located at 204 Northwest 3rd Avenue. The Second District (#2) substation serves the southern part of the City and is located at 4100 South County Center Drive. A third field facility known as the Adobe Office serves as a field office and is located at 336 North Ben Maddox Way.

The headquarters facility is supported by a 400 KW diesel generator. This generator also serves Fire Station #51 and the fueling pumps for both the Police and Fire Department vehicles. The generator has a 500-gallon above ground storage tank. The two substations are supported by 150 KW diesel generators, each with a 175-gallon storage tank. The fourth facility – the Adobe Office located at the City's corporate yard does not presently have an emergency energy system.

The Visalia Police Department has indicated the need for a new headquarters facility and a 44,000-square foot facility has been designed as the future public safety building to be placed in the Civic Center complex. In addition, the Department contemplates the need for future substations to be built over the next 20-year period to serve growth areas in the City

Fire & Emergency Services

The Visalia Fire Department (VFD) consists of five paramedic engine companies, one truck company and operates out of an administration office, five fire stations, an administrative annex and a training facility. Each station is responsible for serving residential and commercial areas within a four-minute drive. The engines and trucks are staffed with three personnel, giving the VFD a daily minimum staffing of 19.

The VFD administrative offices are located in City Hall-West which, as noted above, is supported by a 125 KW diesel generator with a 500-gallon above ground storage tank. Fire Station #51 is located at 309 S. Johnson Street and is supported by the same 400 KW diesel generator supporting Police headquarters and the fuel pumps

for the emergency vehicles at this location. Fire Station #52 is located at 2224 W. Monte Vista and is supported by a 20 KW natural gas generator. Fire Station #53 is located at 9500 Airport drive and is supported by a 5 KW natural gas generator. Fire Station #54 is located at 440 W. Ferguson and is supported by a 35 KW natural gas generator. This station is also the location of the Fire Annex North that houses the Battalion Chief's office and living quarters. Fire Station #55 is supported by a 125 KW natural gas generator, however as noted above, the adjacent training center and the EOC are not currently supported by an emergency energy system. Appendix C provides additional details on each system currently in place.

Fuel supplies for public safety vehicles are located behind Police Headquarters and Fire Station #51 in an 8,000-gallon gasoline underground storage tank (UST) and a 2,000-gallon diesel UST.

Future Facility Needs: According to the Department, areas in the southwest, southeast and northeast parts of the City are in need of stations as they are not currently receiving adequate service based on desirable response times. These needs are expected to intensify as growth in these areas continues in the future.

3.1.1.3 Critical Communications

The availability and redundancy of critical communications systems to support connectivity to internal and external organizations, customers, and the public is vital to the success of agency and organizational operations. Next to the Emergency Operations Center (EOC), the most important facilities are those carrying agency-to-agency and person-to-person communications. The City maintains four (4) repeater sites enabling the use of 800 MHz radios by emergency personnel.

A repeater is an automatic radio-relay station, usually located on a tall building, or radio tower. It allows communication between two or more base, mobile or portable stations that are unable to communicate directly with each other due to distance or obstructions between them. Visalia's repeater sites are located at: 115 West Murray; 1717 N. McAuliff; 9000 West Airport Drive; and on Giddings, north of Mineral King Drive.

At the present time, the N. McAuliff, Airport Drive and Giddings facilities do not have permanent emergency energy systems in place. The fourth repeater site on West Murray does have a 10 KW natural gas-fueled emergency energy generator.

The City does own three roll-up generators that can be used to back up the three repeater sites without permanent generators. These include three Coleman Powermates, Pro-Gen 5000s (120-240 volts, 9hp Briggs & Straton engines). These generators are stored at Fire Station #55 and are maintained by the Fire Department personnel.

3.1.1.4 Transportation & Fleets

Transit Center & Transit Maintenance

The City of Visalia operates a fixed-route, demand-response, Trolley, and the Sequoia Shuttle service. Its Transit Center serves as the hub of all intermodal passenger transportation (including all forms of bus, shuttle and rail services) and is located at 425 East Oak Avenue in downtown Visalia. Its Transit Maintenance facility is located at 525 N. Cain Street, in Visalia.

The fixed-route service consists of 11 routes serving the cities of Visalia, Exeter, Farmersville, Tulare, and Goshen. Trippers are used to handle peak service needs. This schedule results in an annual total of about 100,200 vehicle revenue hours and 967,000 vehicle revenue miles. The fleet consists of thirty-one (31) fixed-route buses. The demand-response service, referred to as Dial-a-Ride, operates up to five vehicles, during the same days and hours as the fixed route service. Dial-a-Ride may operate up to a maximum of 10,900 revenue vehicle hours annually. Dial-a-Ride is available to any member of the general public, but its first priority is to provide complementary paratransit service in response to the Americans with Disabilities Act (ADA). The fleet consists of 12 demand-response vehicles. Visalia Towne Trolley provides trolley bus service in the downtown area. The fleet consists of six (6) trolley vehicles. The Sequoia Shuttle operates from Visalia to the Sequoia National Park, seven days a week, Memorial Day weekend through late September. The fleet consists of 21 shuttle vehicles, 12 of which operate on gasoline while the balance operate on diesel fuel.

Approximately 96 percent of the Visalia Transit fleet vehicles described above operates on compressed natural gas while the balance operates on diesel fuel. At the present time, neither the Transit Center, nor the Transit Maintenance facilities have emergency energy systems supporting their operations or fueling infrastructure.

Fuel for the transit fleet is dispensed at the maintenance facility from 10,000-gallon above ground storage tank.

Fleet Services

The fleet services operation is located at the City's corporate yard located at 336 N. Ben Maddox Way. The yard includes parking spaces for all fleet vehicles and heavy equipment serving all municipal departments and divisions as well as maintenance buildings and garages and administrative offices for Traffic Safety, Public Works and recycling operations.

The yard is also the central fueling depot for all City vehicles except for public safety vehicles that are fueled at 309 S. Johnson Street. At the present time, there is one 15,000 gallon split diesel-gasoline underground storage tank and one 10,000-gallon above ground diesel storage tank in the yard. However, Franzen-Hill, the City's primary fueling equipment maintenance contractor, is in the process of removing the underground tank, re-plumbing and rewiring the above ground tank, installing a new 10,000-gallon split diesel-gasoline storage tank (500-gallons each)

and four new one-product remove fuel dispensers. The fueling infrastructure at this location also provides both compressed natural gas for fleet vehicles.

At the present time, this facility does not have an emergency energy system supporting any of its operations, including its diesel and CNG fuel depots.

3.1.1.5 Public Works, Traffic Safety & Solid Waste

The City's Public Works administrative office is housed with the Traffic Safely Division's office and shop at 336 N. Ben Maddox Way. The Solid Waste Division's administration, warehouse and shop facilities are located at 309 N. Cain. As indicated above, none of the facilities or operations on Ben Maddox Way are supported by emergency energy systems. The Solid Waste division facilities are not supported by back-up energy systems either at the present time.

3.1.1.6 Other Critical Facilities

Visalia Municipal Airport - Visalia's municipal airport is located at 9501 W. Airport Drive. It is supported by a 208 KW Cummins diesel generator that provides essential power to lighting and communications equipment. The generator is supported by a 308-gallon above ground diesel storage tank.

Animal Control & Rescue - The City's animal shelter is located at 29016 Highway 99. Its operation is contracted out to the Society for the Prevention of Cruelty to Animals (SPCA) and is considered critical to the care of pets during an extended energy emergency. At the present time, the shelter does not currently have an emergency energy system.

Visalia Convention Center - The City of Visalia owns and operates a 114,000 square foot convention center located at 303 E Acequia. The Center is considered critical given its potential to serve as a mass shelter during a major disaster. Officials from the Tulare County Office of Emergency Services and the Kaweah Delta Medical Center have explored this potential use with managers at the Convention Center. However, there are no current plans in place to use the Center for this purpose.

The Convention Center does participate in a load shedding program with Southern California Edison and it does have a 12 KW emergency diesel generator with a 100-gallon above ground storage tank; however, it is only sufficient to operate emergency lighting, exit signs and the elevators. If this facility were to serve as a shelter, additional onsite generation and fuel storage equipment would be needed.

Distributed Vehicle Fuel Tanks – In addition to the fuel storage facilities described above, the City has installed several gasoline and diesel above ground storage tanks at strategic locations across the city. These include the following:

- Fire Station #52 — 500-gallon diesel tank
- Fire Station #54 — 550-gallon diesel tank
- Fire Station #55 — 500-gallon diesel tank
- Airport — 1,000-gallon gasoline tank
  500-gallon diesel tank

- Wastewater Treatment Plant — 1,000-gallon road diesel tank
  1,000-gallon off-road/red/tractor diesel tank

These tanks are not supported by emergency energy systems. However, the tanks can dispense fuel with a mechanical pump so no emergency generators are necessary.

3.1.2 Select Privately-Owned Facilities

Although this energy assurance plan is focused principally on municipal facilities, there are a number of privately-owned facilities that play critical roles in preserving life and the well-being of community residents during any kind of emergency. These include the Kaweah Delta Medical Center and associated properties; the private ambulance company facilities; the community's senior and special care facilities; and facilities designated as emergency shelters by the American Red Cross and the Tulare County Office of Emergency Services. Table 2 provides the location of these facilities and indicates whether the facility has an emergency energy system (EES).

Table 2. Select Privately-Owned Critical Facilities

Select Non-Municipal Critical Community Facilities			
Functional Category & Facility	**Address**	**Priority**	**EES**
Medical & Special Care Centers			
Kaweah Delta Health Care Center Mineral King Wing	400 W. Mineral King	A	YES
Kaweah Delta Health Care Center Acequia Wing	400 W. Mineral King	A	YES
Information Services Center	215 S. Willis	A	YES
Community Health Center	1633 S. Court	A	YES
Kaweah Delta Rehab Hospital	840 S. Akers	A	YES
Kaweah Delta Mental Health	1100 S. Akers	A	YES
Emergency Medical Services			
American Ambulance Service	2017 East Noble	A	NO
AMR Ambulance Service	2412 East Valley Oakes	A	NO
Senior & Assisted Care Facilities			
Prestige Senior Living	3120 W. Caldwell	C	NO
Casa Grande Nursing Care	347 E. Walnut Ave	C	UNK
Evergreen Assisted Living	3030 W. Caldwell	C	NO
Parks Assisted Living	3939 W. Walnut	C	UNK
Delta Nursing & Rehab. Center	514 Bridge Street	C	YES
Kaweah Manor Conv. Hospital	3900 W. Tulare	C	YES
Park Visalia	3939 W. Walnut	C	YES
Linwood Gardens Care Center	4444 W. Meadow	C	YES
Visalia Nursing & Rehab Center	1925 E. Houston	C	YES
Walnut Park	4119 W. Walnut	C	UNK
TLC Assisted Living for Seniors	2530 S. Ben Maddox	C	UNK
Westgage Gardens Conv. Center	4525 W. Tulare	C	YES
American Red Cross Shelters			
Community of Christ Church	2127 S. Giddings	A	NO
Christian Faith Fellowship	506 N. Court St.	A	NO
Gateway Church of Christ	1100 S. Sowell	A	NO
El Diamante High School	5100 W. Whitendale St.	A	NO
Liberty Elementary School	11535 Ave 264	A	NO
Highland Elementary School	701 N. Stevenson	A	NO
Crowley Elementary School	214 E. Ferguson Ave.	A	NO
Other Potential Shelters			
College of the Sequoias (COS) Porter Field House	915 South Mooney Boulevard	B	NO
COS - Moro Field House	915 South Mooney	B	NO
Anthony Community Center	345 N. Jacob	B	NO
Manual Hernandez - Gym	247 W. Ferguson Ave	B	NO
Wittman - Gym (Community Center)	317 Pearl St.	B	NO
Rec Center (PAL) & Former Caltrans	701 E. Race Avenue	B	NO
Whitendale Park & Community Center	630 W. Beech Avenue	B	NO
Wittman Village Park & Community	317 Pearl St.	B	NO
Manuel Hernandez Community Center	247 W. Ferguson Avenue	B	NO
Fairview Community Center	2645 N. Conyer Street	B	NO

3.1.2.1 Medical & Special Care Centers

The Kaweah Delta Health Care District (KDHCD) is the primary provider of medical services in Visalia. Most services are provided at the Kaweah Delta Medical Center, located downtown. KDHCD recently completed the first phase of a planned expansion of the downtown campus, adding a six-story patient care wing, and a new administration building. Significant additional expansion is planned over the next 20 years. KDHCD also has a West Campus, at West Cypress Avenue and Akers Street, where the district has Rehabilitation and Mental Health facilities, a small surgery center, and a "Lifestyle Center" including physical therapy, sports injury rehabilitation, and a fitness center.

The West Campus is anchored by the affiliated Sequoia Regional Cancer Center. The South Campus, located on Court Street between Tulare and Walnut avenues, provides long-term and urgent care. The District also operates a small health clinic in Exeter and a dialysis center in Porterville. It owns some 100 acres of undeveloped land in the Southeast Area Specific Plan (SEASP) area, which it anticipates using for medical facilities of some kind in the future.

All of these facilities have exemplary emergency energy systems in place. The 266,097-square foot Mineral King Wing and Acequia Wing of the medical center is powered by a 3.5 Megawatt natural gas combustion turbine generator. In addition to this co-generation plant, the Medical Center has two additional diesel-fueled, 800 KW generator sets with a 7000 gallon onsite fuel capacity enabling the Center to operate for 72 continuous hours without refueling. The Acequia Wing of the Medical Center has a 1000 KW generator set with a 4,000-gallon tank enabling 72 continuous hours of operation and a natural gas/fuel oil boiler meeting all of the institutional hot water needs for the same period of operation.

The Medical Center's information systems are housed at 215 South Willis, a block away from the central facility and is supported by a 4000 KW diesel emergency energy generator set with a 1,773-gallon fuel tank enabling 72-hours of continuous operation. The Community Health Center, located at 1633 South Court Street, is supported by a 248 KW diesel emergency energy generator with a 500-gallon fuel tank enabling 72-hours of continuous operation.

The Kaweah Delta Rehabilitation Hospital, located at 840 South Akers, is supported by a 600 KW emergency energy generator set with a 600-gallon tank enabling 72-hours of continuous operation. And, the Kaweah Delta Mental Health Center, located at 1100 South Akers, is supported by a 350 KW diesel emergency energy generator set with a 350-gallon tank enabling the required 72-hours of operation.

Quinn Caterpillar is the maintenance contractor for the systems at all of these facilities and Valley Pacific is the fuel contractor for all of these systems. Advance purchase agreements are in place to secure emergency services from both the maintenance and the fuel contractors during an emergency.

3.1.2.2 EMS Company Facilities

The City is served by two private ambulance companies, both based in Visalia. The first is the American Ambulance of Visalia located at 2017 East Noble, operating nine ambulances. The second is the AMR company located at 2412 East Valley Oakes Drive, operating 14 ambulances. Neither of these companies have emergency energy systems onsite at these locations.

AMR fuels their vehicles at various gas stations in Visalia but was unable to confirm whether the pumps at these stations were supported by emergency energy systems. American Ambulance fuels their vehicles at the Commercial Fueling Network's Valley Pacific Petroleum – Chevron Station #5897 at 202 North Plaza Drive. However like AMR, the company was unable to confirm whether the pumps at that station are supported by emergency energy systems.

3.1.2.3 Senior & Assisted Care Facilities

There are 12-senior and assisted care facilities in Visalia, as are indicated in Table 2. Six of these facilities have either a diesel- or natural gas-fueled emergency energy generator onsite. However, it is unclear whether the diesel fuel capacity of the generators is sufficient to maintain 72-hours of continuous operation without refueling. Appendix C provides the details on each of the emergency energy systems currently in place.

During the onsite interviews conducted with facility managers, the energy assurance planning team made inquiries about contingency plans for evacuation of residents to shelters during the extended loss of conventional energy utilities. With the exception of the two largest senior homes on the list, the respondents indicated that they had plans to take their residents to one or more of the facilities in Visalia designated as emergency shelters by the American Red Cross. The two largest senior care facilities have plans to evacuate their residents to other facilities owned by the companies outside of the emergency area.

3.1.2.4 American Red Cross Shelters

According to the 2011 Draft Tulare County Evacuation Plan, "Shelters, hosted in schools and other appropriate structures, will be established in accordance with the Tulare County Emergency Operations Plan and Care And Shelter Operations Plan (under development), under the direction of the Tulare County Health Human Services Agency (HHSA)". HHSA seeks support from the American Red Cross (ARC) and the Salvation Army to establish and manage the shelters, and specifically to coordinate personnel, equipment, supplies, food and water as well as to manage shelters for the medically fragile.

Table 2 lists seven facilities that have been designated as shelters by the American Red Cross.[3] Interviews and follow-up surveys with the facility managers determined that none of these buildings are currently equipped with emergency energy systems

[3] 2010 Shelters Survey, American Red Cross

and that the managers were unaware that their facilities had been designated as shelters. However, the Tulare County HHSA is currently working with the ARC to revise the shelter plan element which may address this problem in the future.

3.1.2.5 Other Potential Shelters

Ten other facilities in the City of Visalia have been considered potential shelters. These include the Porter and Moro field houses at the College of the Sequoias (COS); the Anthony, Fairview, Whitendale and Wittman Community Centers; the Manual Hernandez Gym; and the PAL recreation center. None of these facilities has been used for this purpose in the past and none are equipped with emergency energy systems at the present time.

3.2 Critical Infrastructure

Visalia's critical infrastructure consists of: the electricity and natural gas utilities; compressed natural gas and petroleum storage and fueling facilities; the potable water supply system; and the City's wastewater, stormwater and solid waste management systems.

3.2.1 Energy Supply

Four private companies supply the City with energy resources. The Southern California Edison (SCE) Company provides electrical service. SEMPRA Energy Utilities/Southern California Gas Company (SoCalGas) provides natural gas. Pinnacle CNG Systems provides compressed natural gas. Don Rose Oil and Valley Pacific provide petroleum products (gasoline and diesel).

As a result of stated homeland security and confidential business concerns of the electricity and natural gas utilities, information describing the associated energy infrastructure is very limited.

3.2.1.1 Electricity

Southern California Edison provides the supply of electricity to municipal, institutional, commercial and residential customers in the City of Visalia. According to the California Energy Commission, 53.4% of the electricity generated in the state is generated at natural gas-fueled generation facilities. The balance of that amount is generated at nuclear (14.6%) or hydro-electric plants (14.6%), through renewable energy resources (14.6%) or coal fired plants (1.7%). Natural gas also fuels the generation of the largest amount of electricity imported into the State.[4]

The utility has indicated that, in the event of a disruption to natural gas supplies, it would turn to other available sources of generation to address the loss, however, it isn't clear to them that other sources would be adequate to replace the loss of natural gas-fired generation.

[4] 2010 Total System Power in Gigawatt Hours, California Energy Commission website, http://energyalmanac.ca.gov/electricity/total_system_power.html

The energy assurance planning team was unable to obtain requested geographic and technical descriptions of electrical circuits and substations serving Visalia's critical community facilities and infrastructure. Similarly, the planners were not able to obtain information pertaining to system vulnerabilities or reliability or the utility's continuity of operations/emergency operations plan.

In response to the planning team's other energy assurance inquiries, the utility did provide some information regarding: investments in programs and alternative energy systems to minimize adverse impacts of an emergency energy shortage; cyber and physical risks; and guidelines for commercial and residential customers to follow during an energy outage. The utility's verbatim input on these subjects is provided below.

Utility Investment in End-Use Efficiency & Alternative Energy

"SCE works with its local government customers on energy savings and administers programs under the jurisdiction of the California Public Utilities Commission (CPUC) to bring energy efficiency to residential and business customers. These include the Summer Discount Plan, which enables SCE to remotely turn off participating customers' air conditioners up to an agreed-upon number of times during the season. SCE continues to study technologies that may, consistent with current laws and regulations, provide for the siting of power resources closer to load centers. In times of electric system emergencies, SCE would execute directions from the California Independent System Operator (CAISO) regarding load shedding…".

Cyber & Physical Risks

"SCE has in place a vigorous process to protect its systems against cyber risks. Physical risks to its facilities vary with the category or nature of the facility in question. It is inherent and unavoidable that the major components of an electric transmission and distribution grid are open and visible and, at least to a certain extent, vulnerable. Few components of that system, however, are of such individual consequence that the loss of any one of them would result in a widespread, long-term disruption of service the initial effects of which could not at least be minimized. The electric grid is designed with redundancy and alternatives in mind."

Guidelines for Customers During an Energy Outage

"SCE has in place a process for informing customers of planned outages in advance. SCE makes available on its web site information regarding unplanned outages and will shortly supplement that communications channel with an email notification system. SCE has an Outage Communication Team that works specifically with assigned business and government customers to communicate around planned and unplanned outage events. The team also assists with coordination and scheduling issues for planned outage events. The SCE.com outage center now features an outage map that allows customers to view some strategic and key information about outages [that] impact them."
http://www.sce.com/PowerOutageCenter/poweroutagecenter.htm?ecid=V112OUT001.

Southern California Edison 24-hour Emergency Contact Information: (800) 611-1911

3.2.1.2 Natural Gas

Southern California Gas Company (SoCalGas) provides natural gas to the City of Visalia through a network of transmission lines, high-pressure distribution supply lines and medium pressure distribution pipelines. Natural gas enters the city through a city gate station located approximately one mile east of the city limits. Approximately 39 miles of high pressure supply lines loop through the city carrying natural gas at pressures of 125 to 400 pounds-per-square-inch (PSI).[5] The primary loop/backbone is a system of 10" and 12" supply lines that runs in a rectangular alignment roughly within the city boundaries.

The supply line system feeds a local medium pressure network that is comprised of approximately 480 miles of 2 to 6 inch steel and plastic pipelines. The system operates between 30 and 60 psig and is supplied by 18 regulator stations throughout the city. The majority of the local pipeline systems providing service to retail and commercial customers are looped and fed by several regulator stations. There are also a number of commercial and industrial customers that receive gas from high-pressure supply lines including the head-works at the wastewater treatment plant and the Pinnacle CNG Production facility.

The natural gas supply system serving the City of Visalia is considered robust with disruptions, under normal operating conditions, extremely rare. This is due in large part to the considerable number of multiple feeds and interconnections in the system that ensure the availability of multiple paths for the delivery of natural gas supplies to customers. However, So Cal Gas also operates a number of disruption prevention and maintenance programs to avoid system damage and loss of services. These include participation in the Pipeline Integrity and Dig Alert Programs, active pressure monitoring systems, as well as the preventative maintenance programs. Maintenance programs include:

- A Cathodic Protection (CP) System – The system protects the underground steel piping systems from corrosion. The CP system is inspected every two months to one year for proper operation.

- Leak and pipeline patrol surveys – These are surveys of all high and medium pressure pipelines to detect leaks and to observe surface conditions for construction activity, earth movement, erosion and other factors safety and operation of the pipelines.

[5] In natural gas pipeline systems, the city gate station facility typically is owned and operated by a municipality or local gas utility company and interconnects the long-distance interstate pipeline with a local distribution network. City gate stations are composed of a complex array of valves, pipes, and pressure reduction devices designed to meter the gas and reduce its pressure so that it can be delivered safely to customers through distribution networks consisting of local gas mains, smaller-diameter service lines, and individual customer meters.

- Surveys of Above Ground Pipelines – These include residential and commercial surveys of all above ground piping for corrosion.

- Regulator Stations Inspections – All regulators are inspected, tested, and maintained annually for proper operation.

- Critical Valve Inspections – All valves deemed critical to system operation or emergency isolation are inspected, operated and maintained annually for proper operation.

In the event of a major natural gas system emergency in response to an earthquake, terrorism or flood, So Cal Gas will activate the Gas Emergency Center (GEC) consisting of a team of trained engineering, operations, field and support personnel equipped to respond to any incident. The occurrence of a major emergency may also activate the So Cal Gas Emergency Operations Center (EOC) which would be staffed with an emergency liaison position to assure coordination of utility response efforts with the City of Visalia.

SoCalGas 24-hour Emergency Contact Information:
(800) 427-2200 Option #1

3.2.1.3 Compressed Natural Gas

Pinnacle CNG Systems of Midland, Texas is under a contract with the City to operate two CNG facilities located at 2425 W Houston Avenue, adjacent to the Visalia Unified School District (VUSD) fleet yard, and the CNG facility at 419 N Cain Street, adjacent to the Visalia corporate yard and Transit Maintenance Facility. The VUSD owns the Houston Avenue facilities and the City owns the Cain facility.

The Houston Avenue facility's pipeline pressure is 300 pounds per-square inch (PSI), its total horsepower is 150 with a 4,500 PSI maximum. Compressor capacity is 300 standard cubic feet per-minute (SCFM). There are 36 dispensers – four fast-fill hoses, two at 3,000 PSI and 1,400 SCFM, and two at 3,600 PSI and 1,400 SCFM, and 32 time-fill hoses. Storage capacity includes one 47 cubic foot vessel at 4,000 PSI, 13,000 standard cubic foot (SCF) and the back-up compressor capacity is a 5" Pinnacle hydraulic compressor at 150 SCFM. This facility serves fleet vehicles for the Visalia Unified School District school buses, City transit buses, Visalia City Transit, City paratransit vehicles, and City refuse vehicles.

The Cain Street facility's pipeline pressure is 155 PSI, its total horsepower is 650 with a 4,500 PSI maximum. Compressor capacity is 2,000 SCFM. There are 55 dispensers – four at 3,600 PSI, 1 at 3,000/3,600 PSI and 50 in time-fill hoses. Storage capacity is 1,000 SCF and the back-up compressor capacity is at 750 SCFM. The facility serves fleet vehicles for the Visalia Unified School District, City of Visalia, Visalia Transit and Visalia Waste.

Neither of these two CNG facilities has an onsite emergency energy generator to maintain operations during the loss of the electric utility grid.

Pinnacle CNG Systems 24-hour Emergency Contact Information:
(**432) 694-0202**
Alternate Number = (432) 694-0202

3.2.1.4 Petroleum

Don Rose Oil Company is the primary provider of petroleum products (gasoline, diesel and lubrication oils) to the City, serving both transportation and emergency generation fuel needs. They are located at 205 N. Ben Maddox Way in Visalia. The specific facilities and infrastructure systems serviced include those associated with: administration and command; public safety; solid waste; the transit maintenance facility; fleet services; the Visalia municipal airport; and the water conservation plant (WCP). The company does not maintain the City's fuel storage or fueling systems.

Fuel supplies supporting the City of Visalia originate at two locations. The first is the Kinder-Morgan depot located at 2149 South Maple Street in Fresno, California. The second is the Visalia fuel depot located at 205 N. Ben Maddox Way. Neither of the fuel depots is supported by onsite emergency energy systems. However, the Kinder-Morgan facility is able to obtain sufficient energy generation to run the fueling infrastructure at the plant through a contract with Quinn Caterpillar with Offices in Fresno and Tulare, although it takes a considerable amount of time to set-up and activate the large skid-mounted generation equipment.

Neither of the two companies have formal contingency plans in place to respond to an energy emergency. Don Rose Oil does not have an alternative delivery route established for delivery of petroleum products to Visalia, nor does it have a training program for its drivers relating to the delivery of fuels during an emergency. Don Rose Oil does have a formal contract in place with the City of Visalia, however it only specifies the products to be delivered and the call response time.

One other company providing fuels to critical facilities in the community is the Valley Pacific Petroleum Company; located at 1633 E. Mineral King in Visalia. The company provides petroleum products to the Kaweah Delta Medical Facility complex in support of their emergency diesel generators.

Don Rose 24-hour Emergency Contact Information:
Bob Moore (559) 733-4717

Kinder Morgan 24-hour Emergency Contact Information:
(209) 237-4612

Valley Pacific Petroleum 24-hour Emergency Contact Information:
Day (559) 732-8381 / Night (800) 266-3782

3.2.2 Potable Water Supply

The following overview contains information derived from the City's General Plan Update documents, with additional information secured through surveys and interviews with CalWater officials. It provides a description of the City's potable water supply source and local distribution system and the emergency energy systems supporting that system.

The primary source of potable drinking water in Visalia is groundwater, rather than rivers, lakes and reservoirs. The San Joaquin Groundwater Basin encompasses all of the Valley counties between Sacramento County and Kern County and also includes portions of Sacramento County and El Dorado County at the north end and a portion of Kern County at the south end. The San Joaquin Basin is divided into two hydrologic regions. The southern region is called the Tulare Lake Hydrologic Region and the northern region is called the San Joaquin River Hydrologic Region.

Visalia is within the Kaweah Groundwater Sub-basin within the Tulare Lake Hydrologic Region. The total surface area of the Kaweah Sub-basin is 446,000 acres or 696 square miles. The Sub-basin lies between the Kings Groundwater Sub-basin on the north, the Tule Sub-basin on the south, crystalline bedrock of the Sierra Nevada foothills on the east, and the Kings River Conservation District on the west. It generally comprises lands in the Kaweah Delta Water Conservation District (KDWCD). Major rivers and streams in the sub-basin include the Kaweah and St. Johns Rivers. Both rivers serve to recharge groundwater in the area.

Groundwater flow is generally southwestward. Small groundwater depressions occurred to the north and south of Visalia and at the northwest corner of the sub-basin, and a groundwater mound was present in the central western sub-basin during 1999. Based on current and historical groundwater elevation maps, horizontal groundwater barriers do not appear to exist in the sub-basin.[6]

The groundwater supply is primarily distributed by California Water Service Company, (CalWater). Cal Water's Visalia District consists of 74 supply wells that extract groundwater from the Kaweah Groundwater Sub-basin and 519 miles of main pipeline, ranging in size from two-inch diameter to 12-inch diameter. The CalWater system includes two elevated 300,000 gallon storage tanks, an ion exchange treatment plant, four granular activated carbon filter plants and one nitrate blending facility. These facilities are in place to provide CalWater's customers with safe drinking water of a quality and quantity to meet state and federal drinking water standards.

The system serves an estimated population of 136,270 which could grow to 238,980 by 2030 according to the adopted "California Water Service Company, 2007 Urban Water Management Plan - Visalia District." (UWMP) CalWater estimates

[6] General Plan Update, Public Facilities & Services Existing Condition Report, 2011.

it is serving 39,205 residential, commercial, and industrial customers in 2010, with an expected growth to 61,404 customers by 2030.

According to the UWMP, CalWater has an estimated capacity to pump 105,668 acre-feet per year in 2010, all from groundwater. This maximum pumping capacity is expected to remain relatively constant through 2030. The UWMP indicates the pumping capacity at this level will continue to keep up with the demand requirements through 2030 and beyond. The water volume projected to be pumped based on recent estimates of demand is 37,220 acre-feet per year for 2010. CalWater's recent estimates also indicate a relatively uniform growth rate of 57,364 acre-feet per year by the year 2030.

At the present time, 24 of Cal Water's 74-groundwater wells are equipped with emergency energy generators. Table 3 below identifies the locations of these wells and the aforementioned storage facilities.

Table 3. Potable Water Supply Facilities & Emergency Energy Systems

Potable Water Supply Facilities			
Facility	**Address**	**Priority**	**EES**
CalWater 73 Wells / 24 with Generators	Numerous Locations	A	
Water Pumping Station 7-01	Acequia Ave & Bradley St.	A	YES
Water Pumping Station 14-01	604 Rinaldi Ave	A	YES
Water Pumping Station 26-01	Noble Ave & Country Center Drive	B	YES
Water Pumping Station 27-01	723 Cambridge Ave	B	YES
Water Pumping Station 38-01	Mill Creek Ditch & Akers	B	YES
Water Pumping Station 41-01	2329 Dorthea Ave	B	YES
Water Pumping Station 42-01	15183 El Rancho Ave	B	YES
Water Pumping Station 45-01	2728 Jacob	B	YES
Water Pumping Station 47-01	3636 Sunnyside Court	B	YES
Water Pumping Station 48-01	2039 Vine Ave	B	YES
Water Pumping Station 49-01	2209 Vassar Ave	B	YES
Water Pumping Station 50-01	1749 Maple	B	YES
Water Pumping Station 55-02	2825 Packwood	A	YES
Water Pumping Station 56-01	516 Buena Vista	B	YES
Water Pumping Station 58-01	2214 Howard Ave	B	YES
Water Pumping Station 60-01	Road 124 & Ave 264	B	YES
Water Pumping Station 63-01	12639 Ave 320	B	YES
Water Pumping Station 77-01	Hangars Way & Airport Dr.	A	YES
Water Pumping Station 83-01	1601 Monte Verde Ave	A	YES
Water Pumping Station 92-01	4140 Four Creeks Court	A	YES
Water Pumping Station 93-01	1912 Lindwood Ave	A	YES
Water Pumping Station 94-01	2728 W. Riggin Ave	A	YES
Water Pumping Station 95-01	7385 W. Riggin Ave	A	YES
Water Pumping Station 96-01	9630 W. Riggin Ave	A	YES
Storage Station 12A Tank T-2	9630 W. Riggin Ave	C	YES
Storage Tank 59A Tank T-3	7385 W. Riggin Ave	C	YES
Storage Tank 95 Tank T-1	7385 W. Riggin Ave	A	YES
Storage Tank 96 Tank T-1	9630 W. Riggin Ave	A	YES

In January of 2012, CalWater conducted hydraulic modeling to determine if these 24-standby generators would be sufficient to maintain mission-critical pressure necessary to operate fire hydrants during an energy outage. The results of the modeling suggest that existing generators would be sufficient for that purpose.

3.2.3 Wastewater & Stormwater Management

Wastewater Management

The City owns and operates a wastewater treatment facility located west of Highway 99 and south of Highway 198. The facility, known as the Water Conservation Plant (WCP), has a permitted capacity established by the Regional Water Quality Control Board of 20 million-gallons-per-day (MGD). As of the beginning of 2010, the plant operates at an average daily flow of 13 MGD with effluent treated to a secondary treatment level, disinfected then discharged into Mill Creek and/or stored in basins owned by the City. The City has plans to discontinue the discharge to Mill Creek and divert the plant discharge to City owned Basin No. 4. Basin 4 is a 160-acre settling basin located several miles west of the WCP.

The WCP receives its wastewater through 393 miles of sewer lines within the City of Visalia. The wastewater flows by gravity through this network of lines and is assisted by pumps at 13 lift stations. At the present time, none of these lift stations are supported by emergency energy systems. Appendix D contains a combined list of the sanitary sewer and stormwater lift station locations in the City.

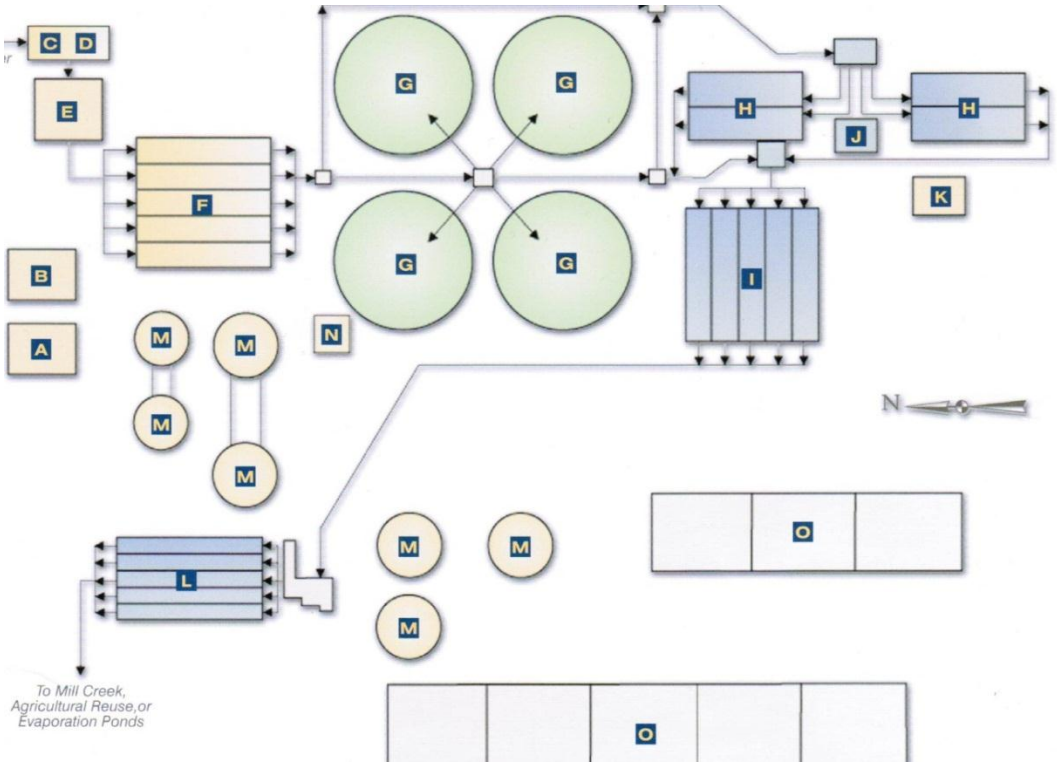

Figure 2. Water Conservation Plant Processes

Figure 2 provides a schematic of the treatment processes these flows go through before effluent is discharged to the Mill Creek or stored in Basin 4. Upon arrival at the plant, raw wastewater is measured and then screened to remove rags, plastic bags, inorganic materials and other substances that could clog or damage pipes,

valves and pumps (Schematic sites C, D & E). At this point, the raw wastewater is pumped up to the top of the "Headworks" where it then flows through the rest of the plant by gravity.

Given the critical role these pumps play in the entire treatment process, they are backed-up by two diesel generators (550 and 900 KW) and two 1,000 gallon storage tanks. They are designed to automatically activate at the loss of grid-provided electricity. Appendix C provides the details on the generator equipment. The generators are exercised and tested once a week for 15-minutes without a load and once a year with a load. Fuel levels are monitored weekly and fuel quality is tested and treated every six-months.

From the top of the headworks the wastewater flows down through sedimentation basins where floatable materials are removed and pumped to digesters (F) and then proceed through trickling filters that reduce organic content (G). The flows then move to aeration basins where oxygen is introduced to maintain a healthy population of micro-organisms (H) and then flows to secondary sedimentation basins where further biological particles are removed (I).

At the "Blower Building" (J), one 620-horsepower Waukesha engine operating on methane or natural gas turns a centrifugal blower unit that delivers oxygen to the aeration basins. Simultaneously, a second 620-horsepower engine runs a 500 KW electric generator providing electricity to plant equipment. This second unit provides 63% of the plant's current electrical demand.

Gravity belt thickeners (K) transform solids into sludge that are sent to drying beds (O) as the effluent is sent to chlorine contact basins (L) where the chemical kills organisms remaining in the water before discharge to Mill Creek or Basin 4. Organic materials removed earlier in the process are further decomposed in anaerobic digesters (M) at elevated temperatures where the absence of oxygen allows bacteria to flourish and digest the solids which produces methane. Hydrogen sulfide concentrations in the methane gas contained in the digester are controlled by the introduction of ferric chloride (N).

At the present time, WCP management is engaged in planning an $80M to $100M upgrade of the existing facilities. The upgraded facility will feature the addition of renewable energy resources including three new 250 KW methane-fueled micro-turbines and a 1 MW solar PV array. To accommodate new processes at the plant, the electrical system and substations will be upgraded and a new substation added.

Future plans also include the installation of quick-release generator receptacles at 11 of the 13 lift stations and two permanent liquid propane gas generators at two with tank capacity to allow 36 hours of continuous operation. The two lift stations to receive permanent generators are the airport and golf stations. Lift stations to receive quick-release generator receptacles are at the following locations:

1. Mooney Blvd. and Sunnyside
2. Mooney Blvd. and 272

3. Shirk and 198
4. St. Johns and Modoc
5. Comstock and Douglas
6. Hillsdale and Preston
7. Mary and County Center
8. Evergreen and Linda Vista
9. Demaree and Pryor
10. Mill Creek and Main
11. Border Links and Ranch

Stormwater Management

Figure 3 depicts the stormwater system in Visalia. Some of the storm waters are channeled through several waterways in a southwesterly direction toward a number of large basins on the west side of the City. Other stormwater flows discharge into retention basins without ever entering a waterway.

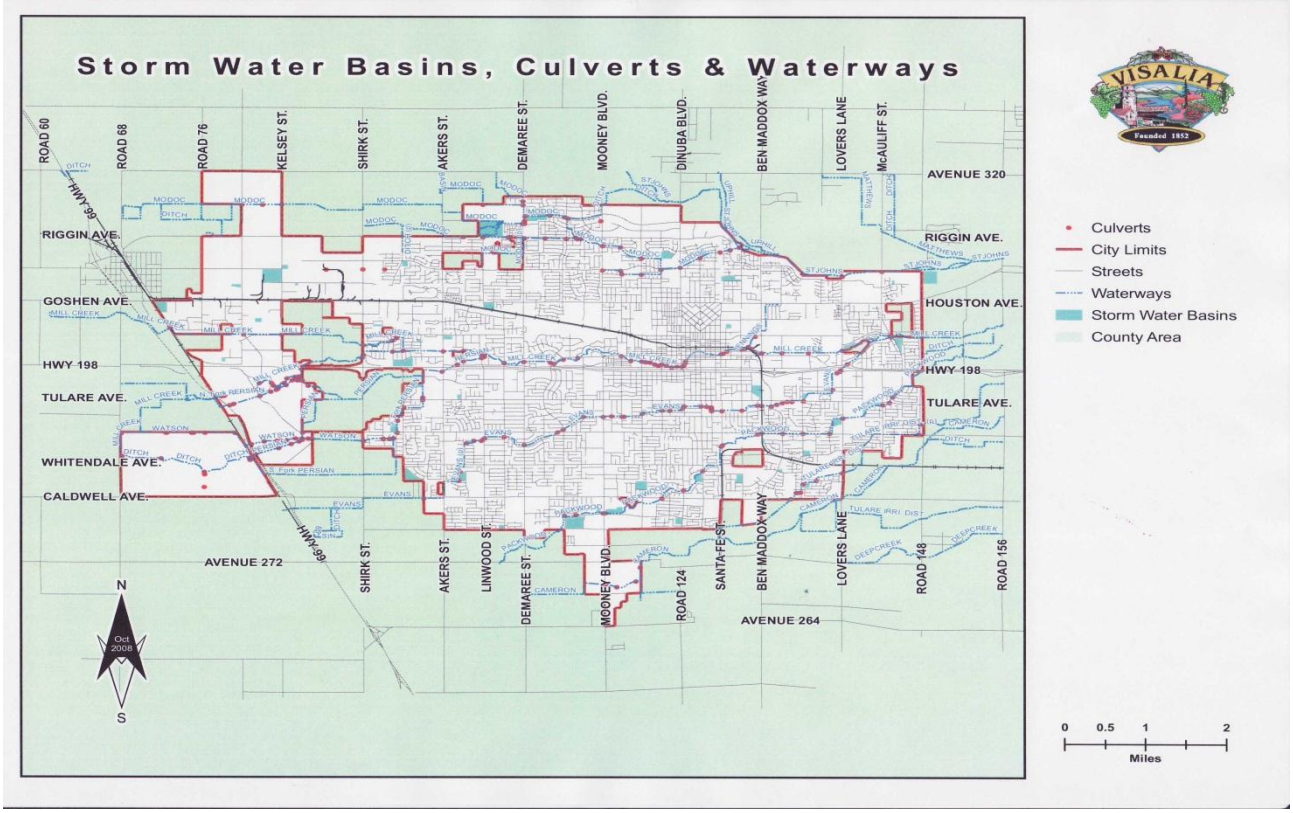

Figure 3. Visalia Storm Drainage System

The 1994 Stormwater Master Plan established seven tributary areas for the waterways in addition to the Goshen Drain. The main drains in the community include" the St Johns River, Modoc Ditch, Goshen Drain, Mill Creek, Evans Ditch, Packwood Creek, Cameron Creek, and Persian/Watson ditches. The system takes

street and lot drainage into a network of storm drain pipelines that send the flows by gravity to the main drain system.

Thirty-three (33) pumps at lift stations augment these flows where necessary. Again, Appendix D contains a combined list of the sanitary sewer and stormwater lift station locations in the City. Detention basins and several retention basins slow and divert storm water resulting from larger storms allowing the creeks and ditches to convey storm water both during and after a storm. This permits the existing creek and ditch system to handle larger storms than would otherwise be the case.

At the present time, none of the 33 lift stations are equipped with emergency energy systems. However, WCP officials indicate that they intend to purchase two 200 KW mobile generators for use where needed during an energy emergency.

3.2.4 Solid Waste Management

The Tulare County Resource Management Agency manages solid waste disposal in the region. The agency operates a number of waste reduction programs including those focused on household hazardous waste disposal, electronics recycling, tire recovery, yard waste recycling, metal recycling and appliance recovery programs. The county landfills approximately 300,000 tons of waste per year, which is equivalent to about 5 pounds per person per day or one ton per county resident per year. The county operates three landfills: the Visalia Landfill, northwest of Visalia; the Woodville Landfill, southeast of Tulare; and the Teapot Dome Landfill, southwest of Porterville.

Sunset Waste Systems provides recyclable material processing services (not green waste) to the City. The City provides all of the collection services for residential customers and for many of the commercial customers. Various private haulers provide refuse, recycling, C&D and green waste services to the remainder of the commercial accounts, along with providing those services for construction sites and other cleanup jobs.

The City's refuse collection fleet is parked, maintained and fueled at the Fleet Operations facility located at 336.N. Ben Maddox Way. Sixty of the City's 70 refuse trucks are fueled with CNG and the balance are fueled with diesel. Neither the CNG- nor the diesel-fueling facilities have emergency energy systems in place at the present time.

3.3 Equipment Maintenance

This section of the plan provides information on the generator and fuel equipment maintenance providers.

3.3.1 Generator Equipment

Two equipment maintenance companies maintain generator equipment at Visalia's critical facilities – Cummins West and Quinn Power Systems.

Cummins West, located at: 5333 N. Cornelia Avenue in Fresno, California, provides semi-annual inspections and maintenance as well as emergency repairs for most of the City's generator equipment (engines, generators, switch gears, and dedicated electrical panels). The company also provides portable generators for temporary connections. The company services equipment at the following critical facilities:

Police Headquarters
Fire Station #51
Police Sub-Station District 1
Police Sub-Station District 2
Delta Nursing & Rehab Center
Kaweah Manor Conv. Hospital
Linwood Gardens Care Center
Visalia Nursing & Rehab Center
Westgate Gardens Conv. Center
All Water Pumping Stations
Visalia Municipal Airport

The company services all makes and models of industrial engines, control panels and transfer switches/switch gears. The company's existing contract with the City does ensure top priority technical assistance/service calls in case of equipment failure during an emergency. However, the company's contract with the City does not contain an advance purchase agreement for services calls during an emergency.

Visalia Account Manager:
Brian Bennett
559-274-4400
brian.b.bennett@cummins.com

24-Hour Emergency Contact:
Call 559-274-4400 or 800-595-5050

Quinn Power Systems, located at 1006 Rose Hills, City of Industry, California provides annual routine inspections, testing, maintenance and emergency repairs of emergency equipment at the following critical facilities:

City Hall-West
Water Conservation Plant
Fire Station #52
Fire Station #53
Fire Station #54

The company also services all makes and models of industrial engines, control panels and transfer switches/switch gears. The company's existing contract with the City does ensure top priority technical assistance/service calls in case of equipment

failure during an emergency. Additionally, the contract does have an advance purchase agreement for that service.

Visalia Account Manager:
Jim Kennedy
559-891-5402
jkennedy@quinnpower.com

24-Hour Emergency Contact:
559-896-4040

3.3.2 Fuel Equipment

Fuel storage and fueling systems construction, maintenance and fuel testing is provided by the Frazen-Hill Corporation located at: 1100 N "J" St., in Tulare, California. The company services fuel storage and fueling equipment at the following critical facilities:

Police Headquarters
Fire Station #51 (co-located with Police Headquarters)
Fire Station #54
Police Sub-Station District 1
Police Sub-Station District 2
Police Adobe Office
Transit Maintenance Facility
Fleet Services Facility
Traffic Safety Office & Shop
Public Works – Office & Module
Visalia Municipal Airport
Water Conservation Plant

The company conducts equipment inspections and maintenance at these facilities on a monthly, biannual, annual and triennial basis. The company does not have a written contract with the City for services. However, Frazen-Hill does have a written contract in place for the repair of the fuel storage facilities at the City's corporate yard. This project entails four components:

1. Installation of new electrical and plumbing to an existing 10,000 gallon above ground tank (AGT);
2. Installation one new 10,000 gallon split compartment AGT;
3. Installation of four new one-product remote fuel dispensers;
4. Removal of one 15,000 gallon split underground tank (UGT).

The project does not entail the installation of a standby energy generator for the two tanks.

Visalia Account Manager:
Mark Altermatt

559-688-2977, ext. 3004
maltermatt@hill.com

24-Hour Emergency Contact:
Mark Altermatt, 559-331-7830

Fuel quality inspections of all City fuel tanks supporting emergency generators is conducted semi-annually by J.D. Mercado, Inc. (dba: Doctor Diesel) located at: 74854 Velie Way, Suite 1, Palm Desert California. In addition to fuel quality inspections the company also provides treatments necessary to keep all stored fuels in usable condition.

3.4 Continuity of Operations

Continuity of operations is an effort within government agencies to ensure that mission essential functions continue to be performed during a wide range of emergencies, including localized acts of nature, accidents and technological or attack-related emergencies.7 Continuity of Operations is a planning concept that reaches back to the Second World War in the United States. It is generally understood to mean the development of a contingency plan and associated actions and standard operating procedures to be taken / followed to continue essential operations of government during any kind of emergency.

Most large commercial enterprises today also produce continuity of operations plans (COOPs) to guide their organizations during emergencies but they are less relevant to local government energy assurance planning than plans specifically designed to maintain essential *public* services. In the City of Visalia, the Emergency Operations (EOP) Plan serves that purpose. The following section describes the organization and general content of the EOP. The section also describes the existing mutual aid agreements the City has in place to enhance its capability of maintaining essential operations during an emergency.

3.4.1 Emergency Operations Plan

Visalia's Emergency Operations Plan contains three essential elements necessary to enable the City to mitigate a disaster or emergency. These are a description of the emergency management organization; municipal policies, responsibilities and procedures; and operational concepts and procedures associated with both initial and extended response operations and the recovery process.

The framework for the plan aligns with the California Standardized Emergency Management Systems (SEMS) and is compliant with the National Incident Management System (NIMS) structure. The framework mirrors the organization of the Tulare County Operational Area Emergency Operations Plan as well as the organization of the EOPs for all other local governments, special districts and state

[7] Derived from the term "Continuity of Operations", as defined in the National Security Presidential Directive-51/Homeland Security Presidential Directive-20 (NSPD-51/HSPD-20) and the National Continuity Policy Implementation Plan (NCPIP)

agencies in California. The use of this common structure is designed to facilitate multi-agency, multi-jurisdictional coordination across all governmental organizations in the state. All EOPs in the state are organized to provide policies and procedures that are relevant to the four phases of an emergency. These include emergency preparedness, response, recovery and mitigation.

The Visalia energy assurance plan is also organized around the four phases of emergency management and adopts the SEMS structure for implementation. In this sense, the energy assurance plan can be considered an integrated supplement to the City's EOP.

Figure 4 provides City's emergency management organization chart from the EOP and illustrates the functional structure of the Emergency Operations Center. Action assignments contained in the energy assurance plan have been developed for each of the Incident Command System (ICS) functional areas outlined in the EOP. These include operations, planning and intelligence, logistics, and finance and administration.

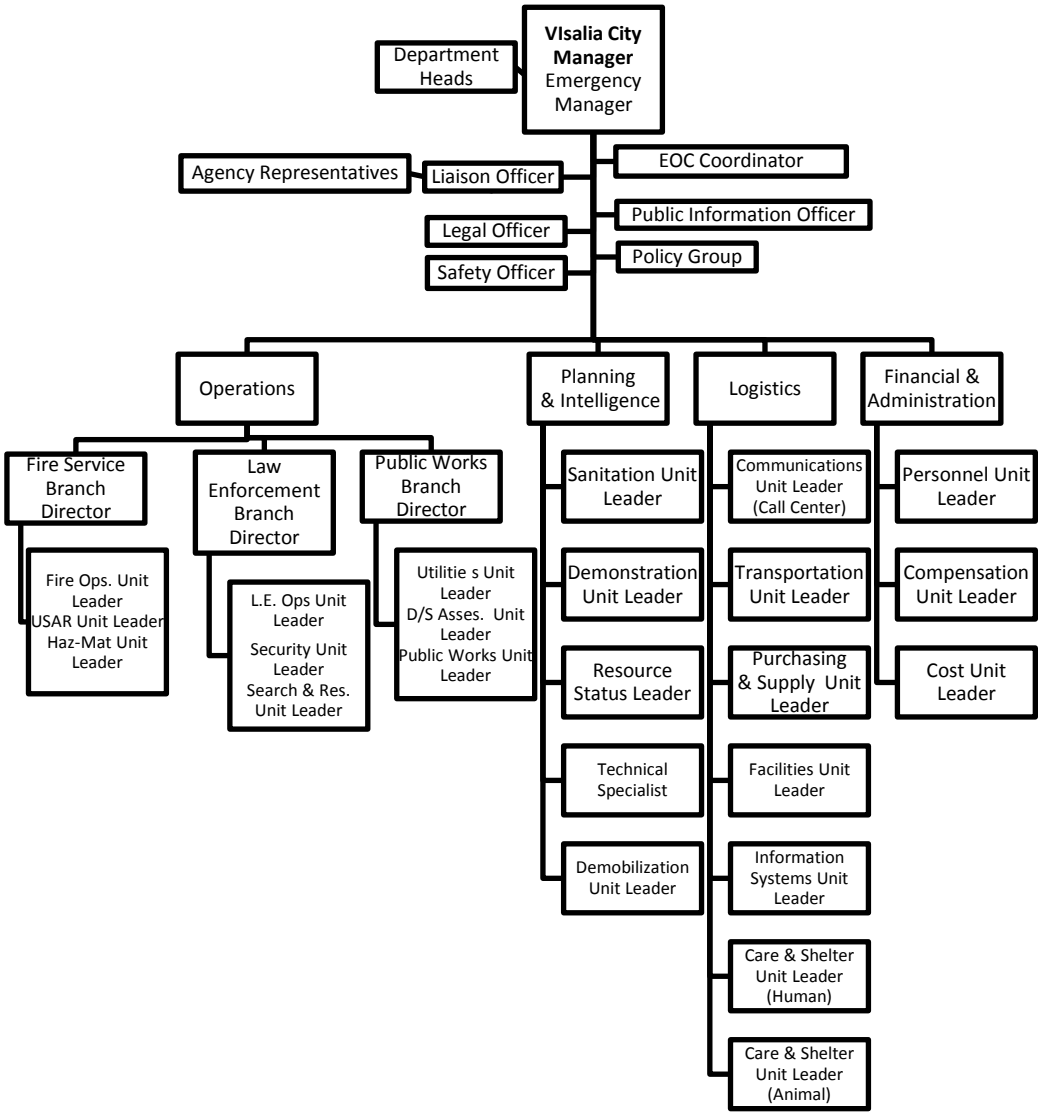

Figure 4. Visalia Emergency Management Organization

At the present time, the City's emergency operations plan/"basic plan" does not specifically address the preparedness or mitigation aspects of energy assurance. However, the operations functional area does describe the responsibilities of a Utilities Unit Leader under the Public Works Branch for the restoration of utilities after an event. Additionally, the EOP does address the restoration of utilities in the response and recovery phases and it designates Public Works as the lead organization for utilities with support provided by Community Development and the OES Inland Region.

3.4.2 Mutual Aid Agreements

Article 11 of the California Emergency Services Act, was written to facilitate rendering of aid to areas stricken by emergencies without the necessity of executing written agreements between public agencies exercising joint powers. Section § 8617 of the article states that: "During any state of war emergency or state of emergency when the need arises for outside aid in any county, city and county, or city, such aid shall be rendered in accordance with approved emergency plans. It shall be the duty of public officials to cooperate to the fullest possible extent in carrying out such plans."

The Governor's Office of Emergency Services (OES) has established a statewide system of mutual aid to ensure the provision of resources, facilities and other support to local jurisdictions when they exceed their capability of responding to an emergency. The California Master Mutual Aid Agreement establishes the framework for mutual aid and divides the state into six regions for the provision of aid. Visalia is located in Region V. The framework establishes "discipline-specific" mutual aid systems including, but not limited to fire and rescue, law enforcement, and emergency medical services. During an emergency, and beyond the established fire and law enforcement mutual aid systems, the Visalia EOC will be responsible for coordinating all requests for mutual aid through the Tulare County Operational Area and specifically through the Tulare County Office of Emergency Services.

At the present time, the City of Visalia is a participant in the following mutual aid agreements:

- California Master Mutual Aid Agreement
- OES Fire & Rescue Operations Plan
- OES Law Enforcement Mutual Aid Agreement
- OES Disaster Medical/Health Services Mutual Aid Agreement
- OES Public Works Mutual Aid Agreement
- Tulare County Regional Emergency Management Mutual Aid Agreement

At the present time, none of these agreements cover the provision of emergency energy equipment or services.

On February 20, 2007, the City of Visalia entered into the Regional Emergency Management Mutual Aid Agreement (REMMAA) with Tulare County. The agreement is used to help expedite the use of resources between jurisdictions when a disaster impacts Tulare County. The agreement provides the ability to share resources between jurisdictions, establishes a chain for requesting resources, discusses requirements for managing the resources and sets a policy for when reimbursement is required. The agreement includes, but is not limited to, building inspectors, city managers, law enforcement personnel, public works employees, public health care workers and equipment. The REMMAA does include provision of services supporting municipal infrastructure but excludes specific reference to emergency energy equipment or services.

4.0 Vulnerabilities & Recommended Mitigation

This Chapter describes the natural and technological hazards/threats and equipment and operational deficiencies that currently compromise the community's energy assurance. The Chapter also includes 18 recommended mitigation measures that address each of the threats and deficiencies described.

4.1 Natural & Technological Hazards

The hazard analysis encompasses natural and technological hazards and domestic security threats. Natural hazards result from unexpected or uncontrollable natural events of significant size and destructive power. Technological hazards are generally accidental or result from events with unintended consequences (for example, an accidental release of hazardous materials). Domestic security threats entail intentional actions of organizations or individuals designed to disrupt the orderly function of a community and often entail actions that pose technological hazards.

Based on an assessment of content contained in the Tulare County Hazards Mitigation Plan (HMP) and the City's EOP, Visalia faces the following hazards and threats.

Natural Hazards

- Earthquakes
- Floods
- Extreme Weather/Storms
- Fire

Technological Hazards

- Dam Failure
- Hazardous Materials
- Transportation Emergencies
- Train Accidents
- Major Truck Accidents
- Airplane Crashes

Domestic Security Threats

- Civil Unrest
- Terrorism

Both of these plans provide detailed descriptions of these hazards and threats so they are not repeated here, with the exception of those that could pose catastrophic consequences for Visalia's critical community facilities and infrastructure. These include earthquakes, floods and terrorism. Each are addressed below.

It should be noted that Tulare County also identified the threat of energy emergencies associated with disruptions of electricity, natural gas, gasoline and

other liquid fuel supplies in the HMP. Although the plan suggested that an energy emergency can have significant impact on the entire county, as it did in 2000 and 2001, it did not advance the threat to the mitigation planning portion of the plan.

4.1.1 Earthquakes/Seismic Activity

As is noted in the City's General Plan, the State of California considers the threat of earthquake serious enough to require a seismic safety element in the general plans of all incorporated governmental bodies in the state. The City of Visalia is located roughly equal distance between the San Andreas and Owens Valley fault lines and the technical analysis supporting the General Plan Seismic Safety Element firmly establishes the need to address this natural hazard in emergency management planning. Accordingly, Visalia's General Plan Review Committee has proposed Policy #S-P-29 which directs the City to: "Update the City's Emergency Preparedness Plan, to include an Earthquake Disaster Plan, and coordinate procedures with the County Emergency Services".[8]

The County's 2011 Hazard Mitigation Plan (HMP) and City's 2008 Emergency Operations Plan (EOP) provide detailed descriptions of the hazards and threats and are recommended reading for personnel that will assume the responsibilities of the energy assurance coordinator described in Section 4.5.4. However for the reader's convenience, the EOP description of the potential impact of a significant earthquake on the electricity and natural gas utilities and on communications is provided below.

Utilities – "A complete disruption of public utilities would occur in more heavily impacted areas for a period in excess of 72-hours. Transmission lines are vulnerable to many hazards, due to their length and remoteness of the lines. Damage to generation/substations may cause outages. Damage to generation facilities affects production. Damage to substations affects delivery. Repairs to electrical equipment require physically clearing roadways, and movement of special equipment. Restoration of local electrical power will be coordinated with regional and local utility representatives. Much of the affected areas may have service restored in days; however, a severely damaged underground distribution system may create longer service delays."

"Damage to natural gas facilities serving the City of Visalia area may consist primarily of isolated breaks in major transmission lines. Breaks in mains and individual service connections within the distribution system will be significant, particularly near the fault zones. These many leaks could pose a threat. Restoration of natural gas service could be significantly delayed."

Communications – System failures, overloads, loss of electrical power, and possible failure of some alternate power systems will affect telephone systems. Immediately following an event, numerous failures will occur. Telephone, radio and microwave systems are all expected to be affected and operate at a decreased capacity."

[8] Visalia General Plan Update: "Summary Paper of Policy Discussions: Including Proposal Revisions for Final Review", General Plan Update Review Committee, January 25, 2012

In response to an inquiry from the energy assurance planning team of Southern California Edison relative to their preparedness to respond to these vulnerabilities, the company replied: "The San Joaquin Valley is relatively isolated from the load centers where such gas fired generation is located. In the event of a disruption in gas service the CAISO would be responsible for working with California government and gas department officials to minimize the impact to customers and ensure reliable power system conditions." And as referenced earlier in this document, the company has stated that: "In the event of a disruption to the natural gas supply that took all gas-fired generation offline, SCE would access all available sources of generation that use other fuel sources. It is not clear that sufficient alternative sources of power would be available to make up for the loss of all gas-fired generation."

The power that SCE provides to Visalia can originate at a number of plants both inside and outside of California. Among them, several are potentially vulnerable to earthquakes and related seismic activity. Two coastal plants, San Onofre (partially owned by SCE) and Diablo Canyon are close to major fault lines and were not designed to withstand shocks of the magnitude that hit the coastal nuclear reactors in Japan during the Tohoku Earthquake and Tsunami of March 2011.

The vulnerability of California's power generation facilities to seismic activities suggests that the City should take the following mitigation measure.

RECOMMENDED MITIGATION: Explore long-term technology solutions to meet the emergency energy demands through locally available and locally-generated energy resources.

4.1.2 Floods & Dam Failure

According to the City's 2008 EOP, the primary concern of floods is associated with controlled releases from the Terminus Dam and the flooding of the Kaweah and St. John's rivers and their overflow into Mill and Packwood creeks and other tributaries that cross Visalia. Controlled releases can be triggered by severe weather, unexpected runoff or malfunction of mechanical equipment. Typically, the City receives advance warning of controlled releases that cause flood, however there have been instances where floods occurred without warning due to unauthorized damming of tributaries downstream of the City. The Failure of the Terminus Dam is also a potential flood hazard identified in the EOP. Dam failure can be caused by severe storms, earthquake, erosion, foundation leaks, and structural collapse of levees.

Table 4 below, taken from Tulare County's HMP, suggests the potential impact that earthquakes, floods and fog could have on Visalia's critical facilities and infrastructure.

Table 4. Hazards Impact on Visalia Critical Facilities & Infrastructure

Hazard	No. of Critical Facilities and Infrastructure	% of Critical Facilities and Infrastructure

Earthquake - Moderate Ground-shaking	123	100%
Flood - 100 Year Floodplain	52	42%
Flood - 500 Year Floodplain	68	55%
Flood - Dam Failure, Terminus Dam	122	99%

The table indicates that a 500-year flood plain event would cause catastrophic flooding resulting in the inundation of the majority of the City's critical facilities and infrastructure. A 100-year flood plain event would also cause considerable inundation that would impact 42% of the City's critical facilities and infrastructure. Inundation would likely be accompanied by the complete loss of electricity and communications in the flooded areas.

RECOMMENDED MITIGATION: Elevate all City emergency energy engines and generators (aka: Gensets), transfer switches/switch gears, electrical panels and fuel storage and fueling equipment above the maximum 100-year flood zone levels. Ensure that flood control devices regularly inspected at the two CNG facilities.

The inventory of emergency energy system locations should be compared to the FEMA 100-year flood maps to determine the platform elevation for each system. The platform structure should be composed of 12" concrete piers, steel beams supporting a metal floor deck, and a poured reinforced concrete deck surface to support the each generator system. A 4' wide metal stair with a 4' high guardrail will provide safe access for service. The estimated cost of an elevated platform to provide this protection on a per-unit/generator basis is $ 32,000.

For emergency energy system installations in new construction, the planning team recommends indoor locations on an upper floor for maximum protection.

With regard to the two CNG facilities, they are both located three feet below the 100-year flood plain level. Consequently, interlocking flood control boards are stored at each facility and should be inspected and installed in the access gates annually to ensure a water-tight fit.

4.1.3 Terrorism

The City's EOP defines a terrorist act as "The use or threatened use, of force to achieve a political or social goal." Organizations or individuals perpetrating these acts can be foreign and increasingly, domestic. Terrorist pronouncements and executed actions indicate that public facilities and infrastructure have been, and will be prime targets of these organizations and individuals.

Expected Damage:

Disruption of utilities, public facilities, private commerce, civic life and potentially the significant loss of life and property.

RECOMMENDED MITIGATION: Enclose all City emergency energy gensets, fuel storage equipment, transfer switches/switch gears and electrical panels in locked fence lines, equipped with surveillance cameras and both combination and key locks. The responsibility for this mitigation measure should be shared between the City's future Energy Emergency Assurance Coordinator and one City's Terrorist Liaison Officers (TLOs) described below.

Currently, six police officers and six fire fighters are certified as Terrorism Liaison Officers (TLOs) by the Sacramento Regional Terrorism Threat Assessment Center (Sac RTAC). TLOs attend meetings and receive terrorism training, information, and intelligence from the Sac RTAC, and other entities engaged in terrorism intelligence and investigations. TLOs then educate others within the municipal government about the threat of terrorism, thereby enhancing situational awareness, early warning, and operational preparedness. TLOs are also the ones contacted when suspicious activity is encountered so they can document and forward that information to the Sac RTAC for analysis and if they deem it necessary, to engage the FBI's Joint Terrorism Task Force in the situation.

4.2 Critical Facilities

Critical Facilities were identified and categorized as shown in Tables 1 and 2, by the Visalia City Staff members in collaboration with the consulting team. Based on the audited facilities and information provided by the Visalia staff, maintenance contractors and fuel suppliers the following observations were made.

4.2.1 Inadequate Energy Generation at Critical Facilities

Many of the Visalia Critical Facilities were protected from electrical interruptions by emergency generators. The existing emergency generators appeared to be of adequate capacity for the required emergency loads. However, a number of the A-category critical facilities did not have emergency generators.

RECOMMENDED MITIGATION: Size emergency energy systems to power the entire load of each critical facility currently without such a system.[9]

Table 5 below provides the emergency energy generator, back-up fuel supply, fuel monitoring, switch gear and electrical panel equipment recommended for each facility.

Table 5. Recommended Generator Equipment Enhancements

[9] Due to the intermittency and cost of most renewable energy technologies such as wind turbines and solar photovoltaic panels and the necessity of ensuring 72-hours of continuous operation during an emergency, regardless of climatic conditions, these technologies were not deemed appropriate for use in the short-term energy assurance plan. However, these technologies play an essential role in demand reduction and grid reliability and should be incorporated into the long-term strategies for energy assurance. Chapter nine provides further detail on this recommendation.

Critical Community Facilities	Recommendation	Cost Estimate
Administration & Command		
City Hall - North	Install 290 kW Diesel Generator*	$279,000
Critical Communications		
Repeater Site - McAuliff	Install 10 kW Diesel Generator*	$115,000
Repeater Site - Airport	Install 10 kW Diesel Generator*	$115,000
Repeater Site - Giddings	Install 10 kW Diesel Generator*	$115,000
Transportation & Fleets		
Transit Maintenance Facility	Install 1,000 kW Diesel Generator*	$618,000
Fleet Services - Diesel Fuel Depot	Install 75 kW Diesel Generator*	$186,000
Visalia Transit - CNG Production Facility	Install 500 kW Natural Gas Generator**	$250,000
Visalia USD - CNG Production Facility	Install 350 kW Natural Gas Generator**	$172,000
Facilities & Equipment		
Solid Waste - Admin, Wrehse, Shop	Install 170 kW Diesel Generator*	$258,000
Traffic Safety - Office & Shop	Install 45 kW Diesel Generator*	$123,000
Public Works - Admin Offices & Mod.	Install 170 kW Diesel Generator*	$258,000
Other Key Facilities		
SPCA	Install 30 kW Diesel Generator*	$115,000
Convention Center	Add Additional 50 kW Diesel Generator to Existing Capacity*	$123,000
Waste Water Treatment		
Largest Sanitary Lift Station - Airport	Install 50 kW Diesel Generator*	$123,000
Storm Water Lift Stations x 33	Portable 35 kW Diesel Generator	$112,000
Standard Sanitary Lift Station x 12	Portable 200 kW Diesel Generator	$255,000
Sub-Total		
		$3,217,000

* Generator cost estimation includes generator, fuel storage to meet 72 hour run-time requirement, automatic fuel transfer if required, networked fuel level monitoring, elevated platform for all equipment, and new emergency electrical panel.

** Generator cost estimation includes generator, elevated platform for all equipment, and new emergency electrical panel.

4.2.2 Inadequate Fuel Storage at Critical Facilities

The existing generators at Visalia's critical facilities are powered by diesel fuel or natural gas. The recommended onsite fuel supply for emergency generators is a quantity sufficient to provide for 72-hours of uninterrupted operation in the event of a utility interruption. None of the diesel fueled generators has a fuel storage capacity sufficient to meet this requirement. The U.S. Department of Energy (USDOE) also recommends that fuel levels in storage tanks be monitored from a central location by an electronic system. Visalia does not have such a system, rather it relies on physical/visual monitoring at each tank which is conducted with each semi-annual maintenance inspection.

RECOMMENDED MITIGATION: Size onsite fuel tanks to meet the operating requirement; install automatic transfer pumping and fuel monitoring systems for diesel-fueled systems and CNG tanks and compressor units for natural gas-fueled systems. Table 6 below provides a list of the recommended enhancements and associated costs for fuel storage equipment at each facility.

Table 6. Recommended Fuel Equipment Enhancements

Critical Community Facilities	Recommendation	Cost Estimate
Administration & Command		
City Hall - West	Install 200 Gallon Secondary Fuel Tank & Automatic Transfer	$50,000
	Install Networked Fuel Level Monitor	$16,000
City Hall - North	Install 170 Cubic Foot CNG Storage System*	$102,000
Emergency Operations Center	Install Central Fuel Monitor Hub	$27,500
	Install 500 Cubic Foot CNG Storage System*	$242,000
Public Safety		
Police - Headquarters	Install 1500 Gallon Secondary Fuel Tank & Automatic Transfer	$105,000
	Install Networked Fuel Level Monitor	$16,000
Police - Substation District 1	Install 750 Gallon Secondary Fuel Tank & Automatic Transfer	$92,000
	Install Networked Fuel Level Monitor	$16,000
Police - Substation District 2	Install 750 Gallon Secondary Fuel Tank & Automatic Transfer	$92,000
	Install Networked Fuel Level Monitor	$16,000
Police Dept. - Adobe Office	Install 45 kW Diesel Generator*	$123,000
Fire - Station #52	Install 170 Cubic Foot CNG Storage System*	$102,000
Fire - Station #53	Install 50 Cubic Foot CNG Storage System*	$70,000
Fire - Station #54 & North Fire Annex	Install 170 Cubic Foot CNG Storage System*	$102,000
Fire - Station #55 & Fire Training Facility	Install 670 Cubic Foot CNG Storage System*	$312,000
Critical Communications		
Repeater Site - Murray	Install 170 Cubic Foot CNG Storage System*	$102,000
Other Key Facilities		
Visalia Municipal Airport	Install 1,000 Gallon Secondary Fuel Tank & Automatic Transfer	$95,000
	Install Networked Fuel Level Monitor	$16,000
Waste Water Treatment		
Water Conservation Plant Headworks	Install 2,000 Gallon Secondary Fuel Tank & Automatic Transfer on Generator 1	$144,000
	Install Networked Fuel Level Monitor to Generator 1	$16,000
	Install 5,000 Gallon Secondary Fuel Tank & Automatic Transfer to Generator 2	$199,000
	Install Networked Fuel Level Monitor to Generator 2	$16,000
Medical & Special Care Centers		
Kaweah Delta Medical Center Mineral King Wing	Install 1,500 Gallon Secondary Fuel Tank & Automatic Transfer to Generator 1 & 2	$105,000
	Install Networked Fuel Level Monitor to Generator 1&2	$16,000
Kaweah Delta Medical Center Acequia Wing	Install 1,500 Gallon Secondary Fuel Tank & Automatic Transfer	$105,000
	Install Networked Fuel Level Monitor to Generator 3	$16,000
Information System Services	Install 500 Gallon Secondary Fuel Tank & Automatic Transfer	$87,000
	Install Networked Fuel Level Monitor	$16,000
Community Health Center	Install 1,000 Gallon Secondary Fuel Tank & Automatic Transfer	$95,000
	Install Networked Fuel Level Monitor	$16,000
Kaweah Delta Rehab Hospital	Install 2,500 Gallon Secondary Fuel Tank & Automatic Transfer	$154,000
	Install Networked Fuel Level Monitor	$16,000
Kaweah Delta Mental Health	Install 1,500 Gallon Secondary Fuel Tank & Automatic Transfer	$105,000
	Install Networked Fuel Level Monitor	$16,000
Senior & Assisted Care Facilities		
Delta Nursing & Rehab. Center	Install 500 Cubic Foot CNG Storage System*	$242,000
Sub-Total		
		$2,748,500

* CNG storage capacity based on gross tank volume and CNG stored at 3,000 psi, includes networked pressure monitor.
** Existing fuel storage capacity is unknown. Recommendation sized for entire 72 hour requirement.

An Important Note: Many of these critical facilities listed above are located in zones that allow fuel storage as a conditional use. However, some are located in "Office" zones that do not allow fuel storage. For these facilities, the City will either need to

grant zoning variances or develop a means of refueling these facilities from fuel storage located in zones where storage is permitted.

4.2.3 Absence of Shelters & Associated Energy Resources

As noted in the baseline assessment, the City of Visalia does not have sufficient shelters in place to support its residents during an emergency. The American Red Cross and Tulare County HHSA have the responsibility for designating facilities for this use. However, progress in fulfilling this responsibility has been slow and the prospect of their establishing fully functional shelters, equipped with emergency energy systems, in the near future is not high. Given the essential role that shelters play in all-hazards management of an emergency, the City has elected to begin the formulation of its own shelter operations plan and to specify the energy assurance provisions necessary to support them.

RECOMMENDED MITIGATION: Establish three mass shelter facilities in the City of Visalia and equip them with emergency energy generation and fuel storage equipment sufficient to ensure 72-hours of continuous operation without refueling.

The energy assurance planning team has identified three potential facilities that could serve as mass shelters in Visalia – the Convention Center and the Porter and Moro Field Houses on the Campus of the College of the Sequoias. Action items contained in the energy assurance plan call for discussions between the City, Tulare County HHSA/OES, the ARC and officials/facility managers at the Convention Center and COS to explore the potential use of these facilities as shelters. Additionally, the City of Visalia would need to rezone the College of the Sequoias and the Visalia Convention Center to enable them to serve as emergency shelters as their current zoning designation prohibits such a use. In the interim, the energy assurance engineering team has conducted preliminary analysis of these facilities and has determined the basic generator requirements for future consideration by these collaborators.

Table 7 below indicates the recommended equipment and associated costs

Table 7. Recommended Shelter Equipment Enhancements

Critical Community Facilities	Recommendation	Estimate Cost
Other Potential Shelters		
Convention Center**	Add Additional 50 kW Diesel Generator to Existing Capacity*	$123,000
COS - Porter Field House	Install 95 kW Diesel Generator*	$197,000
COS - Moro Field House	Install 65 kW Diesel Generator*	$136,000
Sub-Total		
		$456,000

* Generator cost estimation includes generator, fuel storage to meet 72 hour run-time requirement, automatic fuel transfer if required, networked fuel level monitoring, elevated platform for all equipment, and new emergency electrical panel.

** Muncipally-owned facility

4.3 Critical Infrastructure

4.3.1 Inadequate Energy Assurance for CNG Supplies

As noted in the baseline assessment, the city has two compressed natural gas facilities energized by the existing SCE electricity grid that provide fuel for the transit, school bus, refuse truck and municipal fleet. These critical facilities are not supported by emergency generator systems and therefore, this is considered a major energy assurance vulnerability.

RECOMMENDED MITIGATION: Install standby emergency natural gas fueled-electrical generators for the two CNG facilities serving the City.

The energy assurance planning team recommends the installation of a 500 KW generator to meet the load at the North Cain facility and a 350 KW generator to meet the maximum load at the West Houston facility. Also recommended is a 480 volt three horsepower natural gas generator

These installations will ensure continued operation of the CNG facilities during an electrical outage as long as the natural gas supply is available. In the event of a disruption in the natural gas supply, the CNG production facilities will not be have fuel stock to compress and consequently the facilities will not need an emergency fuel supply for their generators. Table 8 indicates the recommended equipment.

Table 8. Recommended CNG Facility Equipment Enhancements

Critical Community Facilities	Recommendation	Cost Estimate
CNG Fueling Facilities		
Visalia Transit - CNG Production Facility	Install 500 kW Natural Gas Generator**	$250,000
Visalia USD - CNG Production Facility	Install 350 kW Natural Gas Generator**	$172,000
Sub-Total		
		$422,000
** Generator cost estimation includes generator, elevated platform for all equipment, and new emergency electrical panel.		

4.3.2 Inadequate Energy Assurance for Petroleum Supplies

The City's two 10,000-gallon diesel tanks at the fleet services yard are not supported by a standby emergency energy generator. During the loss of grid-electricity, this fueling depot would become inoperable resulting in the eventual loss of the use of all vehicles dependent on this source of fuel.

RECOMMENDED MITIGATION: Install an appropriately sized generator, fuel supply and fuel monitoring system for the City's petroleum storage tanks.

Table 9 indicates the recommended equipment.

Table 9. Recommended WCP Generator Equipment Enhancement

Critical Community Facilities	Recommendation	Cost Estimate
Fleet Services Diesel Fueling Facilities		
Fleet Services - Diesel Fuel Depot	Install 75 kW Diesel Generator*	$186,000
Sub-Total		
		$186,000
* Generator cost estimation includes generator, fuel storage to meet 72 hour run-time requirement, automatic fuel transfer if required, networked fuel level monitoring, elevated platform for all equipment, and new emergency electrical panel.		

4.3.3 Inadequate Energy Assurance for Water Management Systems

The Water Conservation Plant (WCP) has two adequately sized diesel-fueled emergency energy generators to maintain operations. However, the onsite fuel storage capacity is inadequate to maintain 72 hours of uninterrupted operation.

RECOMMENDED MITIGATION: Install fuel storage tanks sufficient to ensure 72-continuous hours of operation and an electronic fuel-level monitoring system at the City's Water Conservation Plant.

Table 10 indicates the recommended equipment.

Table 10. Recommended WCP Fuel Equipment Enhancements

Critical Community Facilities	Recommendation	Estimate Cost
Water Conservation Plant Headworks	Install 2,000 Gallon Secondary Fuel Tank & Automatic Transfer on Generator 1	$144,000
	Install Networked Fuel Level Monitor to Generator 1	$16,000
	Install 5,000 Gallon Secondary Fuel Tank & Automatic Transfer to Generator 2	$199,000
	Install Networked Fuel Level Monitor to Generator 2	$16,000
Sub-Total		
		$375,000

The sanitary sewer system employs 13-lift stations at strategic locations in the distribution system. The stormwater management system employs 33-lift stations across the City. The number of these stations required to maintain the essential operations of the system is not currently known and would require hydraulic modeling to determine.

RECOMMENDED MITIGATION: Conduct hydraulic modeling to determine the minimum number of lift stations that must operate to maintain essential operations of the sanitary and stormwater system during an electrical outage.

Although the specific number and locations of the lift stations that must be maintained in not known at this time, the approximate size of pumps installed across the system is known and will require a 35 kW generator system. Based on this information, the energy assurance planning team recommends the installation of the required number of generator systems at the unit cost shown below.

Table 11 indicates the recommended equipment.

Table 11. Recommended Lift Station Equipment Enhancement

Critical Community Facilities	Recommendation	Estimate Cost
Waste Water Treatment		
Typical Sanitary Lift Station	Install 35 kW Diesel Generator*	$123,000
Sub-Total		
		$123,000

4.4 Maintenance & Fuel Supply Contracts

This section covers energy assurance vulnerabilities relating to contracts with equipment maintenance and fuel supply vendors.

4.4.1 Inadequate Equipment Maintenance Contracts

Dead starting batteries, old diesel fuel, and improperly maintained generation and fueling equipment can result in the loss of an emergency energy system during an emergency just assuredly as inundation by flood waters. The City currently has 14 emergency energy systems in place at critical facilities and infrastructure. Although all of these systems receive maintenance and inspections and repairs when needed, the frequency of service is inconsistent and incomplete across the City's critical facilities.

According to a detailed review of all equipment maintenance contracts, some of the standby power systems receive inspections on a quarterly basis (e.g.: Police department headquarters and police substations), some on a semi-annual basis (e.g.: City Hall-West & the Water Conservation Plant) while others receive inspections on an annual basis (e.g.: Fire Stations #52, #53 & #54). It should also be noted here that after an extensive search, the planning team was unable to determine what organization is responsible for maintenance of the emergency energy systems at Fire Station #55, if any at all. Otherwise, all energy systems receive complete maintenance service (including oil and filter changes) once a year.

In addition to the inconsistent level of attention these systems receive, it appears that only the two standby generators located at the WCP receive load bank testing. Also missing are contract provisions for priority service during an emergency and advance purchase agreements for that service. One other essential service that isn't being provided consistently is fuel quality testing of the storage tanks

supporting emergency energy generators. According to City-maintenance vendor contracts on file, only the Visalia corporate yard, Convention Center and WCP currently receive fuel quality testing and treatment.

RECOMMENDED MITIGATION: Develop vendor contract provisions establishing a consistent schedule of equipment maintenance inspections, advance purchase agreements for priority service during an emergency and expanded load bank and fuel quality testing. In addition, consolidate responsibility for the inspection, maintenance and repair of all emergency energy systems under one municipal division and under one office rather than three or four as is currently the case.

To rectify these deficiencies, the planning team recommends a consistent schedule of quarterly inspections for all emergency energy systems and load bank testing annually at the Public Safety building and the EOC when its future generator is installed. Also recommended is a revision of the fuel quality maintenance contract with J.D. Mercado, Inc. (dba "Diesel Doctor") to include service at all critical facilities dependent on diesel fuel supplies.

4.4.2. Missing Equipment Maintenance Contract

During the review of vendor contracts, the planning team discovered that the Franzen-Hill Company does not have a written contract with the City for maintenance of its fuel storage and fueling equipment. This is a significant vulnerability as the company maintains most the emergency energy systems that support the City.

RECOMMENDED MITIGATION: Execute a formal contract for equipment maintenance services with the Franzen-Hill Company and ensure that it includes priority service during an emergency and an advance purchase agreement for that service.

4.4.3 Inadequate Fuel Supply Contract

In addition to the inadequate fuel storage capacity at critical facilities noted above, the City of Visalia has inadequate energy assurance elements in its contracts with its fuel suppliers. At the present time, contracts with Don Rose Oil Company and Valley Pacific Petroleum Services only contain content that relates to products sold, pricing, municipal delivery locations and call response time. Missing are requirements for priority service during an energy emergency and advance purchase agreements for that service. Current contracts also stipulate that fuel storage tank levels should not be allowed to fall below 25% when they should stipulate that fuel levels should not fall below 65%.

Also missing are provisions for the staging of fuel tankers adjacent to critical fuel storage depots during an emergency and reference to alternate delivery routes and the training of delivery personnel on those routes. Follow-up phone interviews with the account executive at Don Rose Oil confirmed the absence of any alternative routing or training for the delivery of fuel to the City during an emergency.

The last item that needs to be addressed is the inclusion of Julien Oil company in the EOP as one of the petroleum providers to the City. The consultant's examination of City contracts indicates that no contract exists with the company.

RECOMMENDED MITIGATION: Revise the City's contracts with petroleum providers to include energy assurance provisions and compel vendor compliance with contract requirements.

Revise the City's contracts with petroleum providers to include priority service during an energy emergency and advance purchase agreements for that service. Include in the revision: provisions for the staging of fuel tankers adjacent to critical fuel storage depots during an emergency; a requirement for at least two written alternative delivery routes and routine training of all delivery personnel on those routes. Require vendor submission of written alternative delivery routes, related training materials/instruction and annual certifications for all delivery personnel testifying to completion of training.

Consider use of the following routes.

Alternative Delivery Route A (includes major highways):

1. Leave Kinder-Morgan depot going South on Maple Avenue toward East Florence Avenue
2. Turn left onto East Jensen Avenue
3. Take the 3rd right onto South Chestnut Avenue
4. Merge onto CA-99 via ramp on the left
5. Merge onto CA-198 East via Exit 97 toward Visalia/Sequoia Park
6. Take Exit 107B toward Ben Maddox Way/Woodlake
7. Turn right onto East Noble Avenue
8. Turn right onto South Ben Maddox Way
9. Turn right onto East Main
10. Take the 1st left onto North Cain
11. 335 N. Cain is on the left

Alternative Delivery Route B – (excludes major highways)**:**

1. Leave Kinder-Morgan depot going South on Maple Avenue toward East Florence Avenue
2. Turn left onto East Jensen Avenue
3. Turn right onto South McCall Avenue
4. Turn left onto East Manning Avenue
5. Turn right onto South Mendocino Avenue
6. Turn left onto East Mountain View Avenue
7. East Mountain View Avenue becomes West El Monte
8. Turn right onto Road #56
9. Turn left onto Avenue 400/CA-201
10. Turn right onto Road #128/CA-201/CA-63
    Continue to follow CA-63

11. Turn left onto West Riggin Avenue
12. West Riggin becomes North St. Johns Parkway
13. Turn right onto N. Ben Maddox Way
14. Turn left onto East Goshen Avenue
15. Take 1st right onto North Cain Street
16. 335 North Cain is on the right

4.5 Continuity of Operations

Beyond the equipment and fuel supply vulnerabilities discussed above, the City needs to address the absence of energy assurance provisions in its Emergency Operations Plan and General Plan, and the complete absence of a functional shelters plan with an evacuation component that considers energy assurance. Each vulnerability is discussed further below with recommended mitigation measures.

4.5.1 Absence of Energy Assurance Elements in the EOP

As noted in the baseline assessment, the City has a detailed emergency operations plan that defines its emergency management organization, policies and procedures for initial and extended response operations and for recovery. However, the subject of energy assurance is only covered in the emergency response and recovery phases of plan implementation and not in emergency preparedness and mitigation.

Where energy is covered in the plan, it is limited to conducting damage assessments of electricity and natural gas utilities, monitoring fuel suppliers during an incident and providing assistance to the private utilities in their restoration efforts. The nature of the EOC personnel assignments and activation and deactivation checklists also appears to assume that all critical facilities and fuel storage systems are supported by standby emergency generation. This apparent assumption and the limited scope of energy assurance assignments in the EOP represent a significant vulnerability.

RECOMMENDED MITIGATION: Integrate the energy assurance plan into the City's EOP and into relevant mutual aid agreements with adjacent jurisdictions and Tulare County.

Integrate energy assurance provisions throughout the Emergency Operations Plan and particularly in sections addressing the preparedness and mitigation phases of emergency management. Revise relevant mutual aid agreements with surrounding jurisdictions and Tulare County to include energy assurance elements. Chapter 5, Section 5.4.1. of this document provides specific recommendations for the addition of energy assurance responsibilities for EOC personnel in the City's Emergency Operations Plan.

4.5.2 Absence of Energy Assurance Elements in the General Plan

Given the recent advent of local energy assurance planning in the United States,

the absence of related provisions in Visalia's General Plan is not unexpected. However, it is the contention of the planning team that energy assurance should be integrated into municipal policies that direct the future growth and development of a community. In California, those policies are contained in the General Plan. State law requires that every general plan contain elements that address land use, conservation, noise, circulation, open space, safety and housing.

The absence of energy assurance in the City's General Plan can be considered a vulnerability relative to the City's stated goal of fostering safe and environmentally responsible growth and development.

RECOMMENDED MITIGATION: Integrate energy assurance provisions into the Safety Element of the City's General Plan.

At the present time, the City is in the process of updating its General Plan. The plan update is now scheduled to be completed in February of 2013 and during 2012 there is an opportunity to propose energy assurance measures for inclusion in the final update. These measures should include:

- Provisions to assure emergency energy supplies at all critical facilities and infrastructure adequate to maintain 72-hours of continuous operation without refueling;

- The use of energy-efficient and renewable energy technologies to reduce emergency energy demand and global greenhouse gas emissions associated with emergency energy generation (Distributed energy resources including combined-cooling-heat-and-power systems and thermal storage units should be considered among these technologies);[10]

- A requirement that all newly constructed nursing and special care facilities in the City maintain onsite emergency energy systems capable of 72-hours of continuous operation without refueling;

- Inclusion of other recommended mitigation measures contained in the City's 2012 Energy Assurance Plan that are relevant to the Safety and Seismic Safety Elements of the General Plan Update.

4.5.3 Absence of an Operational Shelter & Shelter Transit Plan

One of the most significant findings during the baseline assessment was the absence of a comprehensive shelter plan and designated facilities in Visalia that could serve that purpose during an energy emergency.

RECOMMENDED MITIGATION: Collaborate with Tulare County, the College of the Sequoias, the American Red Cross and related contractors to formulate an operational shelter and shelter transit plan.

[10] This recommended measure reinforces the proposed General Plan Update Policy #CO-P-80 requiring energy conservation in new construction and energy management in public buildings in compliance with AB32.10

Section 4.2.3 of this document advances the concept of using the Porter and Moro field houses at the College of the Sequoias and the Visalia Convention Center as the community's shelters and addresses the energy equipment needs of each. However, if these were to become operational, officials responsible for each facility would need to collaborate with officials from the City of Visalia, Tulare County HHSA/OES and the American Red Cross to formulate a specific plan for their use. As noted earlier, the City of Visalia would also need to rezone the College of the Sequoias and the Visalia Convention Center to enable them to serve as emergency shelters.

Additionally, officials for these entities would need to work with Visalia Transit officials and their contractor to formulate an evacuation plan capable of moving the population seeking shelter to these facilities. Discussions with MV Transit officials, the prime contractor for Visalia Transit, suggest that the fleet fuel requirements for 72-hours of continuous operation would be 2,000-gallons of diesel fuel and 8,650-gallons of CNG – DFE (diesel fuel equivalent).[11] Table 12 provides the associated costs for installation of required fuel equipment to support 72-hours of shelter transit service.

Table 12. Recommended Transit Fleet Equipment Enhancement

Critical Community Facilities	Recommendation	Estimate Cost
Transportation & Fleets		
Transit Center	Install 2,000 Gallon Diesel Fuel Storage for Fleet Vehicles	$110,000
	Install Networked Fuel Level Monitor	$16,000
	Install 8,650 DGE of CNG Storage System	$1,250,000

4.5.4 Absence of an Energy Emergency Assurance Coordinator(s)

Again, given the recent advent of energy assurance planning, it is not surprising that the City does not have an energy emergency assurance coordinator. However, the complexity and extent of the objectives and planned actions presented in the next Chapter demand that the responsibility for plan implementation be assigned to a new full-time employee or shared among a closely-knit group of existing employees.

RECOMMENDED MITIGATION: Establish an Energy Emergency Assurance Coordinator or energy emergency assurance coordination team to implement the Energy Assurance Plan and adopt a more active role in the maintenance of emergency fuel systems.

There is good reason to assign the responsibility of coordinating energy assurance planning and implementation to a single individual or to a small team of municipal

[11] The fuel estimate provided by Danny Cadena, Operations Manager, MV Transit. The estimate assumes the high-temperature operation of nine diesel-fueled buses and 32 CNG-fueled buses.

employees. Execution of the baseline assessment required the planning team to contact individuals across many municipal organizations and non-municipal organizations. In the process, the team learned that many of those interviewed assumed the existence of non-existent systems and procedures and were very unclear regarding the location of basic information relating to energy assurance.

The responsibilities of an energy emergency assurance coordinator could be defined in such a manner as to require the recruitment of a full-time employee. Appendix E provides a generic position description for the recruitment of such an employee. Alternately, the responsibilities could be assigned and shared by two or more existing municipal employees currently holding aligned positions in the City's emergency management organization referenced in Figure 4. The best aligned positions to share these responsibilities include: the Utilities Unit Leader (Operations Section), the Resource Status Leader (Planning & Intelligence Section) and the Transportation and Facilities Unit Leaders (Logistics Section).

In addition to formalizing plan implementation through an energy assurance coordinator(s), the City should consider a more active role in the oversight and potentially the execution of maintenance services. This could include the assignment of some maintenance responsibilities to municipal personnel and the development of a joint City-Vendor operations manual that documents procedures and schedules and guides operations. The manual would be jointly produced by City and its vendors and should include the following items:

1. An inventory (with all relevant specifications and purchase dates) of all components comprising the emergency energy systems at each critical facility; The inventory should include geographic locations of each system on each site, as well as information relating to physical access to the system;

2. Procedures for the inspection, maintenance, operation, refueling and monitoring of each system;

3. A list of separate and shared responsibilities between the vendor and municipal personnel;

4. A priority list for the inspection, maintenance and fueling of all systems serving critical facilities;

5. A set of delivery routes for the worse-case disaster scenarios;

6. A concurrence sheet attesting to the review of all manual provisions by all relevant municipal and vendor personnel.

5.0 Energy Assurance Plan

This chapter contains a set of strategic goals, subordinate objectives and planned actions targeted at mitigating each of the vulnerabilities discussed in the previous chapter. The City may elect to implement any and all strategic goals, objectives and actions as funding becomes available.

The plan's operational and structural components, as well as the departmental action assignments contained in this chapter are derived from similar functional area responsibilities for government agencies contained in California's Standardized Emergency Management System (SEMS) and the federal government's National Incident Management System (NIMS). They are also designed to align with the State of California's Energy Emergency Response Plan, Tulare County's 2011 Hazards Mitigation Plan (HMP), the Tulare County Operational Area Emergency Operations Plan) and Visalia's Emergency Operations Plan.

5.1 Energy Assurance Goals

The following goals express a desirable future state in which energy assurance has been achieved by the City. They are intentionally designed to be long-range policy statements. Based on the vulnerability assessment and 18 recommended mitigation measures, 12 strategic goals are proposed:

1. All critical facilities and infrastructure (CF&I) have sufficient energy supplies for 72-hours of continuous operation without refueling;

2. All privately-owned facilities supporting residents with functional needs (FSFNs) have sufficient energy supplies for 72-hours of continuous operation without refueling;

3. All future publicly- and privately-owned facilities and infrastructure will be constructed in hazard-free locations and will have sufficient emergency energy supplies for 72-hours of continuous operation without refueling;

4. All residents have access to, and a means of reaching community shelters equipped with emergency energy systems (EES);

5. Critical facilities and infrastructure will be enhanced to address earthquake and flood hazards and the threat of terrorism;

6. Municipal personnel have the capacity to inspect, operate, maintain and refuel emergency power systems supporting all critical facilities and infrastructure;

7. An Energy Emergency Assurance Coordinator or Energy Emergency Assurance Coordination Team work to continually maintain the City's energy assurance;

8. The City's Energy Assurance Plan (EAP) is finalized, adopted and incorporated into the Emergency Operations Plan (EOP) and the General Plan Update;

9. An emergency communications plan is in place to guide delivery of essential information to the general public and the media during an energy disruption;

10. The City has the capital necessary to pursue its energy assurance goals, objectives and actions;

11. Adequate public and private mutual aid agreements serve as an additional source of energy assurance for the City;

12. The City engages in ongoing energy assurance communication, information sharing and collaboration with adjacent municipalities, Tulare County, state agencies and private entities.

5.2 Objective & Action Sets

Objectives and action sets are defined as the intermediate states that must be reached and the subordinate activities necessary to achieve the stated energy assurance goals. Tables 13-24 present the objective and action sets for each of the energy assurance goals.

Table 13. Goal #1: Objectives & Actions

LEAP Goal #1: All critical facilities and infrastructure (CF&I) have sufficient energy supplies for 72-hours of continuous operation without refueling
Objective 1.A: *Install EES at Critical Facilities and Infrastructure Without Them*
Action 1.A.1 Install the generator, fuel supply & fuel monitoring equipment for sites without them City Hall-East; Repeater stations on McAuliff, Giddings & the Airport; Transit Maintenance Facility; Fleet Services; Visalia Transit; Visalia Transit & USD CNG facilities; Solid Waste, Traffic Safety & Public Works Offices; SPCA facility; & the Stormwater and Sanitary Lift Stations. See Table #5
Objective 1.B: *Ensure Adequate 72-Hour Fuel Capacity at CF&I With EES in Place*
Action 1.B.1 Install secondary fuel tanks, fuel line connectors, automatic transfer pumping systems, fuel monitoring systems for all diesel EES & CNG storage tanks for all natural gas EES installations City Hall North & West; Emergency Operations Center; Police HQ & Substation District 1 & 2; Adobe Office; Fire Stations #52, #53 & #54; Murray Repeater Station; Visalia Airport; WCP See Table #6
Objective 1.C: *Revise Vendor Contracts*
Action 1.C.1 Require fuel vendors to guarantee 72-hours of fuel at each CF&I
Action 1.C.2 Require fuel vendors to give the City priority fueling during an emergency
Action 1.C.3 Require fuel vendors to locate fuel tankers onsite in Visalia during emergencies
Action 1.C.4 Require vendor delivery personnel to practice secondary fuel delivery routes
Action 1.C.5 Require fuel vendors to develop & exercise a worse-case delivery scenario
Action 1.C.6 Require vendors to compose an Energy & Fuel Supply Systems Operations Plan
Objective 1.D: *Conduct Municipal Inspections, Maintenance & Testing*
Action 1.D.1 Execute a schedule of quarterly inspections, maintenance & testing at all CF&I

Action 1.D.2 Provide the City manager written results of all inspections & testing
Objective 1.E: *Conduct Hydraulic Lift Station Modeling to Determine EES Placement*
Objective 1.E.1 Issue RFP for modeling of wastewater & stormwater lift stations
Objective 1.E.2 Award contract, conduct study, add needed EES to critical infrastructure list

Table 14. Goal #2: Objectives & Actions

LEAP Goal #2: All privately-owned facilities supporting residents with functional needs (FSFNs) have sufficient energy supplies for 72-hours of continuous operation without refueling	
Objective 2.A: *Encourage Private Facilities to Install Adequate Tank Capacity*	
Action 2.A.1	Draft an advisory letter to facility managers on the need for the 72-hour capacity
Action 2.A.2	Conduct a briefing at each facility to explain the City's request
Objective 2.B: *Investigate Petroleum Set-Aside Program Supplements*	
Action 2.B.1	Contact the California Energy Commission to determine whether the inclusion of supplemental fuel requests for the privately-owned FSFNs can be included with the City's application for supplemental fuel under California's Petroleum Fuels Set-Aside Program.
Objective 2.C: *Determine Facility Supplemental Fuel Requirements*	
Action 2.C.1	Convene a workgroup of private facility managers & Visalia Public Works personnel to discuss fuel requirements for each private facility during an extended energy outage. Document generator run-times based on existing capacity & determine supplemental tank & or fueling requirements
Objective 1.D: *Draft Emergency Fuel Requests*	
Action 2.D.1	Compose, review & finalize a fuel request to CEC for use in emergencies
Action 2.D.2	Develop delivery & refueling procedures with fuel vendor & facilities' managers
Objective 1.E: *Conduct Energy-Efficiency Audits for the FSFN's*	
Action 2.E.1	Translate existing commercial building energy efficiency audits into a format suitable for FSFNs in the community
Action 2.E.2	Conduct onsite energy efficiency audits & compose follow-on reports for use by the facility managers

Table 15. Goal #3: Objectives & Actions

LEAP Goal #3: All future publicly- and privately-owned facilities & infrastructure will be constructed in hazard-free locations & will have sufficient emergency energy supplies for 72-hours of continuous operation without refueling	
Objective 3.A: *Prevent Location of Future CF&I & FSFNs in Hazard-Prone Areas*	
Action 3.A.1	Utilize HMP Plan hazard overlays to identify hazard-prone areas
Action 3.A.2	Establish buffer zones for the siting of CF&I & FSFNs near hazard-prone areas
Action 3.A.3	Prohibit siting of CF&I and FSFNs in extreme hazard areas that cannot be adequately mitigated
Action 3.A.4	Update the City's General Plan & zoning ordinance to include the provisions above

Objective 3.B:	***Integrate Energy Assurance Plan (EAP) Elements into City Regulations***
Action 3.B.1	Facilitate adoption of new building code provisions requiring all public or private buildings that will serve as CF&I and FSFNs to include emergency electrical systems with capacity to support 72-hours of continuous operation without refueling
Action 3.B.2	Incorporate a provision into the building code requiring all new CF&I and FSFNs to include cost-effective technologies to reduce electrical energy demand during emergency operations
Action 3.B.3	Amend the City's Fire Code, as necessary, to reflect EAP General Plan elements
Objective 3.C:	***Enforce EAP General Plan, Zoning Ordinance, & Building Codes Elements***
Action 3.C.1	Provide an EAP compliance review any time a permit is obtained for any improvement on new & existing structures to serve as CF&I or FSFNs
Action 3.C.2	Provide an inspection program & issue certificates of compliance to ensure maintenance of compliance with the City's EAP related codes

Table 16. Goal #4: Objectives & Actions

LEAP Goal #4:	**All residents have access to, and a means of reaching community shelters equipped with emergency energy systems (EES)**
Objective 4.A:	***Plan a Network of EES Equipped Shelters***
Action 4.A.1	Secure agreement from officials for the COS & the Convention Center to use the Moro & Porter Field Houses & the Convention Center as mass shelters
Action 4.A.2	Conduct an engineering survey of all three structures to determine EES requirements
Action 4.A.3	Estimate costs for engineering design, installation and commissioning of shelters
Action 4.A.4	Develop a capital improvement budget, financing options & implementation plan
Action 4.A.5	Acquire financing to initiate the renovation & installation phase
Action 4.A.6	Rezone the COS and the Convention Center to enable them to serve as shelters
Objective 4.B:	***Install Emergency Electrical System Equipment***
Action 4.B.1	Conduct final engineering design & complete detailed bid specifications
Action 4.B.2	Structure a competitive solicitation for vendors, service & construction companies
Action 4.B.3	Solicit & evaluate vendors, services & construction bids & award contracts
Action 4.B.4	Commence energy demand reduction renovations
Action 4.B.5	Install emergency electrical panels, gensets, fuel storage & fueling equipment [To include necessary fuel storage facilities at Visalia Transit to support evacuation]
Action 4.B.6	Test all system components at each shelter
Action 4.B.7	Inspect & commission all building renovations & equipment installations systems
Objective 4.C:	***Formulate an Emergency Shelters Operation Plan***
Action 4.C.1	Develop an activation protocol based on weather & extent of the outage
Action 4.C.2	Formulate public safety & fire safety elements of the plan
Action 4.C.3	Collaborate with ARC to define other assistance elements
Action 4.C.4	Collaborate with the Visalia Transit to develop emergency transit routes
Action 4.C.5	Engage Visalia Paratransit to develop an element for transport of FSFN residents
Action 4.C.6	Compose a draft plan, circulate for comment, revise & submit for Council Approval
Action 4.C.7	Incorporate the Emergency Shelters Operation Plan as an Annex to the EOP
Objective 4.D:	***Develop a Public Information Campaign & Alert System***
Action 4.D.1	Investigate use of the new Broadcast Message Center (BMC) system to notify residents of the activation of the emergency shelters on their cell phones
Action 4.D.2	Develop a printed brochure and webpage on the City's site describing the shelters and providing a map of resident shelter assignments based on home addresses
Action 4.D.3	Include brochure in utility bills or deliver door-to-door

Table 17. Goal #5: Objectives & Actions

LEAP Goal #5:	**Critical facilities & infrastructure will be enhanced to address earthquake & flood hazards & the threat of terrorism**
Objective 5.A:	***Enhance Resilience to Earthquake Hazards***
Action 5.A.1	Track R&D relating to use of renewable energy resources for energy resiliency at the National Renewable Energy Laboratory (NREL), USDOE & DHS/FEMA
Action 5.A.2	Track R&D developments relating to advanced battery storage & photovoltaic power
Action 5.A.3	Consider solar PV applications at CF&I to reduce emergency energy demand
Objective 5. B	***Enhance Resilience to Flood Hazards***
Action 5.B.1	Compare FEMA 100-year flood maps & CF&I locations to identify flood risks
Action 5.B.2	Determine platform elevations for each site 24" above 100-year maximum flood
Action 5.B.3	Compose a project budget for all necessary platforms
Action 5.B.4	Seek & secure project funding for the flood hazard enhancements
Action 5.B.5	Solicit vendor bids & award security system contract
Action 5.B.6	Elevate all EES components at CF&I
Action 5.B.7	Conduct annual inspection to ensure interlocking flood boards fit at the CNG facility
Objective 5. C	**Enhance Resilience to the Threat of Terrorism**
Action 5.C.1	Survey all EES to determine which require locked & alarmed security enclosures
Action 5.C.2	Compose a project budget for all necessary enclosures & cameras at all CF&I sites
Action 5.C.3	Seek & secure project funding for the security enhancements
Action 5.C.4	Solicit & evaluate vendor bids & award security system contract(s)
Action 5.C.5	Enclose all EES components in locked fenced enclosures
Action 5.C.6	Install security cameras & a central monitoring array at Police headquarters

Table 18. Goal #6: Objectives & Actions

LEAP Goal #6:	**Municipal personnel have the capacity to inspect, operate, maintain & refuel emergency power systems supporting all critical facilities & infrastructure**
Objective 6.A:	***Develop Inventories, A Manual & Execute Training***
Action 6.A.1	Formulate a detailed inventory of emergency energy systems at each CCF
Action 6.A.2	Formulate a comprehensive training program covering electrical generator & fuel systems inspection, operation, maintenance & monitoring for select PW personnel
Action 6.A.3	Require selected PW personnel to complete the training & practical exams

Table 19. Goal #7: Objectives & Actions

LEAP Goal #7:	**An Energy Emergency Assurance Coordinator or Energy Emergency Assurance Coordination Team work to continually maintain the City's energy assurance**
Objective 7.A:	***Recruit an Energy Emergency Assurance Coordinator (EEAC)***
Action 7.A.1	Conduct cross-departmental review of the draft EEAC position description (PD)
Action 7.A.2	Revise & seek concurrence of final PD from all affected department heads
Action 7.A.3	Recruit/Assign a staff member to the position with requisite capabilities [Alternately, form an energy assurance coordination team]
Objective 7.B:	***Top-10 Priority Assignments***
Action 7.B.1	Complete a detailed inventory of all EES components at all CF&I
Action 7.B.2	Establish a consistent schedule of equipment maintenance inspections & testing
Action 7.B.3	Revise all vendor contracts to include necessary energy assurance provisions

Action 7.B.4	Draft, negotiate & execute the fuel equipment maintenance contract with Franzen-Hill
Action 7.B.5	Collaborate with vendors & Public Works to produce an EES operations & maintenance manual for municipal personnel & execute training
Action 7.B.6	Initiate discussions with COS & Convention Center on the shelters plan
Action 7.B.7	Engage Tulare County OES & the Red Cross in the effort to build the shelters plan
Action 7.B.8	Participate in the General Plan Update process to ensure inclusion of energy assurance
Action 7.B.9	Conduct surveys & analysis to advance the objectives & actions of Goal #5
Action 7.B.10	Conduct research to identify EAP implementation funding sources

Table 20. Goal #8: Objectives & Actions

LEAP Goal #8:	**City's Energy Assurance Plan (EAP) is finalized, adopted & incorporated into the Emergency Operations Plan (EOP) & General Plan Update**
Objective 8.A:	***Develop Energy Assurance Provisions & Incorporate into EOP***
Action 8.A.1	Draft step-by-step procedures for each SEMS functional lead to respond to disruptions of electrical, natural gas, diesel & gasoline supplies (See Chapter 7)
Action 8.A.2	Identify additional personnel needed in each functional area to respond to a disruption
Action 8.A.3	Develop internal (municipal) communications elements for each type of disruption
Action 8.A.4	Develop external (public) communications elements for each type of disruption
Action 8.A.5	Circulate proposed EAP provisions for departmental review & comment
Action 8.A.6	Revise & finalize the EAP components & incorporate into the EOP
Action 8.A.7	Seek Council approval of the amended EOP
Objective 8.B:	***Develop Energy Assurance Provisions & Incorporate into General Plan***
Action 8.B.1	Collaborate with the Planning Division to determine the timing and format for a proposed energy assurance revision to the General Plan Update (GPU) Safety Element
Action 8.B.2	Develop draft revisions to the Safety Element & circulate for department review
Action 8.B.3	Revise to address comments & finalize for submission to the GPU Review Committee
Action 8.B.4	Continue to participate in the GPU process to ensure inclusion of energy assurance

Table 21. Goal #9: Objectives & Actions

LEAP Goal #9:	**An emergency communications plan is in place to guide delivery of essential information to the general public & the media during an energy disruption**
Objective 9.A:	***Compose a Format to Communicate Energy Emergency (EE) Information***
Action 9.A.1	Develop a format to be used to collect and distribute EE information to the public
Action 9.A.2	Ensure alignment of the format with other gov't emergency comm. protocols
Action 9.A.3	Establish the internal approval process for EE communications to the public
Action 9.A.4	Establish primary and back-up EE communications officers in all departments
Objective 9.B:	***Identify EE Communication Stakeholders***
Action 9.B.1	Identify and record contact information for public information officers at all utilities
Action 9.B.2	Identify key state, regional, county and local government points-of-contact
Action 9.B.3	Identify key commercial and institutional points-of-contact
Action 9.B.4	Identify key media industry points-of-contact
Action 9.B.5	Identify key internal points-of-contact and method to communicate information to municipal personnel
Objective 9.C:	***Identify Communication Distribution Channels***
Action 9.C.1	Explore use of existing City and other web-based communication channels
Action 9.C.2	Explore use of pager and text messaging channels to reach stakeholders
Action 9.C.3	Explore use of radio and internet radio channels to reach stakeholders

Action 9.C.4	Determine how to input EE communications into area media outlets
Action 9.C.5	Formulate instructions for distribution of EE communications through channels
Action 9.C.6	Prepare press kits appropriate for use with these channels
Objective 9.D:	***Establish Intelligence Network & Crisis Monitoring Procedures***
Action 9.D.1	Establish procedures to obtain state, county & utility emergency status updates
Action 9.D.2	Assign personnel to monitor state, county & utility incident management channels
Action 9.D.3	Establish reporting format & internal distribution procedures to share state, county & utility information with key internal stakeholders

Table 22. Goal #10: Objectives & Actions

LEAP Goal #10:	**The City has the capital necessary to pursue its energy assurance goals, objectives & actions**
Objective 10.A:	***Develop Detailed Budgets for Priority Goal-Objective-Action Sets***
Action 10.A.1	Prioritize all goals giving top priority to goals whose objective & action sets have the smallest capital expenditures
Action 10.A.2	Conduct a detailed budget analysis for all goals requiring significant expenditures
Action 10.A.3	Compose & circulate for comment & final department head concurrence, budgets for each of the other 11 energy assurance goals
Objective 10.B:	***Determine the Most Appropriate Financing Options***
Action 10.B.1	Explore potential sources of funding including federal, state & regional government agency programs, utility energy efficiency & portfolio program funds, equipment manufacturers & other independent sources
Action 10.B.2	Prioritize sources & estimate staff commitment to solicit support from each
Action 10.B.3	Explore alternative ownership arrangements for major technology assets
Action 10.B.4	Convene a Council committee to review the products of each action & to generate recommendations for the revision of the Energy Assurance Plan
Objective 10.C:	***Revise the Energy Assurance Plan (EAP) & Seek Final Council Approval***
Action 10.C.1	Revise the Energy Assurance Plan, replacing the preliminary budget projections with the departmentally-approved budgets & endorsements for Council consideration
Action 10.C.2	Calendar the EAP for Council Review, Discussion & Adoption

Table 23. Goal #11: Objectives & Actions

LEAP Goal #11:	**Adequate public and private mutual aid agreements serve as an additional source of energy assurance for the City**
Objective 11.A:	***Explore & Develop Public & Private Mutual Aid Agreements***
Action 11.A.1	Develop draft mutual aid agreement provisions for energy assurance covering supply of emergency power generators, supplemental fuelling support, use of shared shelters & personnel assistance in the operation of these systems & facilities
Action 11.A.2	Solicit input from fire departments in other Tulare County municipalities. Revise the draft to accommodate input & recirculate for approval & execution by the Council
Action 11.A.3	Revise the City's existing mutual aid agreements to include the new energy assurance provisions
Action 11.A.4	Explore & execute similar agreements with private entities that would benefit from & enhance the City's energy assurance activities

Table 24. Goal #14: Objectives & Actions

LEAP Goal #12:	**The City engages in ongoing energy assurance communication, information sharing & collaboration with adjacent municipalities, Tulare County, state agencies & private entities**
Objective 12.A:	***Develop an EA Action Agenda for the Tulare County Emergency Council***
Action 12.A.1	Formulate a briefing paper and presentation proposing the establishment of an energy assurance (EA) action agenda to be included in the charter & permanent agenda of the Tulare County Operational Area Emergency Council
Action 12.A.2	Circulate the briefing to members for consideration at next quarterly meeting
Action 12.A.3	Discuss & revise the charter amendment & action agenda to address comments
Action 12.A.4	Work with the Tulare OES to encourage the eight member cities of the Emergency Council to adopt the charter amendment and EA action agenda
Objective 12.B:	***Engage State Agencies in the EA Action Agenda***
Action 12.B.1	Circulate the amended Emergency Council charter and energy assurance agenda to the California Energy Commission, Public Utilities Commission for review and comment
Action 12.B.2	Incorporate state agency input into a revised agenda for discussion among all Emergency Council entities during next quarterly meeting
Action 12.B.3	Revise the action agenda to accommodate agreements reached & jointly pursue execution of the agenda
Objective 12.C:	***Engage Private Entities in Execution of the EA Agenda***
Action 12.C.1	Solicit private sector engagement in the action agenda by inviting officials from the utilities and privately-owned CF&Is in the region to participate in an Energy Assurance subcommittee to the Emergency Council. Officials from the following organizations will be invited to participate: Southern California Edison, SEMPRA/SoCalGas, CalWater, Pinnacle CNG Systems, AT&T, Kaweah Delta Health Care District, Visalia School District,
Action 12.C.2	Pursue: sharing/coordination of restoration information among all agencies and entities during disasters; facilitation of the repair/replacement of infrastructure for fuel, gas, electric, telecommunications, drinking water, wastewater, transportation and medical services after a disaster; and the preparation and response to regional power outages.

5.3 Required Resources & Municipal Capacity

5.3.1 Required Resources

Before advancing the strategic goal-objective- and action-sets to the implementation planning phase, the team estimated their costs, reviewed potential funding and the City's technical capacity to implement them. The City may elect to implement any and all strategic goals, objectives and actions as funding becomes available.

Appendix F. contains budgetary cost estimates for each goal-objective-action set listed in the previous chapter. Table 22 contains a summary of these costs at the strategic goal-level. The total of all recommended measures is **$8,002,336**.

Table 25. Cost Estimates for the 12 Strategic Goals

Goal	Description	Estimated Cost
1	All critical facilities and infrastructure (CF&I) have sufficient energy supplies for 72-hours of continuous operation without refueling	**$5,844,896**
2	All privately-owned facilities supporting residents with functional needs (FSFNs) have sufficient energy supplies for 72-hours of continuous operation without refueling	**$21,900**
3	All future publicly- and privately-owned facilities and infrastructure will be constructed in hazard-free locations and will have sufficient emergency energy supplies for 72-hours of continuous operation without refueling	**$9,000**
4	All residents have access to, and a means of reaching community shelters equipped with emergency energy systems (EES)	**$562,850**
5	Critical facilities and infrastructure will be enhanced to address earthquake and flood hazards and the threat of terrorism	**$1,287,640**
6	Municipal personnel have the capacity to inspect, operate, maintain and refuel emergency power systems supporting all critical facilities and infrastructure	**$31,000**
7	An Energy Emergency Assurance Coordinator or Energy Emergency Assurance Coordination Team work to continually maintain the City's energy assurance	**$167,000**
8	The City's Energy Assurance Plan (EAP) is finalized, adopted and incorporated into the Emergency Operations Plan (EOP) and the General Plan Update	**$3,700**
9	An emergency communications plan is in place to guide delivery of essential information to the general public and the media during an energy disruption	**$4,600**
10	The City has the capital necessary to pursue its energy assurance goals, objectives and actions	**$37,000**
11	Adequate public and private mutual aid agreements serve as an additional source of energy assurance for the City	**$30,000**
12	The City engages in ongoing energy assurance communication, information sharing and collaboration with adjacent municipalities, Tulare County, state agencies and private entities	**$2,750**

5.3.2 Fiscal & Financial Capacity

Potential Financing Sources: The planning team's examination of potential funding sources suggests that there are the following possible public financial resources that could be utilized to fund the planned actions:

- Debt Financing through General Obligation Bonds
- Debt Financing through Special Tax and Revenue Bonds
- Capital Improvement Project Funding
- Tax Levy with Voter Approval
- Development Impact Fees
- Fees for Sewer Services
- Community Development Block Grants

Since most of the types of investments will be "value-adding" measures rather than "revenue-producing," such financing instruments as revenue bonds, shared savings and purchase power agreements will not likely be available. Moreover, it is unlikely that the City will be able to fund emergency energy equipment and supplies as individual investments by incurring debt through general obligation bonds unless these investments are bundled with larger upgrading, renovation or new infrastructure improvements. Fee-based revenue sources such as a Sewer Facility Replacement Fund, a Wastewater Enterprise Fund and Development Impact Fees may support some of the capital costs, as well as Community Development Block Grant Funds.

Funding Gaps between Costs and Appropriations: The City will need to apply to government agencies to fund emergency energy capital improvements projects. Potential future sources of funding may include: the U.S. Department of Energy; the U.S. Department of Homeland Security/FEMA; CalEMA; and the California Energy Commission.

The integration of the EAP in the City's Emergency Operations Plan, as well as alignment with Tulare County's HMP will enable the City to access funding from federal and state sources. At the present time, considerable funding is being directed toward local government emergency preparedness, emergency response planning, training and exercises. The City also may need to apply for low interest California Energy Commission and Housing and Urban Development loans and take advantage of relevant federal and state subsidies and incentives. Another possible source may be public benefits funds under its Energy Efficiency Partnership with Southern California Edison and, in certain cases, utility on-bill financing. In the case of energy efficiency and renewable energy investments, Clean Renewable Energy Bonds (CREBs) and Qualified Energy Conservation Bonds (QECBs) can help to lower the cost of capital improvements.

Integration of Energy Emergency Investments into the City's Capital Improvement Program (CIP): Once the City through its Council has approved the EAP and it is incorporated into the City's Emergency Operations Plan, the City will need to integrate the Plan's emergency energy system-related investments into its CIP

planning according to the priorities set out in the Plan with respect to municipally-owned critical facilities and infrastructure:

Emergency Energy Equipment and Fuel Supplies

- Adequate fuel storage capacity to maintain 72-hours of continuous operation at all critical facilities and infrastructure (secondary diesel storage tanks and automatic transfer pumping systems; back-up storage tanks for natural gas-fueled back-up generators);
- New natural gas-fueled back-up generators;
- Networked sensors for fuel level monitoring and centralized monitoring hub for all storage tanks;
- Adequate emergency electrical generator capacity (particularly if the City elects to purchase portable/roll-up generators, connections, panels, circuits, manual switch and interconnection equipment) for the Moro and Porter field houses in lieu of pursuing the permanent installation of energy generation equipment;
- Demand reduction through energy-efficient building equipment and systems upgrades .

Energy Assurance Staffing, Procedures & Policies

These investments will entail multi-year planning and budgeting. In incorporating the EAP into its asset management strategies, the City may be able to combine these priority investments with other planned infrastructure improvements, upgrades or investments with respect to future Fire Stations, Police Department substations, the Civic administration center, Public Works and wastewater lift stations. In addition, the City may be able to offset costs and debt service with energy demand reduction/energy efficiency investments in municipal facilities. Such measures could also reduce the capital required by scaling back the size needed for backup generators.

Methods of Financing: Emergency energy back-up generators and fueling equipment systems are typically financed using traditional financing instruments (loans, conditional sales agreements, installment purchase agreements, operating or capital lease agreements). While a rental agreement may be an affordable option with respect to certain equipment (portable/roll-up generators), the City may also wish to consider a tax-exempt lease-purchase agreement to finance the emergency electrical and fuel storage equipment from operating budget dollars rather than its capital budget. This is a cost-effective alternative to traditional debt financing (bonds, loans, etc.) which allows a public entity to pay for energy upgrades using funds set aside in its annual utility budget. If the investment is combined with energy demand reduction/energy efficiency investments at the targeted facility, the public entity can draw on dollars saved from future utility bills to pay for the new equipment. In contrast to the rental agreement or commercial lease, the City would build equity and own the assets once the lease term expires. The interest rates also will be lower due to the tax-exempt status of the City.

Typically, tax-exempt lease-purchase agreements do not constitute a "debt" obligation.

5.3.3 Technical & Administrative Capacity

An assessment of the technical expertise required to execute the proposed EAP and the City's existing technical expertise, suggests that, with some consulting assistance, the City does have the capacity to execute the plan. Collectively, the departments and divisions represented in the City's emergency management organization contain all of the expertise necessary to manage all of the technical aspects of the plan. However, additional power systems engineering and some emergency planning consulting assistance may also be necessary to fully execute all proposed actions.

Similarly, the Offices of the City Manager and City Attorney and the Administrative Services Department have the necessary expertise to fully execute all of the administrative aspects of the plan. It may however, be necessary to obtain additional consulting assistance to execute the proposed training elements/actions related to emergency energy systems operation, maintenance and refueling.

6.0 Plan Implementation

This implementation plan: defines the departmental assignments for the near-term and long-term energy assurance goals and objectives; indicates the funding sources that are available; and establishes the timeframe within which each goal should be accomplished. Table 26 provides the assignments for each goal set. The departmental assignments are derived from and reflect federal, State of California and Tulare County departmental roles and responsibilities for energy assurance and emergency management summarized in Appendix A.

6.1 Proposed Departmental Assignments

Table 26 contains proposed departmental assignments for the objectives supporting each of the energy assurance goals listed in the previous chapter. The letter L indicates the Lead role while the letter S indicates a support role. These assignments are provided for the overall goal and for the supporting objectives.

Table 26. Proposed Departmental Assignments

Visalia Energy Assurance Plan - Proposed Departmental Assignments

MCC - Mayor & City Council
CM - City Manager
CA - City Attorney
AS - Administrative Services
CD - Community Development
FD - Fire Department
PD - Police Department
PW - Public Works
L = LEAD ROLE
S = SUPPORT ROLE

		MCC	CM	CA	AS	CD	FD	PD	PW
Goal #1	**All critical facilites & infrastructure (CF&I) have sufficient energy supplies for 72-hours of continous operation without refueling**		S	S	S		S		L
Objectives									
1.A	Install EES at Critical Facilities & Infrastructure Without Them		S		S				L
1.B	Ensure Adequate 72-Hour Fuel Capacity at CF&I with EES in Place		S		S				L
1.C	Revise Vendor Contracts		S	S	L				S
1.D	Conduct Inspections, Maintenance & Testing		S				S		L
1.E	Conduct Hydraulic Lift Station Modeling to Determine EES Placement		S		S				L
Goal #2	**All privately-owned facilities supporting residents with functional needs (FSFNs) have sufficient energy supplies for 72-hours of continuous operation without refueling**		S		S		S		L
Objectives									
2.A	Encourage Private Facilities to Install Adequate Tank Capacity						L		
2.B	Investigate Petroleum Set-Aside Program Supplements				S				L
2.C	Determine Facility Supplemental Fuel Requirements								L
2.D	Draft Emergency Fuel Requests		S		S				L
2.E	Conduct Energy-Efficient Energy Audits for the FSFNs						S		L
Goal #3	**All future CF&I & FSFNs will be constructed in hazard-free Locations & will have sufficient electrical energy supplies for a minimum of 72-hours of continuous operation without refueling**			S	S	L	S		
Objectives									
3.A	Prevent Location of Future CF&I and FSFNs in Hazard-Prone Areas					L	S		
3.B	Integrate Energy Assurance Plan (EAP) Elements into City Regulations			S	S	L	S		
3.C	Enforce EAP General Plan, Zoning Ord., & Building Codes Elements			S	S	S	L		
Goal #4	**All residents have access to, and means of reaching community shelters that are equipped with emergency energy systems (EES)**			S	S		L	S	S
Objectives									
4.A	Plan a Network of EES Equipped Shelters				S	S	L	S	S
4.B	Install Emergency Electrical System Equipment				S				L
4.C	Formulate an Emergency Shelters Operations Plan			L	S	S	S	S	
4.D	Develop a Public Information Campaign & Alert System				S		L		
Goal #5	**Critical facilities & infrastructure will be enhanced to address earthquake & flood hazards & the threat of Terrorism**				S			S	L
Objectives									
5.A	Enhance Resilience to Earthquake Hazards				S				L
5.B	Enhance Resilience to Flood Hazards				S				L
5.C	Enhance Resilience to the Threat of Terrorism				S			S	L
Goal #6	**Municipal personnel have the capacity to inspect, operate, maintain & refuel emergency power systems supporting all critical facilities & infrastructure**				S		S		L
Objectives									
6.A	Develop Inventories, A Manual & Execute Training				S		S		L
Goal #7	**An Energy Assurance Coordinator or Energy Assurance Coordination Team work to continually maintain the City's energy assurance**				S		L		S
Objectives									
7.A	Recruit an Energy Assurance Coordinator				S		L		S
7.B	Top-10 Priority Assignments				S		L		S
Goal #8	**City's Energy Assurance Plan (EAP) is finalized, adopted & incorporated into the Emergency Operations Plan (EOP) & General Plan Update**	S	S	S	S	S	L	S	S
Objectives									
8.A	Develop Energy Assurance Provisions & Incorporate into EOP	S	S	S	S	S	L	S	S
8.B	Develop Energy Assurance Provisions & Incorporate into General Plan	S	S	S	S	S	L	S	S
Goal #9	**An emergency communications plan is in place to guide delivery of essential information to the general public & the media during an energy disruption**		S		L	S	S	S	S
Objectives									
9.A	Compose a Format to Communicate Energy Emergency Information		S		L	S			S
9.B	Identify EECommunications Stakeholders		S		L	S	S		
9.C	Identify Communication Distribution Channels		S		L	S	S	S	
9.D	Establish Intelligence Network & Crisis Monitoring Procedures		S		L	S	S	S	
Goal #10	**The City has the capital necessary to pursue its energy assurance goals, objectives & actions**	S	S	S	L	S	S	S	S
Objectives									
10.A	Develop Detailed Budgets for Priority Goal-Objective-Action Sets	S	S	S	L	S	S	S	S
10.B	Determine the Most Appropriate Financing Options				L	S			
10.C	Revise the Energy Assurance Plan (EAP) & Seek Final Council Approval	S	S		L	S	S		
Goal #11	**Adequate public and private mutual aid agreements serve as an additional source of energy assurance for the City**	S	S	L	S	S	S	S	S
Objectives									
11.A	Explore & Develop Public & Private Mutual Aid Agreements	S	S	L	S	S	S	S	S
Goal #12	**The City engages in ongoing energy assurance communication, information sharing & collaboration with adjacent municipalities, Tulare County, state agencies & private entities**		S				L		S
Objectives									
12.A	Develop an EA Action Agenda for the Tulare County Emergy Council		S				L		S
12.B	Engage State Agencies in the EA Action Agenda		S				L		S
12.C	Engage Private Entities in Execution of the EA Agenda		S				L		S

6.2 Funding Sources & Timeframe

This section provides the funding sources and timeframes associated with each goal contained in the plan. The City may elect to implement any and all strategic goals, objectives an actions as funding becomes available.

Goal #1:	All critical facilities and infrastructure (CF&I) have sufficient energy supplies for 72-hours of continuous operation without refueling
Potential Funding Source:	General Fund/Capital Improvement Program/Grants/Low Interest Loans
Implementation Timeframe:	3 – 5 Years
Goal #2:	All privately-owned facilities supporting residents with functional needs (FSFNs) will have sufficient electrical energy supplies for a minimum of 72-hours of continuous operation without refueling
Potential Funding Source:	General Fund to Leverage Private Capital
Implementation Timeframe:	3 – 4 Years
Goal #3:	All future publicly- and privately-owned facilities and infrastructure will be constructed in hazard-free locations and will have sufficient emergency energy supplies for 72-hours of continuous operation without refueling
Potential Funding Source:	General Fund/Capital Improvement Program/Grants/Low Interest Loans
Implementation Timeframe:	1 – 5 Years
Goal #4:	All residents have access to, and a means of reaching community shelters equipped with emergency energy systems (EES)
Potential Funding Source:	General Fund/Capital Improvement Program/Grants/Low Interest Loans
Implementation Timeframe:	2 – 3 Years

Goal #5:	Critical facilities and infrastructure will be enhanced to address earthquake and flood hazards and the threat of terrorism
Potential Funding Source:	Capital Improvement Program/Grants/Low Interest Loans
Implementation Timeframe:	3-5 Years
Goal #6:	Municipal personnel have the capacity to inspect, operate, maintain and refuel emergency power systems supporting all critical facilities and infrastructure
Potential Funding Source:	General Fund
Implementation Timeframe:	1 Year
Goal #7:	An Energy Assurance Coordinator or Energy Assurance Coordination Team work to continually maintain the City's energy assurance
Potential Funding Source:	General Fund
Implementation Timeframe:	1 Year
Goal #8:	The City's Energy Assurance Plan (EAP) is finalized, adopted and incorporated into the Emergency Operations Plan (EOP) and the General Plan Update
Potential Funding Source:	General Fund
Implementation Timeframe:	1 Year
Goal #9:	An emergency communications plan is in place to guide delivery of essential information to the general public and the media during an energy disruption
Potential Funding Source:	General Fund
Implementation Timeframe:	1 Year

Goal #10:	The City has the capital necessary to pursue its energy assurance goals, objectives and actions
Potential Funding Source:	General Fund/Capital Improvement Program/Grants/ESPC/CREBs/QECBs/Third Party Investment/Power Purchase Agreement
Implementation Timeframe:	3 – 5 Years
Goal #11:	Adequate public and private mutual aid agreements serve as an additional source of energy assurance for the City
Potential Funding Source:	General Fund
Implementation Timeframe:	2 Years
Goal #12:	The City engages in ongoing energy assurance communication, information sharing and collaboration with adjacent municipalities, Tulare County, state agencies and private entities
Potential Funding Source:	General Fund
Implementation Timeframe:	1 Year

7.0 Recommended EOP Modifications

The City's Emergency Operations Plan (EOP) is divided into four parts, each corresponds to the four phases of an emergency – preparedness, response, recovery and mitigation. Table 26 below proposes additional energy assurance duties and responsibilities to be added to the initial and extended response checklists for seven positions in the Emergency Operations Organization (EOO). These are the: Utilities and Public Works Unit Leaders (Operations Section); Resource Status Leader (Planning & Intelligence Section); and the Transportation, Communications, Facilities and Care & Shelter Unit Leaders (Logistics Section). The table also indicates the principal support role these positions should assume to advance implementation of the Energy Assurance Plan (EAP) goals.[12]

Table 27. Recommended EOP Modifications

SEMS Function	Operations	Planning & Intelligence (P&I)	Logistics	Logistics
EOC Positions	**Utilities & Public Works Unit Leaders**	**Resource Status Unit Leader**	**Communications Transportation & Unit Leaders**	**Facilities & Care & Shelter Unit Leaders**
Preparedness	• EOO support role to departmental leads for EAP Goals #11 & 12	• EOO support role to departmental leads for EAP Goals #3, 8, 10, 11 & 12	• EOO support role to departmental leads for EAP Goal #4 & 9	• EOO support role to departmental leads for EAP Goals #1, 2, 4, 5, & 6
Response & Recovery	• All responsibilities included on EOP page 222 & 229 • Notify maintenance & fuel providers of standby status • Confirm operation of EES at CNG facilities • Confirm operation of EES at Repeater facilities • Confirm operation of EES at WCP facilities • Confirm operation of EES at fuel depot • Send EES status report to P&I	• All responsibilities included on EOP Page 250 • Monitor condition of all utility networks • Monitor State response/recovery actions • Monitor County OES response/recovery actions • Draft request for public demand reduction for the Public Information Officer (PIO) • Prepare City-wide EES status report for EOC manager	• All responsibilities included on EOP page 255 & 261 • Notify MV Transit of standby status for shelter transit services • Confirm operation of all fleet fueling equipment • Prepare shelter transit activation notice for the PIO • Implement shelter transit operations plan (as necessary) • Send EES status report to P&I	• All responsibilities included on EOP pages 267 & 270 • Reduce energy demand at all critical facilities • Confirm operation of EES at all critical facilities • Notify shelters of standby status • Confirm operation of EES at shelters • Send EES status report to P&I
Mitigation	• Participate in long-term recovery & reconstruction of EES at critical infrastructure & hazards mitigation	• Amend zoning, building codes & plan safety elements to advance energy assurance provisions	• Work with utilities on restoration communications to the public	• Participate in long-term recovery & reconstruction of EES at critical facilities & hazards mitigation

[12] EAP Goals #7 & 10 should also be supported by the Finance Section unit as they pertain to personnel recruitment and capital costs. EAP Goal # 11 should be supported by the Management Section as it pertains to legal matters and mutual aid agreements.

8.0 EA Inter-Governmental Exchanges

To enhance plan implementation in the near-term, the City will establish a mechanism for ongoing communication, information sharing and collaboration about and around energy assurance with local and state government agencies.

At the present time, there is not an entity in Tulare County that fosters collaboration among the eight municipalities, the County and relevant state agencies on the subject of energy assurance. The State of California does intend to develop a mechanism to foster intergovernmental exchanges in the future under its CaLEAP program. When that occurs, the City is likely to be very active participant. In the meantime however, the City will initiate discussions with the Tulare County Office of Emergency Services to explore the expansion of the charter and agenda for the Emergency Council to include energy assurance. Table 23 of this plan describes the actions the City will take and the interim objectives it will reach to fulfill this goal within the first year after the adoption of this plan by the City Council.

In addition to establishing a mechanism for collaboration between governmental agencies, the City will strive to engage the participation of the privately-owned electricity, natural gas and water utilities in this initiative, as well as other private stakeholders in the region. This will include petroleum and CNG companies, telecommunications and communications companies, hospitals and special care facilities and the school districts.

The City will propose that Tulare County consider forming either a subcommittee of the existing Emergency Council or a new entity similar in nature to the entity that San Diego County established recently known as the Lifelines Emergency Coordination Group (LECG). The entity is comprised of public agencies and private companies working to understand the interdependencies between infrastructure systems and their roles in each before and during emergency. The LECG also serves as a vital conduit for information sharing among all members during restoration efforts after a disaster strikes. The City will work with the Tulare OES to learn more about this organization and the agenda they are developing as one of the top priority actions to be taken after the adoption of this energy assurance plan.

9.0 Long-Term Energy Assurance

9.1 Renewable Energy Resources

The use renewable resources such as wind, solar, biogas and geothermal can significantly diversify a community's energy portfolio and reduce the demand it places on the electricity and natural gas infrastructure, thereby increasing their reliability. These two benefits in turn increase a community's overall resiliency and energy assurance while they reduce the release of criteria pollutants and greenhouse gas emissions.

While the intermittency of wind turbine, solar photovoltaic and solar thermal energy technologies prevent them from providing 100% assurance of power during an emergency, other forms of alternative renewable energy can provide this assurance. In particular, methane from wastewater treatment processes, landfill gas (a mixture of methane and non-methane organic compounds), synthetic gases produced through bio-mass conversion processes and hydrogen can be used to generate electricity. As noted early, the WCP currently relies on methane for a significant amount of its energy demand.

Biodiesel could also be used in place of diesel or gasoline for public safety, heavy equipment and diesel-fueled transit vehicles in the City which would reduce reliance on conventional petroleum products that may become scarce during an emergency. However, if the City were to consider conversion of its fleets to biodiesel mechanical alterations of the vehicles may also be necessary.

Although as noted, the intermittency of wind and solar photovoltaic and solar thermal technologies limit their reliability during an emergency, they can be used to supplement conventional standby generation for critical facilities. In fact, they have been used for this purpose to support emergency communication transmitters and emergency shelters in other communities and particularly in the Gulf states.

The energy assurance planning team recommends that the City explore all practical opportunities for the integration of renewable energy resources in all newly constructed or substantially renovated critical and non-critical pubic facilities. The team also recommends that the exploration consider the use of alternative fuels for both duty and emergency service vehicles.

9.2 An Energy Assurance Microgrid

The uninterrupted flow of energy to our communities ensures the health, safety, prosperity, and security of our citizens, and the nation as a whole. In recognition of this fact, an Executive Order was issued as far back as May of 1998, (Presidential Directive #63) instructing the federal government to work in "close cooperation and coordination with state and local governments…[to develop] a robust and flexible infrastructure protection program."

Over the past decade, numerous initiatives have been engaged to prepare American communities to respond to the sudden loss of critical infrastructures services. These have included the formulation of guidelines and models for the identification of critical urban infrastructure facilities, the assessment of energy system vulnerabilities, and the evaluation and implementation of preparedness measures.

This energy assurance plan is the result of the most recent federal initiative of this kind. Although valuable, these initiatives ultimately fall short of addressing the core vulnerability inherent in our community's reliance on centralized electric power plants, long-distance electrical transmission lines and natural gas pipelines as our primary sources of energy. To address this vulnerability, the City must move

beyond this energy supply model and the current energy assurance planning paradigm to a model and planning focused on decentralized, distributed energy resources and hardened local-area distribution systems.

9.3 Microgrid Components

Ultimately, the future energy assurance model will be one in which all critical community facilities are connected to one or more hardened microgrids served by local electricity and thermal energy generating plants across a community. The series of microgrids and local generating plants or energy resource centers (ERCs) will have interconnections to one another and to the larger area Smart Grids serving non-emergency consumers. Each ERC will have redundant natural gas-fueled combined cooling, heat and power (CHP) systems in place to ensure reliability and extended onsite storage capacity for fuel including biodiesel and other renewable fuel stocks.

Depending on climatic conditions particular to a community's location, other renewable energy resources such as solar, wind, geothermal, and methane will also be enlisted to provide the lowest carbon emission footprint for each ERC. Thermal Energy Storage (TES), advanced electrical storage systems, advanced communications and IT systems and interconnections for emergency fleet plug-in electric and hybrid electrical vehicles will also play roles in the two-way exchange of energy resources among all components of the energy assurance system of the future.

9.4 Microgrid Benefits

In addition to providing the uninterrupted flow of energy resources during emergencies, non-emergency operation of an energy assurance microgrid system will, over the long-term, enable Visalia to reduce energy costs and price volatility. Similarly, these alternative onsite energy systems will benefit Southern California Edison through their ability to manage peak loads on the distribution system resulting in increased grid reliability. Additionally, the operational flexibility of CHP plants will contribute to the effective implementation of the Smart Grid, while minimizing the capital investment required for central station power plants and the associated transmission infrastructure.

9.5 Model Energy Assurance System

9.5.1 The Critical Facility Cluster

Although the energy assurance planning team conceived of a future network of interconnected microgrids serving clusters of critical facilities across Visalia, the first such cluster identified as a model for applying the concept is within the City's urban center. The area identified for this conceptual microgrid is bounded by South Bridge St. on the East, East and West Mineral King Ave. on the South, South Stevenson St. on the West and East and West Acequia St on the North. The Critical Facilities located within this area include; City Hall West, City Hall East, Kaweah Delta Medical Center and the Visalia Convention Center. A microgrid with on-site electrical

generation would support a number of City administrative functions, police, fire, medical and shelter functions. Figure 5 indicates the geographic extent of the conceptual microgrid.

- Visalia City Hall East and City Hall West
- Fire Department Administration
- Public Works Department
- Engineering & Transportation
- Traffic Department
- Community development
- Visalia Police Department
- Fire Station 51
- Kaweah Delta Medical Center
- Visalia Convention Center (proposed shelter)

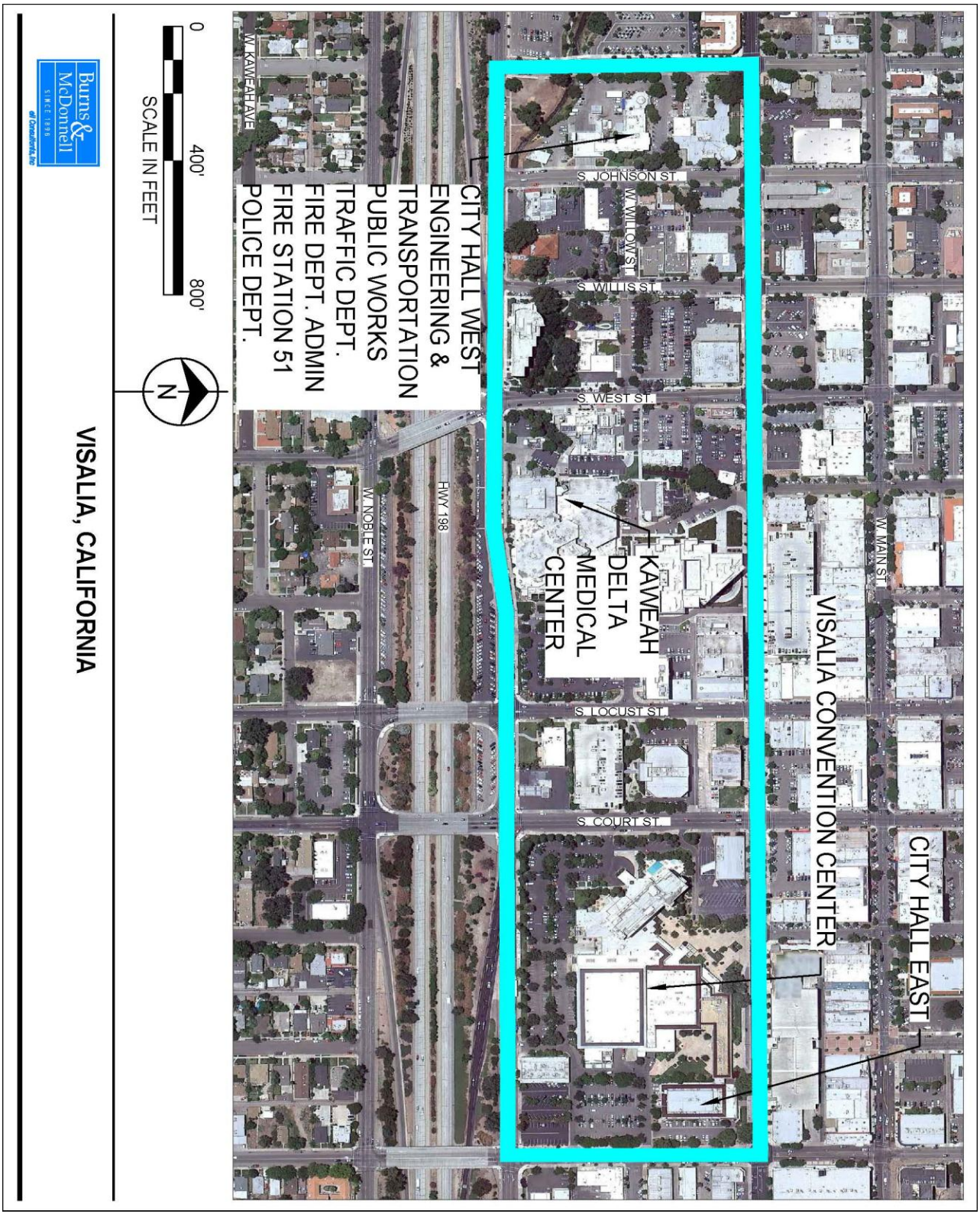

Figure 5. Visalia Model Energy Assurance Microgrid

The microgrid would be the primary electrical service provider to the specified facilities with interconnection to the SCE electrical grid for redundancy. Because of the requirement for continuous operation, it must be powered by highly efficient distributed generation capable of using multiple fuel sources, although the sole use of renewables would be desirable. The capability of transferring seamlessly to the local utility power grid in the event of a generator failure or a scheduled maintenance shutdown is essential. Since the Kaweah Delta Medical Center already has a highly efficient Combined Heat and Power (CHP) System it would be prudent to build on that existing base to develop the primary electrical generation capacity for the entire complex. This would require the development of a collaborative agreement for a business relationship among the City of Visalia, The Kaweah Delta Medical Center Administration and Southern California Edison, the local electric utility provider to effectively deal with franchise, investment and operational issues.

In addition to the technical issues related to generation and distribution of electrical power for the microgrid, control technology with appropriate sensing, communication and data management capabilities must be included to provide effective internal management of the function based on real time information from the Smart Grid. Similarly, the Smart Grid must be able to receive information from the microgrid and automatically adjust operations to optimize all available resources. This two-way control and information sharing interaction of microgrids with the utility service provider grid and the California Independent System Operator supports the optimization of all generation transmission and distribution resources relative to the consuming devices. It can also provide information or control signals to support the management of energy consuming devices to level the demand.

Upon installation of the model emergency energy system, the existing emergency electrical generators can be operated to support the external Smart Grid and microgrid flexibility or redeployed to other critical facilities not served by the microgrid.

9.5.2 Evaluation of Source Technologies

Ideally, the energy sources relied upon for the microgrid generation units would be entirely renewable. However, the desire for renewable energy sources must be balanced with economic viability when the output is compared to grid supplied electricity and the fuel availability necessary to provide reliable source of energy. Therefore, the planning team decided to examine a portfolio of energy generation resources and technologies having flexible capabilities that allow changes to be implemented as technologies and market forces mature. A brief description of the planning team's examination of both renewably-fueled and advanced fossil-fueled generating technologies follows.

9.5.2.1 Renewable Technologies

Solar - Solar technologies are ideal from the standpoint of environmental considerations since their operation produces no carbon dioxide. However, for this application in the center of the city space availability would make the installation of

an adequately sized solar array impractical. Also for an emergency energy system that requires 100% availability, the electrical power output of solar varies with the intensity of the sunlight and is not available at night. If solar electrical generation is desired for environmental reasons, it could be purchased from an Independent Power Provider (IPP) or a locally owned solar array could be located near a connection point to the local distribution system in an area where adequate vacant land is available. Rooftop solar arrays could be installed on the buildings being served by the microgrid. Either option would increase the life cycle cost and would not provide the level of reliability required for these facilities.

Wind **-** Local wind generation is not practical in the center of the city for obvious reasons and it is unreliable because of the variability of the wind. If wind generation is desired for environmental reasons it could be purchased from an IPP or possibly wind generators could be located near a connection point to the local distribution system in an area where adequate vacant land is available. However, these approaches would increase the life cycle cost compared to more conventional choices such as natural gas-fired CHP. Additionally, the inherent lack of reliability in this application would also be an issue.

Renewable Fuels **-** There is the potential to use renewable fuels such as solid biomass or a biofuel such as biodiesel. However, locating a solid fuel power plant in the city center would not be practical due to transportation, fuel storage, fuel handling and equipment requirements. Biodiesel with the appropriate prime mover is a definite possibility. Although biodiesel is not economically viable at this scale at the present time, the generating system could be designed to include technologies that use biodiesel as a supplemental fuel in the absence of natural gas, with an eye towards adopting biodiesel as the primary fuel source when it becomes economical to do so.

9.5.2.2 Advanced Fossil Technologies

Fuel Cell Combined Heat & Power **-** Fuel cells combined with Heat Recovery Steam Generators (HRSG) provide total system efficiencies in the 50 to 80% range, and fuel cells have a very small carbon footprint. However, most of the units currently available are limited to less than three megawatts of capacity. While these units are very efficient, their high capital and maintenance costs result in life cycle costs two to two and one-half times higher than combustion turbine or reciprocating engine generator installations with comparable CHP efficiencies.

Reciprocating Engine Combined Heat & Power **–** A reciprocating engine coupled with heat recovery technology provides a very efficient system. The thermal energy supplied from these systems is a combination of steam and hot water. If there is a nearby requirement for the hot water and steam, the economics of these systems are comparable to those of a combustion turbine system. The capital cost is also lower than fuel cells or combustion turbines. However, they usually require exhaust after-treatment to comply with emissions requirements, which adds significant operating cost. Maintenance costs are lower than fuel cells and higher than for combustion turbines.

Combustion Turbine Combined Heat & Power **-** A combustion turbine combined with a Heat Recovery Steam Generator can efficiently provide electricity and thermal energy for the critical facilities identified for inclusion in this microgrid. This is particularly true when healthcare facilities with their high and consistent electrical and thermal requirements are part of the system. System efficiencies for combustion turbine CHP systems are typically in the 60 to 75% range. Maintenance requirements are lower than the other prime movers.

9.5.2.3 Selection of Source Technology

As noted, the selected source technology for the microgrid generating unit must be capable of supplying 100% reliability, it must be highly efficient and operationally flexible and it must be environmentally acceptable. The technology must also have the capacity to serve the peak load of the connected facilities:

- City Facilities
- Kaweah Delta Medical Center
- Visalia Convention Center

The selected systems will require one interconnection between the microgrid and the SCE grid and appropriate business arrangements and grid management protocols will have to be developed among the City, the Kaweah Delta Medical Center and SCE.

The required capacity of the prime mover cannot be precisely established with the level of study included in this planning effort. However, since the Kaweah Delta Medical already has an existing 3.5 MW unit in place it is reasonable to believe that another 1 or 2 MW unit operating in parallel with the existing generation would likely provide the capacity necessary to power the entire microgrid.

9.5.2.4 Economic Screening of Technologies

Three representative technology generation systems were evaluated and compared to solar electricity purchased from an Independent Power Provider. The generation technologies included:

- Combustion Turbine CHP;
- Fuel Cell CHP;
- Reciprocating Internal Combustion Engine CHP;
- PV Solar

The economic screening process evaluated four technologies on a cost and performance basis. Levelized annual costs that accounted for capital investment, energy, operating and maintenance costs were drawn from analysis performed during the development of comparable projects. These unit costs provide a direct comparison of each technology. Table 23 contains the results of this comparison of the technologies being considered. Wind generation was excluded because the Wind Availability map indicates that wind resources are inadequate in the Visalia area.

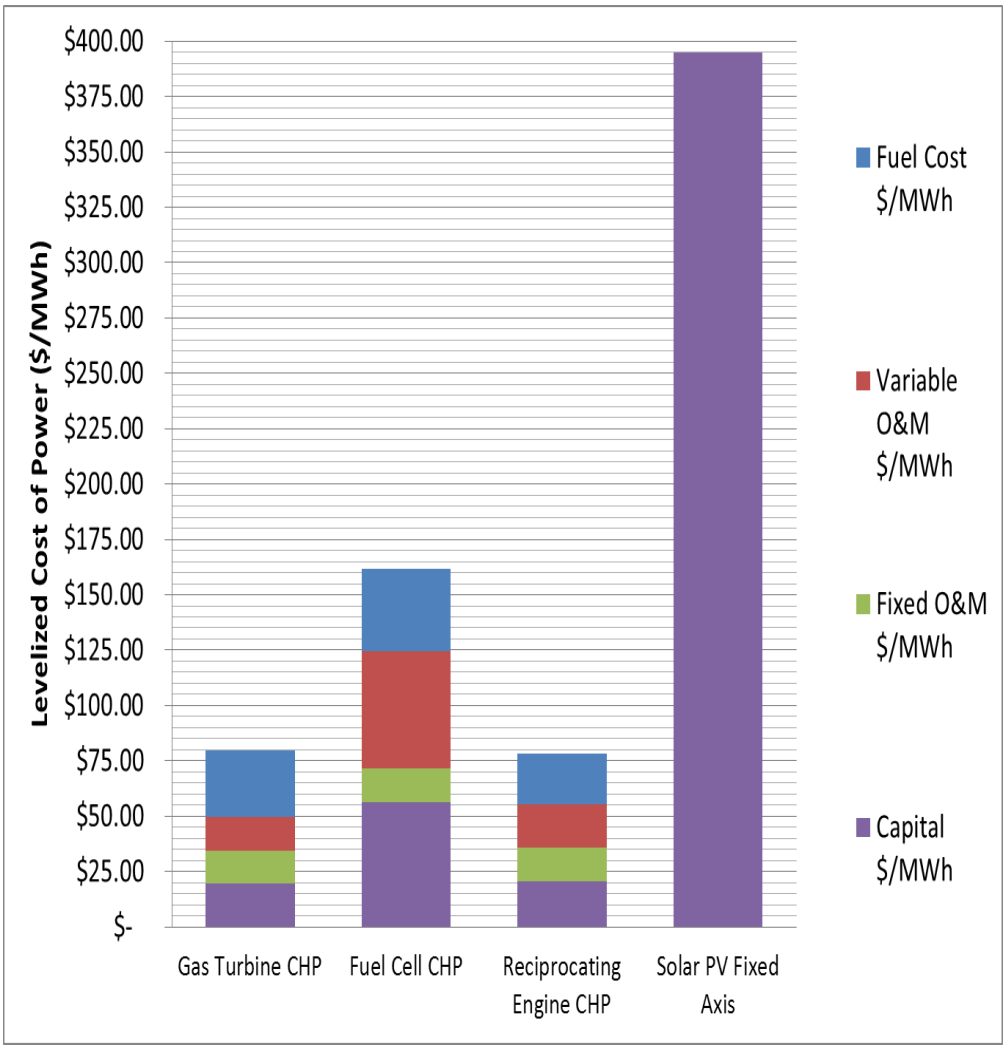

Figure 6. Comparative Analysis of Generator Candidates

9.5.2.5 Selected Generation Technology

Based on the comparative cost analysis of the generation technologies and their performance characteristics relative to the requirements of the serviced facilities, the most promising candidate for this microgrid application appears to be a small combustion turbine generator coupled with a HRSG to supplement the existing generation of the Kaweah Delta Medical Center. The unit cost of electricity generated is essentially equal for the combustion turbine system and the reciprocating internal combustion engine. However the combustion turbine produces more high quality thermal energy (steam Vs. lower temperature steam and hot water) than the reciprocating internal combustion system. The higher quality thermal is more appropriate for the requirements of the Medical Center. The combustion turbine can be fueled with natural gas or diesel fuel in an emergency capacity. Additionally, there may be a possibility of using biofuel with these turbines in the future.

9.5.3 Technology Configuration

The cogeneration system will consist of the following components:

- One combustion turbine electrical generator;
- One natural gas compressor skid;
- One Heat Recovery Steam Generator
- A deaerator skid with feedwater pump;
- A condensate storage skid with transfer pumps;
- All piping, ductwork, controls and appurtenances to create a complete and operational system.

9.5.4 Plant Location

Ideally the additional CHP system would be located at the Kaweah Delta Medical Center. Co-location of the plant near the hospital's facilities would present the possibility of employing Medical Center staff resources to operate and maintain both facilities with minimal increase in staffing requirements. This assumes appropriate business arrangements could be executed between the City, the Medical Center and Southern California Edison.

Appendices

Appendix A. Authorities, Frameworks, Relationships & Responsibilities

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Appendix C. EES-Status of Critical Facilities & Infrastructure

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Appendix A

AUTHORITIES, FRAMEWORKS, RELATIONSHIPS and RESPONSIBILITIES

Principal Local and County Authorities and Plans

This energy assurance planning is undertaken consistent with and in support of the Tulare County Operational Area Emergency Management and Response Planning described in this section. The City's energy-specific planning and response efforts operate within the federal and state legal frameworks, referenced below, as part of the first line of emergency preparedness, response and incident management support. For continuity, the Visalia enabling authorities provided in Chapter 1 of the EAP are repeated in this appendix.

Visalia Municipal Code - Title 2, Chapter 2.28: The declared purposes of this chapter are to provide for the preparation and carrying out of plans for the civil defense of persons and property within this city in the event of a disaster, and to provide for the coordination of the civil defense and disaster functions of this city with all other public agencies and affected private persons, corporations and organizations.

Visalia Municipal Code - Title 2, Chapter 2.32: The purposes of this chapter are to provide for the preparation and carrying out of plans, for disaster and emergency services, the protection of persons and property within the city in the event of disaster, and to provide for the coordination of the disaster and emergency functions of the city with all other affected persons and agencies, both public and private.

Visalia Emergency Operations Plan, 2008 - Chapter 1: The Emergency Operations Plan (EOP) addresses authorities enabling the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the City of Visalia.

Visalia General Plan, 1990 - Safety Element, Ordinance 2475: The element covers education and disaster preparedness and item three (3) states - "It is the policy of the City of Visalia to continue to upgrade preparedness strategies and techniques at all levels of government so as to be prepared when disaster, either natural or man-made, occurs".

City of Visalia Council Resolution, February 2010: The Council authorized the submittal of an application to the U.S. Department of Energy to obtain grant funding for the development of a Local Energy Assurance Plan (LEAP). This resolution directed that the City staff produce and disseminate a model municipal emergency energy system design and plan to assure the operation of critical community facilities and infrastructure during disruptions of electric and gas supplies.

Tulare County Area General Plan, 1975 – Safety Element: The element of the general plan adopted by the Tulare County Association of Governments establishes plans, policies and programs to reduce hazards and conserve economic, environmental and social values within Tulare County.

Tulare County Hazards Mitigation Plan (HMP), 2011: The HMP analyzes a wide range of potential natural and man-made hazards, and prioritizes future projects that will reduce damage and impacts from disasters in the municipalities in Tulare County, including the City of Visalia.

Tulare County Emergency Operations Plan (EOP), 2004: The plan addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting the County of Tulare communities. Specifically, the plan establishes the emergency management organization required to mitigate an emergency or disaster; identifies the policies, responsibilities and procedures required to protect the health and safety; and establishes the operational concepts and procedures associated with Initial Response Operations (field response) to emergencies in the County**.**

Principal State Laws and Plans

State regulations establish the Standardized Emergency Management System (SEMS). This system includes requirements for all agencies with emergency response capability within the state, including municipalities, for incident command systems, multi-agency coordination systems, mutual aid agreements and the "operational area" concept.

California Energy Emergency Response Plan – The Public Resources Code Sections 25216.5(b) and 25700 direct the California Energy Commission to prepare and submit to the Governor and Legislature a plan to deal with possible shortages of electrical energy or fuel supplies to protect public health, safety and welfare (California Emergency Services Act, Chapter 7 of Division 1 of Title 2 of the Government Code, including Article 95, Senate Bill 1841, Petris; California Natural Disaster Assistance Act; California Energy Shortage Contingency Plan, December 1988, Public Resources Code Sections 25216.5 and 25700 et seq.; State of California Emergency Plan, July 1990; Orders and Regulations Promulgated by the Governor during a State of Emergency).

The California Energy Emergency Response Plan is the state's strategy for responding to an energy emergency. The Plan is consistent with California Government Code Section 8607 which mandates the use of SEMS for all state agencies during a proclaimed disaster or emergency. The Plan is consistent with the National Incident Management System (NIMS) "Multi-Agency Coordination System" requirement because of its use of the five SEMS functions, as well as consistent with the National Response Plan (NRP) that uses these functions to manage and coordinate federal emergency response functions, including ESF #12--Energy.

California Energy Commission's Local Government Emergency Planning Handbook – This handbook provides guidance to local governments in developing energy shortage response plans that build upon community resources and authorities, as well as integrate local management and communications systems with those of the California Energy Commission, Office of Emergency Services and the California Emergency Management Agency.

Emergency Managers Mutual Aid (EMMA) Plan – Pursuant to the Master Mutual Aid Agreement, the California Emergency Council approved the Emergency Managers Mutual Aid Plan on November 21, 1997. The purpose of EMMA is to support disaster operations in affected jurisdictions with professional emergency management personnel from local and state government. Requests for mutual aid are made through the Operational Area by the county, cities and special districts. The Operational Area acts as the coordinator point between the County, cities and the Cal EMA Southern region. The Cal EMA headquarters facilitates the provision of mutual aid among Cal EMA regions.

Principal Federal Laws and Plans

Federal Disaster Management Act 2000 (Public Law 106-390) – Federal law requires that, in order to remain eligible for disaster Federal Emergency Management Agency (FEMA) funding after 2004, every jurisdiction in the United States must have an approved Hazard Mitigation Plan (HAZMIT plan) to address the management of, and response to, emergency situations (Federal Disaster Relief Act of 1950 (Public Law 93-288); Strategic Petroleum Reserve Drawdown Plan, Amendment 4 (Public Law 97-299)). DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 of DMA 2000 specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation plan prior to a disaster. It encourages and rewards state and local authorities that work together on pre-disaster planning and promotes sustainability as a risk reduction strategy.

National Response Framework – The National Response Framework (NRF) is an all-discipline, all-hazards plan that establishes a single, comprehensive approach to domestic incident management. Required by a Homeland Security Presidential Directive (HSPD)-5, the NRF 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 NRF is built on the template of the National Incident Management System (NIMS), which is designed to provide a consistent framework for incident management at all jurisdictional levels regardless of the cause, size or complexity of the incident. The NRF operates on the premise that in most cases, local and state resources and interstate mutual aid will provide the first line of emergency response and incident management support. The Plan incorporates best practices and procedures from incident management disciplines and integrates them into a unified structure; it also establishes

protocols, including ones to protect and restore critical infrastructure and key resources (CIKR).

NRF Emergency Support Function #12 – The NRF contains Emergency Support Function (ESF) Annexes that describe the roles and responsibilities of primary and support agencies for key response functions, like ESF #12 for Energy. USDOE is the lead federal agency when the federal ESF-12 is activated. The purpose of ESF 12 is to provide guidance to governments at all levels, support agencies and organizations in responding to and recovering from shortages and disruptions in the supply and delivery of electricity, natural gas, and other forms of energy and fuels.

National Infrastructure Protection Plan – Based on the Homeland Security Act of 2002 (and also Homeland Security Presidential Directives (HSPDs) 7 and 8 issued by the U.S. Department of Homeland Security, the NIPP is a comprehensive, integrated strategy to identify, prioritize and coordinate the protection of critical infrastructure and key resources (CIKR) and delineates how the Department will work with Federal departments and agencies, State and local governments, the private sector and foreign countries and international organizations. The NIPP describes activities to be undertaken by the Department to define and prioritize, reduce the vulnerability of, and coordinate protection of CIKR; provides initiatives for sharing CIKR information and releasing threat warning data to State and local governments and the private sector; addresses the coordination of the NIPP with other Federal emergency management and preparedness activities, including the NRF. In furtherance of this Plan, the USDOE coordinated the development of an Energy Sector Specific Plan.

National Incident Management System (NIMS) – The Department of Homeland Security released the NIMS in March, 2004 and outlined a phased approach to local government compliance with the NIMS, with full compliance by September 30, 2006. California integrated the NIMS into its emergency management system through an Executive Order. The NIMS is a comprehensive system that improves local response operations through the use of the Incident Command System (ICS) and the application of standardized procedures and preparedness measures.

PRINCIPAL CITY and COUNTY AGENCIES and RESPONSIBILITIES
City of Visalia

Office of the Mayor – The Mayor has authority to declare emergencies and authorize response measures. The Mayor also issues executive orders to require implementation of mandatory measures and coordinates press releases and regular updates.

Energy Emergency Assurance Coordinator – The designated person has working knowledge of emergency services, a broad-based knowledge of local government infrastructure and established relationships with all levels of government and the private sector. The Coordinator undertakes energy-related activities appropriate to the verification, pre-emergency and emergency response phases of a supply disruption or emergency, including: Monitoring the progress of the energy

emergency, Obtaining and analyzing information from the CEC and others via established communications lines; maintaining contact and liaison with local energy providers; Monitoring and reviewing informational updates and maintaining activity logs; Preparing and disseminating summary reports; Implementing appropriate energy conservation strategies; Coordinating with all emergency management staff to assure the availability of energy for critical facilities and emergency response vehicles; Coordinating with the Public Information Officer on developing and disseminating energy emergency public information messages and briefings; Assessing the energy needs of the private sector; Assisting in the implementation of federal and state energy emergency mitigation programs (such as the Petroleum Fuels Set-Aside), especially in procuring and distributing essential energy resources to support emergency operations; Monitoring the use and progress of energy emergency conservation strategies; Advising the CEC, OES, CEMA of the impact of the local energy emergency and the progress and effectiveness of mitigation measures; and developing appropriate post-emergency reports.

Public Information Officer – Designated person responds to media and public calls, maintains activity log and media/public contact log, monitors and records media coverage; assists with the preparation of public messages, assures that all media releases and press materials are reviewed and approved by the Emergency Services Director and the Energy Emergency Assurance Coordinator and provides them updates on media and public inquiries, releases emergency instructions/information to the public.

Public Works Department – The PWD has responsibility to provide and install emergency generators to critical facilities during extended power outages. PWD also oversees and maintains fuel supplies and fueling stations for municipality agencies and administers contracts with fuel suppliers.

Fire and Emergency Response Department – Fire protection and emergency medical and other services are provided by the Visalia Fire Department. The City uses a growth related service standard to help determine if public safety is adequately protected. Fire Department staffing and equipment are expanded, as needed, to meet the service standard and to minimize hazards to the firefighters and public. The Department enhances its capabilities through mutual aid agreements with fire departments in the surrounding communities.

Tulare County Emergency Operations Plan

The Tulare County Emergency Operations Plan (EOP), currently being revised, is designed to provide a planned response to emergencies associated with natural disasters, technological incidents and threats to national security that may affect Tulare County. The plan establishes an emergency management organization to mitigate any emergency or disaster that threatens the County. It specifies policies, responsibilities and procedures necessary to protect life, health, safety, and property within the County. The plan establishes the operational framework and procedures for both initial (field response) and extended (Emergency Operations Center) response as well as for recovery operations. The plan uses the California

SEMS framework to facilitate multi-agency and multi-jurisdictional coordination, particularly between the Tulare Operational Area and local governments, including special districts and state agencies, in emergency operations.

Emergency Operations Center – Emergency management within the Tulare County Operational Area consists of the synchronization of myriad governmental, non-profit and business organizations into a single focus response with the goal of saving lives, property, protecting the environment and minimizing social loss from disaster or emergency. Effective response is predicated on community preparedness and resiliency, deriving from: (1) The ability of first responder agencies to shift to emergency operations effectively and efficiently; (2) The strength of the Emergency Management System and organizations within the region to include the EOC's mass notification systems and communications systems. In accordance with the Standardized Emergency Management System (SEMS), the EOC is organized into five major functional areas: Management; Operations; Planning & Intelligence; Logistics; and Finance/Administration.

Tulare County Cities – The eight municipalities within the County are encouraged to develop their own emergency operations plans based on the SEMS model to guide local response to emergencies.

Fire Districts – Fire Districts are responsible for assessing their supplies and resources, providing information to the Operation Area Energy Coordinator and participating in conservation measures to the extent possible.

Principal State Agencies And Responsibilities

California Emergency Management Agency – The CalEMA, which replaced the State Office of Emergency Services (OES), is the lead agency in an emergency which is the result of a disaster. Staff coordinates the emergency activities of all State departments and agencies and operates the statewide emergency communications system. CalEMA also assists with coordinating mutual aid, when it is requested by cities and counties.

California Energy Commission – The Energy Commission is the agency responsible for energy emergency response planning and serves as a clearinghouse for gathering and disseminating information during an energy emergency. It is the lead agency in a supply disruption emergency and, in any situation, is the focal point for energy information and analysis. The five functional areas of the management structure defined by SEMS govern the CEC's Energy Emergency Management Center.

Principal Federal Agencies And Responsibilities

U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability – DOE is responsible for protecting the national interests in the event of a foreign or domestic energy supply disruption. Information will be provided to DOE by the CEC and Cal EMA. As the lead federal agency for Emergency Support Function #12 of

the National Response Plan, DOE is responsible for, among other things, forecasting energy supply and demand, and estimating system damage; advising local authorities on energy preparedness, restoration, assistance and supply priorities; providing regular incident situation reports; serving as an information clearinghouse; assisting in the provision of temporary fuel supply; recommending conservation actions.

USDOE Energy Emergency Assurance Coordinator System (EEAC) – USDOE's Office of Electricity Delivery and Energy Reliability maintain an Energy Emergency Assurance Coordinators website through which authorized state and local energy emergency coordinators may access energy security information, including daily news summaries, emergency situation reports, lessons learned, links to outage and curtailment information and the ability to email messages to up-to-date listings of counterparts in other jurisdictions.

U.S. Department of Homeland Security, Federal Emergency Management Agency – FEMA provides disaster assistance funds and assists with providing federal resources through the mutual aid system. If a presidential disaster declaration is made, FEMA can mission-assign the U.S. Army Corps of Engineers to provide technical advice, electrical generators, and other support services as requested to alleviate an energy shortage.

U.S. Army Corps of Engineers – If mission-assigned by FEMA in a federally funded disaster, the U.S. Army Corps of Engineers (USACE) will provide technical advice, electrical generators and other support services as needed to supplement State, regional and local efforts in the temporary restoration of electrical service.

U.S. Environmental Protection Agency – The California Air Resources Board can seek temporary waivers to import fuel that does not meet local air quality requirements in the event of a severe fuel shortage, if fuel supplies are not available that meet current air quality standards and other environmental regulations.

U.S. Department of Transportation – The Office of Pipeline Safety oversees rules that apply to intra- and inter-state pipelines. The Federal Motor Carrier Safety Administration generally will be contacted if California State makes or receives a request to waive highway fuel transport driver hours to facilitate fuel delivery during a supply shortage or if the restrictions will adversely affect the distribution system's ability to deliver fuel to meet demand.

Appendix B

Visalia EAP Literature Review/References

Literature Review - The first element of the baseline analysis consisted of a comprehensive review of existing federal, state, regional (Tulare County), City of Visalia policy, planning and guidance documents relating to energy and emergency management. The following documents were considered the most important for plan formulation.

- 2011 Tulare County Hazard Mitigation Plan - Tulare County Office of Emergency Services, 2011
- A Guide to Critical Infrastructure and Key Resources Protection at the State, Regional, Local, Tribal, and Territorial Level - U.S. Department of Homeland Security, 2008
- California Multi-Hazard Mitigation Plan - State of California, California Emergency Management Agency, State of, 2010
- Chula Vista, California Energy Assurance Plan – City of Chula Vista, California, 2011
- City of Visalia Emergency Operations Plan – City of Visalia, 2008
- Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans: Comprehensive Preparedness Guide (CPG) 101– U.S. Department of Homeland Security, 2009
- Electrical Energy Security: Assessing Security Risks Part I – The Regulatory Assistance Project, Issue Letter, April 2002
- Electrical Energy Security: Policies for a Resilient Network Part II - The Regulatory Assistance Project, Issue Letter, April 2002
- Emergency Operations Plan: Crosswalk for Plan Review - California Emergency Management Agency (formerly Office of Emergency Services), 2007
- Emergency Planning Guidance for Local Government - California Emergency Management Agency (formerly Office of Emergency Services), 1999
- Emergency Response Plan, California Water Service Company, Visalia District Office, Visalia, California, 2008
- Energy and Water Distribution Interdependency Issues: Best Practices and Lessons Learned – U.S. Environmental Protection Agency, 2005
- Energy Emergency Response Plan – California Energy Commission, 2006
- Foundation for the Standardized Emergency Management System (SEMS) – California Emergency Management Agency, 2010

- General Plan Update, Public Facilities & Services Existing Conditions Report, City of Visalia, 2010
- Hardening and Resiliency: U.S. Energy Industry Response to Recent Hurricane Seasons – U.S. Department of Energy, Infrastructure Security and Energy Restoration, Office of Electricity Delivery and Energy Reliability, 2010
- Index of U.S. Energy Security Risks – Institute for 21st Century Energy, Affiliated with the U.S. Department of Commerce, 2010. Additional on-line resources available at: http://www.energyxxi.org/energysecurity/
- Local Government Emergency Operations Center Position Checklists - California Emergency Management Agency (formerly Office of Emergency Services), 1997
- Local Government Energy Assurance Guidelines: Version II – Public Technology Institute for the U.S. Department of Energy, 2011
- Local-Level Energy Assurance Framework: 10 Steps to Build a Plan: Supplement to Local Government Energy Assurance Guidelines - U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability, 2010
- National Response Framework (NRF) – U.S. Department of Homeland Security, 2008. Also the Emergency Support Function (ESF)#12—Energy Annex and the Critical Infrastructure and Key Resources Support Annex
- National Response Plan and the National Incident Management System (NIMS) – Department of Homeland Security, 2008 and updates 2009
- Safety Element, General Plan, City of Visalia, California, 1975
- State Energy Assurance Guidelines – National Association of State Energy Officials, 2009
- Stormwater Management Program – City of Visalia, 2005
- The Role of Transit in Emergency Evacuation – Transportation Research Board of the National Academies, 2008
- The ARRA Energy Assurance Planning Bulletin – U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability, periodic publication
- Tulare County Emergency Operations Plan: Working Copy – Tulare County Office, 2012
- Visalia General Plan Update: Summary Paper of Policy Discussions: Including Proposal Revisions for Final Review – General Plan Update Committee, City of Visalia, 2012

Appendix C

EES-Status of Critical Facilities & Infrastructure
Publicly-Owned

Visalia, California - Emergency Generators				
Critical Community Facilities	**Generator Data**			
	Make	**Model**	**Capacity** (kW)	**Fuel Type**
Administration & Command				
City Hall - West	Boss - Perkins	P125	125	Diesel
City Hall - East	Generac	90A04236-S	12	Natural Gas
Emergency Operations Center[1]	Cummins	GGHF	70	Natural Gas
Public Safety				
Police - Headquarters	Cummins	400DFCE	400	Diesel
Police - Substation District 1	Onan	150DSHAA	150	Diesel
Police - Substation District 2	Onan	150DSHAA	150	Diesel
Fire Administration	Shared with City Hall - West			
Fire - Station #51	Shared with Police - Headquarters			
Fire - Station #52	Kohler	20RZ82	20	Natural Gas
Fire - Station #53	Onan	5.0CCK	5	Natural Gas
Fire - Station #54 & North Fire Annex	Kohler	20RZ82	20	Natural Gas
Fire - Station #55 & Fire Training Facility	Kohler	125RZG	125	Natural Gas
Critical Communications				
Repeater Site - Murray	UNK	UNK	10	Natural Gas
Other Key Facilities				
Visalia Municipal Airport	Cummins	QSB7-G5-NR3	208	Diesel
Convention Center	Generac	90A04236-S	12	Diesel
Waste Water Treatment				
Water Conservation Plant Headworks				
Generator 1	Katolight	CD550V6T2	550	Diesel
Generator 2	Detroit Diesel	900DS	900	Diesel

REMARKS

1. UNDER CONTRACT BUT NOT CURRENTLY INSTALLED

EES-Status of Critical Facilities & Infrastructure
Privately-Owned

Visalia, California - Emergency Generators				
Critical Community Facilities	**Generator Data**			
	Make	**Model**	**Capacity** (kW)	**Fuel Type**
Medical & Special Care Centers				
Kaweah Delta Medical Center Mineral King Wing				
Gas Turbine	Centaur 40 Gas Turbine		3,500	Natural Gas
Generator 1	UNKNOWN		800	Diesel
Generator 2	UNKNOWN		800	Diesel
Kaweah Delta Medical Center Acequia Wing	UNKNOWN		1,000	Diesel
Information System Services	UNKNOWN		400	Diesel
Community Health Center	UNKNOWN		248	Diesel
Kaweah Delta Rehab Hospital	UNKNOWN		600	Diesel
Kaweah Delta Mental Health	UNKNOWN		350	Diesel
Potable Water Supply Facilities				
Water Pumping Station 7-01	UNKNOWN			Diesel
Water Pumping Station 14-01	UNKNOWN			Diesel
Water Pumping Station 26-01	UNKNOWN			Diesel
Water Pumping Station 27-01	UNKNOWN			Diesel
Water Pumping Station 38-01	UNKNOWN			Natural Gas
Water Pumping Station 41-01	UNKNOWN			Diesel
Water Pumping Station 42-01	UNKNOWN			Diesel
Water Pumping Station 45-01	UNKNOWN			Diesel
Water Pumping Station 47-01	UNKNOWN			Diesel
Water Pumping Station 48-01	UNKNOWN			Diesel
Water Pumping Station 49-01	UNKNOWN			Diesel
Water Pumping Station 50-01	UNKNOWN			Diesel
Water Pumping Station 55-02	UNKNOWN			Diesel
Water Pumping Station 56-01	UNKNOWN			Diesel
Water Pumping Station 58-01	UNKNOWN			Natural Gas
Water Pumping Station 60-01	UNKNOWN			Gasoline
Water Pumping Station 63-01	UNKNOWN			Diesel
Water Pumping Station 77-01	UNKNOWN			Natural Gas
Water Pumping Station 83-01	UNKNOWN			Diesel
Water Pumping Station 92-01	UNKNOWN			Diesel
Water Pumping Station 93-01	UNKNOWN			Diesel
Water Pumping Station 94-01	UNKNOWN			Diesel
Water Pumping Station 95-01	UNKNOWN			Diesel
Water Pumping Station 96-01	UNKNOWN			Diesel

Critical Facilities & Infrastructure
Generator Deficiency

Visalia, California - Generator Deficiency	
Critical Community Facilities	**Required Generator Capacity**
Administration & Command	
City Hall - North	290
Public Safety	
Police Dept. - Adobe Office	45
Critical Communications	
Repeater Site - McAuliff	10
Repeater Site - Airport	10
Repeater Site - Giddings	10
Transportation & Fleets	
Transit Center	Shared with City Hall - North
Transit Maintenance Facility	1,000
Fleet Services - Diesel Fuel Depot	75
Visalia Transit - CNG Production Facility	500
Visalia USD - CNG Production Facility	350
Facilities & Equipment	
Solid Waste - Admin, Wrehse, Shop	170
Traffic Safety - Office & Shop	45
Public Works - Admin Offices & Mod.	170
Other Key Facilities	
SPCA	30
Waste Water Treatment	
Largest Sanitary Lift Station - Airport	50
Storm Water Lift Stations x 33	200
Standard Sanitary Lift Station x 12	35
Other Potential Shelters	
COS - Porter Field House	95
COS - Moro Field House	65

Critical Facilities & Infrastructure
Generator Performance Data

Visalia, California - Emergency Generator Performance Data

Critical Communicty Facilities	Generator Data		Burn Rate[1]		Fuel Storage Capacity (Gal.)	Run Time[2] (Hrs.)	72 HR Run Time Capacity[2] (Gal. or ft^3)
	Capacity (kW)	Fuel Type	1/2 Load	Full Load			
Administration & Command							
City Hall - West	125	Diesel	5.0	9.3	500	53.9	675
City Hall - East	12	Natural Gas	122[3]	187[3]	0	0	13,500
Emergency Operations Center[4]	70	Natural Gas	587[3]	987[3]	0	0	71,100
Public Safety							
Police - Headquarters	400	Diesel	15.9	29.7	500	16.8	2,150
Police - Substation District 1	150	Diesel	5.9	11.1	175	15.7	825
Police - Substation District 2	150	Diesel	5.9	11.1	175	15.7	825
Fire Administration	Shared with City Hall - West						
Fire - Station #51	Shared with Police - Headquarters						
Fire - Station #52	20	Natural Gas	204[3]	312[3]	0	0	22,500
Fire - Station #53	5	Natural Gas	51[3]	78[3]	0	0	5,700
Fire - Station #54 & North Fire Annex	20	Natural Gas	204[3]	312[3]	0	0	22,500
Fire - Station #55 & Fire Training Facility	125	Natural Gas	984[3]	1,651[3]	0	0	118,900
Critical Communications							
Repeater Site - Murray	10	Natural Gas	102[3]	156[3]	0	0	11,300
Other Key Facilities							
Visalia Municipal Airport	208	Diesel	7.8	13.3	308	23.2	1,200
Convention Center	12	Diesel	0.5	0.9	50	55.6	75
Waste Water Treatment							
Water Conservation Plant Headworks							
Generator 1	550	Diesel	21.8	40.8	1,000	24.5	2,950
Generator 2	900	Diesel	35.7	66.8	1,000	15.0	4,825
Medical & Special Care Centers							
Kaweah Delta Medical Center Mineral King Wing							
Gas Turbine	3,500	Natural Gas	UNK	UNK	N/A	N/A	N/A
Generator 1	800	Diesel	31.71	59.35	3500	59.0	4,275
Generator 2	800	Diesel	31.71	59.35	3500	59.0	4,275
Kaweah Delta Medical Center Acequia Wing	1,000	Diesel	39.63	74.19	4000	53.9	5,350
Information System Services	400	Diesel	15.85	29.68	1773	59.7	2,150
Community Health Center	248	Diesel	9.83	18.40	500	27.2	1,325
Kaweah Delta Rehab Hospital	600	Diesel	23.78	44.51	600	13.5	3,225
Kaweah Delta Mental Health	350	Diesel	13.87	25.97	350	13.5	1,875

REMARKS

1. BURN RATES WERE ESTIMATED USING SIMILAR SIZED GENERATORS IF OEM DATA WAS NOT AVAILABLE
2. EVALUATED AT FULL LOAD
3. SCFH OF NATURAL GAS
4. UNDER CONTRACT BUT NOT CURRENTLY INSTALLED

Appendix D

Sanitary & Stormwater Lift Stations

Visalia, California - Wastewater Treatment Facilities

Facility	Address	Priority	EES
Water Conservation Plant Headworks (Wastewater Treatment)	7579 Avenue 288	A	YES
Lift Station	3037 E. Noble	B	NO
Lift Station	Ben Maddox and St. John's	B	NO
Lift Station	Ben Maddox and Walnut	B	NO
Lift Station	Bradley and St. John's	B	NO
Lift Station	Buena Vista and St. John's	B	NO
Lift Station	Burke and Murray	B	NO
Lift Station	Caldwell and Jacob	B	NO
Lift Station	Chinowith and 198	B	NO
Lift Station	Chinowith and Caldwell	B	NO
Lift Station	Chinowith and Walnut	B	NO
Lift Station	Cotta and Tulare	B	NO
Lift Station	Court	B	NO
Lift Station	Crenshaw and COS Farm	B	NO
Lift Station	Damaree and 198	B	NO
Lift Station	Demaree and Victor	B	NO
Lift Station	Fairview Park and 63	B	NO
Lift Station	Ferguson and 63	B	NO
Lift Station	John Combs Park	B	NO
Lift Station	Julieann and Feemster	B	NO
Lift Station	Library	B	NO
Lift Station	Lindwood and Evans Ditch	B	NO
Lift Station	Mill Creek Park	B	NO
Lift Station	Mooney Blvd. and Modoc	B	NO
Lift Station	Mooney Blvd.& Packwood	B	NO
Lift Station	Pinkham and Tulare	B	NO
Lift Station	Sowell and Feemster	B	NO
Lift Station	SR-198 and Road 76	B	NO
Lift Station	St. John's and Norman	B	NO
Lift Station	Tulare and Roeben	B	NO
Lift Station	Walnut and County Center	B	NO
Lift Station	Walnut and Savannah	B	NO

Lift Station	Airport Plaza	B	NO
Lift Station	Border Links and Ranch Road	B	NO
Lift Station	Demaree and Pryor	B	NO
Lift Station	Effie and Camp	B	NO
Lift Station	Evergreen and Linda Vista	B	NO
Lift Station	Golf Course	B	NO
Lift Station	Mary and County Center	B	NO
Lift Station	Mill Creek and Main	B	NO
Lift Station	Mooney Blvd. and 272	B	NO
Lift Station	Mooney Blvd.& Sunnyside	B	NO
Lift Station	Shirk and 198	B	NO
Lift Station	St. John's and Modoc	B	NO

Appendix E

Energy Emergency Assurance Coordinator - Position Description

CITY OF VISALIA
ENERGY EMERGENCY ASSURANCE COORDINATOR

DEFINITION
To plan, organize, direct, and manage emergency energy assurance activities within the Fire Department; to coordinate energy assurance activities with other agencies and City departments; and to provide highly responsible technical support to the Fire Chief and City Manager.

SUPERVISION RECEIVED AND EXERCISED
Receives general direction from the Administrative Deputy Fire Chief. Exercises direct supervision over assigned professional, technical, and clerical staff.
ESSENTIAL FUNCTIONS – Functions may include, but are not limited to, the following:

- Plan, develop, and implement updates and revisions to the City of Visalia Energy Assurance Plan (EAP);

- Undertake energy-related activities appropriate to the verification, pre-emergency and emergency response phases of an energy supply disruption or emergency, including:

    - Monitoring the progress of the energy emergency;
    - Obtaining and analyzing information from the CEC and others via established communications lines;
    - Maintaining contact and liaison with local energy providers;
    - Monitoring and reviewing informational updates and maintaining activity logs;
    - Preparing and disseminating summary reports;
    - Implementing appropriate energy conservation strategies;
    - Coordinating with all emergency management staff to assure the availability of energy for critical facilities and emergency response vehicles;
    - Coordinating with the Public Information Officer on developing and disseminating energy emergency public information messages and briefings;
    - Assessing the energy needs of the private sector;
    - Assisting in the implementation of federal and state energy emergency mitigation programs (such as the Petroleum Fuels Set-Aside), especially in procuring and distributing essential energy resources to support emergency operations;
    - Monitoring the use and progress of energy emergency conservation strategies;

- Advising the CEC, OES, CEMA of the impact of the local energy emergency and the progress and effectiveness of mitigation measures; developing appropriate post-emergency reports.

- Establish an energy assurance training program and exercises for all related municipal personnel and conduct one USDOE/NASEO energy assurance table-top exercise each year;

- Identify vulnerabilities in the City's energy assurance system and mitigation measures;

- Ensure that all revisions in state and county plans are reflected in necessary revisions to the City of Visalia's Energy Assurance and Emergency Operations Plans;

- Prepare and make presentations to City Council, staff, and other agencies in the community;

- Coordinate and participate in communication with schools, hospitals, community, the press, and other agencies;

- Organize teams, plan training sessions, manage resources, and supervise multiple teams;

- Participate in budget preparation and administration;

- Prepare cost estimates for budget briefings;

- Monitor and control expenditures;

- Prepare, oversee and track reimbursement claims to state and federal agencies;

- Prepare and correspondence related to assignments;

- Use quality customer service to build positive relations with co-workers and the public;

- Perform other related duties as assigned.

MINIMUM QUALIFICATIONS

Knowledge of: Principles and practices of energy assurance planning; California Emergency Plan and California Master Mutual Aid Agreements; Health and environmental safety rules and regulations; Energy assurance protocols of state, federal and local agencies, including Federal Emergency Management Agency (FEMA) and Office of Emergency Services (OES); Principles and practices of assessment analysis and strategic planning techniques; Principles and practices of public speaking; Site assessment and mitigation techniques for energy

assurance; Budgeting procedures and techniques; Planning, scheduling, and supervision; Computer equipment and software applications related to area of assignment; Principles and practices of work safety and CITY OF VISALIA Energy Assurance and Disaster Preparedness.

ABILITY TO:

- Organize, implement, and maintain an Energy Assurance Plan for the City of Visalia;
- Present stand up training and make group presentations;
- Assist in the development and monitoring of an assigned program budget;
- Develop and recommend policies and procedures related to assigned operations;
- Explain pertinent City and department policies and procedures;
- Manage and prioritize workload to ensure completion within established time schedule;
- Work well under pressure and in a crisis situation;
- Work independently with minimum supervision;
- Communicate clearly and concisely, both orally and in writing;
- Establish/maintain effective working relationships with others;
- Work with various cultural and ethnic groups in a tactful and effective manner.

EXPERIENCE AND TRAINING

Any combination of experience and training that would likely provide the required knowledge and abilities is qualifying. A typical way to obtain the knowledge and abilities would be:

Experience:

Five years of increasingly responsible experience in environmental safety and emergency services, including one year of supervisory responsibility.

Training:

Equivalent to a Bachelor's Degree from an accredited college or university with major course work in energy, environmental science, occupational health and safety, public administration or a closely related field.

Certificates/Licenses:

Valid State of California Driver's License. Preferably a commercial driver's license.

PHYSICAL DEMANDS
On a continuous basis, sit at a desk, stand, or walk for long periods of time; perform simple grasping and fine manipulations; use telephone, and write or use a keyboard to communicate through written means; and lift or carry weight of 30 pounds or less. See in the normal vision range with or without correction to read typical business documents, computer screens, blueprints, and drafting plans; hear in the normal range with or without correction.

WORKING ENVIRONMENT
Primary work is in performed indoors in a carpeted and air-conditioned office environment with fluorescent lighting and moderate noise level; there is some exposure to the external environment when going to outlying offices. Work is frequently disrupted by the need to respond to in-person and telephone inquiries.

Appendix F Cost Estimates For Goal-Objective-Action Sets

Visalia Energy Assurance Plan - Cost Estimates

Goal #1 All critical facilities and infrastructure (CF&I) have sufficient energy supplies for 72-hours of continuous operation without refueling

Objectives
- A. Install EES at Critical Facilities and Infrastructure Without Them
- B. Ensure Adequate 72-Hour Fuel Capacity at CF&I With EES in Place
- C. Revise Vendor Contracts
- D. Conduct Municipal Inspections, Maintenance & Testing
- E. Encourage Private Facilities to Install Adequate Tank Capacity

Plan Code	Actions	Staff Costs	Consultants	Equipment	Totals
1.A.1	Install generator, fuel supply & fuel monitoring systems for sites without them [Staff labor cost based on a project manager at $80/hr. for 320 hours]	25600	300000	3,217,000	3542600
				Objective Total =	3542600
1.B.1	Install secondary fuel tanks, fuel line connectors, automatic transfer pumping systems, fuel monitoring systems for all diesel EES & CNG storage tanks for all natural gas EES installations	25600	197000	1977500	2200100
				Objective Total =	2200100
1.C.1	Require fuel vendors to guarantee 72-hours of fuel at each CF&I	266			266
1.C.2	Require fuel vendors to give the City priority fueling during an emergency	266			266
1.C.3	Require fuel vendors to locate fuel tankers onsite in Visalia during emergencies	266			266
1.C.4	Require vendor delivery personnel to practice secondary fuel delivery routes	266			266
1.C.5	Require fuel vendors to develop & exercise a worse-case delivery scenario	266			266
1.C.6	Require vendors to compose an Energy & Fuel Supply Systems Operations Plan	266			266
				Objective Total =	1596
1.D.1	Execute a schedule of quarterly inspections, maintenance & testing at all CF&I	9600			9600
1.D.2	Provide the City manager written results of all inspections & testing	3200			3200
				Objective Total =	12800
1.E.1	Issue RFP for modeling of wastewater & stormwater lift stations	12800			12800
1.E.2	Award contract, conduct study, add needed EES to critical infrastructure list (study only)		75000		75000
				Objective Total =	**87800**
				Goal Total	**5844896**

Goal #2 All privately-owned facilities supporting residents with functional needs (FSFNs) have sufficient energy supplies for 72-hours of continuous operation without refueling

Objectives
- A. Encourage Private Facilities to Install Adequate Tank Capacity
- B. Investigate Petroleum Set-Aside Program Supplements
- C. Determine Facility Supplemental Fuel Requirements
- D. Draft Emergency Fuel Requests
- E. Conduct Energy-Efficiency Audits for the FSFN's

Plan Code	Actions	Staff Costs	Consultants	Equipment	Totals
2.A.1	Draft an advisory letter to facility managers on the need for the 72-hour capacity	100			100
2.A.2	Conduct a briefing at each facility to explain the City's request	300			300
				Objective Total =	**400**
2.B.1	Contact the California Energy Commission to determine whether the inclusion of supplemental fuel requests for the privately-owned FSFNs can be included with the City's application for supplemental fuel under California's Petroleum Fuels Set-Aside Program.	1000			1000
				Objective Total =	**1000**
2.C.1	Convene a workgroup of private facility managers & Visalia Public Works personnel to discuss fuel requirements for each private facility during an extended energy outage. Document generator run-times based on existing capacity & determine supplemental tank & or fueling requirements	2500			2500
				Objective Total =	**2500**
2.D.1	Compose, review & finalize a fuel request to CEC for use in emergencies	1000			1000
2.D.2	Develop delivery & refueling procedures with fuel vendor & facilities' managers	1000			1000
				Objective Total =	**2000**
2.E.1	Translate existing commercial building energy efficiency audits into a format suitable for FSFNs in the community	1000			1000
2.E.2	Conduct onsite energy efficiency audits and compose follow-on reports for use by the facility managers		15000		15000
				Objective Total =	**16000**
				Goal Total	**21900**

Goal #3	All future publicly- and privately-owned facilities & infrastructure will be constructed in hazard-free locations & will have sufficient emergency energy supplies for 72-hours of continuous operation without refueling				
Objectives	**A. Prevent Location of Future CF&I & FSFNs in Hazard-Prone Areas** **B. Integrate Energy Assurance Plan (EAP) Elements into City Regulations** **C. Enforce EAP General Plan, Zoning Ordinance, & Building Codes Elements**				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
3.A.1	Utilize HMP Plan hazard overlays to identify hazard-prone areas	1000			1000
3.A.2	Establish buffer zones for the siting of CF&I & FSFNs near hazard-prone areas	0			0
3.A.3	Prohibit siting of CF&I and FSFNs in extreme hazard areas that cannot be adequately mitigated	0			0
3.A.4	Update the City's General Plan & zoning ordinance to include the provisions above	1000			1000
				Objective Total =	**2000**
3.B.1	Facilitate adoption of new building code provisions requiring all public or private buildings that will serve as CF&I and FSFNs to include emergency electrical systems with capacity to support 72-hours of continuous operation without refueling	2500			2500
3.B.2	Incorporate a provision into the building code requiring all new CF&I and FSFNs to include cost-effective technologies to reduce electrical energy demand during emergency operations	0			0
3.B.3	Amend the City's Fire Code, as necessary, to reflect EAP General Plan elements	2500			2500
				Objective Total =	**5000**
3.C.1	Provide an EAP compliance review any time a permit is obtained for any improvement on new & existing structures to serve as CF&I or FSFNs	1000			1000
3.C.2	Provide an inspection program & issue certificates of compliance to ensure maintenance of compliance with the City's EAP related codes	1000			1000
				Objective Total =	**2000**
				Goal Total	**9000**

Goal #4	All residents have access to, and a means of reaching community shelters equipped with emergency energy systems (EES)				
Objectives	**A. Plan a Network of EES Equipped Shelters** **B. Install Emergency Electrical System Equipment** **C. Formulate an Emergency Shelters Operation Plan** **D. Develop a Public Information Campaign & Alert System**				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
4.A.1	Secure agreement from officials for the COS & the Convention Center to use the Moro & Porter Field Houses & the Convention Center as mass shelters	100			100
4.A.2	Conduct an engineering survey of all three structures to determine EES requirements	1500	10000		11500
4.A.3	Estimate costs for engineering design, installation and commissioning of shelters	750	5000		5750
4.A.4	Develop a capital improvement budget, financing options & implementation plan	250			250
4.A.5	Acquire financing to initiate the renovation & installation phase	2500			2500
4.A.6	Rezone the COS and the Convention Center to enable them to serve as shelters	2500			2500
					0
				Objective Total =	**22600**
4.B.1	Conduct final engineering design & complete detailed bid specifications	25000	30000		55000
4.B.2	Structure a competitive solicitation for vendors, service & construction companies	2500			2500
4.B.3	Solicit and evaluate vendor, services and construction bids & award contracts	1500			1500
4.B.4	Commence energy demand reduction renovations	0			0
4.B.5	Install emergency electrical panels, gensets, fuel storage & fueling equipment [To include necessary fuel storage facilities at Visalia Transit to support evacuation]	0		456,000	456000
4.B.6	Test all system components at each shelter	5000	5000		10000
4.B.7	Inspect & commission all building renovations & equipment installations systems	1500			1500
				Objective Total =	**526500**
4.C.1	Develop an activation protocol based on weather & extent of the outage	500			500
4.C.2	Formulate public safety & fire safety elements of the plan	1000			1000
4.C.3	Collaborate with ARC to define other assistance elements	1500			1500
4.C.4	Collaborate with the Visalia Transit to develop emergency transit routes	500			500
4.C.5	Engage Visalia Paratransit to develop an element for transport of FSFN residents	1500			1500
4.C.6	Compose a draft plan, circulate for comment, revise & submit for Council Approval	2500			2500
4.C.7	Incorporate the Emergency Shelters Operation Plan as an Annex to the EOP	500			500
				Objective Total =	**8000**
4.D.1	Investigate use of the new Broadcast Message Center (BMC) system to notify residents of the activation of the emergency shelters on their cell phones	500			500
4.D.2	Develop a printed brochure and webpage on the City's site describing the shelters and providing a map of resident shelter assignments based on home addresses	5000			5000
4.D.3	Include brochure in utility bills or deliver door-to-door	250			250
				Objective Total =	**5750**
				Goal Total	**562850**

Goal #5	Critical facilities & infrastructure will be enhanced to address earthquake & flood hazards & the threat of terrorism				
Objectives	A. Enhance Resilience to Earthquake Hazards B. Enhance Resilience to Flood Hazards C. Enhance Resilience to the Threat of Terrorism				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
5.A.1	Track R&D relating to use of renewable energy resources for energy resiliency at the National Renewable Energy Laboratory (NREL), USDOE & DHS/FEMA	0			0
5.A.2	Track R&D developments relating to advanced battery storage & photovoltaic power	0			0
5.A.3	Consider solar PV applications at CF&I to reduce emergency energy demand	0			0
				Objective Total =	**0**
5.B.1	Compare FEMA 100-year flood maps & CF&I locations to identify flood risks	1000	10000		11000
5.B.2	Determine platform elevations for each site 24" above 100-year maximum flood	1000	10000		11000
5.B.3	Compose a project budget for all necessary platforms	1000			1000
5.B.4	Seek & secure project funding for the flood hazard enhancements	12800			12800
5.B.5	Solicit vendor bids & award security system contract	6400			6400
5.B.6	Elevate all EES components at CF&I	0	40000	640000	680000
5.B.7	Conduct annual inspection to ensure interlocking flood boards fit at the CNG facility	240			240
				Objective Total =	722440
5.C.1	Survey all EES to determine which require locked & alarmed security enclosures	0	10000		10000
5.C.2	Compose a project budget for all necessary enclosures & cameras at all CF&I sites	1000			1000
5.C.3	Seek & secure project funding for the security enhancements	12800			12800
5.C.4	Solicit & evaluate vendor bids & award security system contract(s)	6400			6400
5.C.5	Enclose all EES components in locked fenced enclosures	0	15000	200000	215000
5.C.6	Install security cameras & a central monitoring array at Police headquarters	0	20000	300000	320000
				Objective Total =	**565200**
				Goal Total	**1287640**

Goal #6	Municipal personnel have the capacity to inspect, operate, maintain & refuel emergency power systems supporting all critical facilities & infrastructure				
Objective	A. Develop Inventories, A Manual & Execute Training				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
6.A.1	Formulate a detailed inventory of emergency energy systems at each CCF	2000			2000
6.A.2	Formulate a comprehensive training program covering electrical generator & fuel systems inspection, operation, maintenance & monitoring for select PW personnel	4000			4000
6.A.3	Require selected PW personnel to complete the training & practical exams	25000			25000
				Objective Total =	**31000**
				Goal Total	**31000**

Goal #7	An Energy Emergency Assurance Coordinator or Energy Emergency Assurance Coordination Team work to continually maintain the City's energy assurance				
Objective	A. Recruit an Energy Emergency Assurance Coordinator (EEAC) B. *Top-10 Priority Assignments*				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
7.A.1	Conduct cross-departmental review of the draft EEAC position description (PD)	1000			1000
7.A.2	Revise & seek concurrence of final PD from all affected department heads	0			0
7.A.3	Recruit/Assign a staff member to the position with requisite capabilities [Alternately, form an energy assurance coordination team]	166000			166000
				Objective Total =	167000
7.B.1	Complete a detailed inventory of all EES components at all CF&I	0			0
7.B.2	Establish a consistent schedule of equipment maintenance inspections & testing	0			0
7.B.3	Revise all vendor contracts to include necessary energy assurance provisions	0			0
7.B.4	Draft, negotiate & execute the fuel equipment maintenance contract with Franzen-Hill	0			0
7.B.5	Collaborate with vendors & Public Works to produce an EES operations & maintenance manual for municipal personnel & execute training	0			0
7.B.6	Initiate discussions with COS & Convention Center on the shelters plan	0			0
7.B.7	Engage Tulare County OES & the Red Cross in the effort to build the shelters plan	0			0
7.B.8	Participate in the General Plan Update process to ensure inclusion of energy assurance	0			0
7.B.9	Conduct surveys & analysis to advance the objectives & actions of Goal #5	0			0
7.B.10	Conduct research to identify EAP implementation funding sources	0			0
				Objective Total =	0
				Goal Total	**167000**

Objectives	A. Develop Energy Assurance Provisions & Incorporate into EOP B. Develop Energy Assurance Provisions & Incorporate into General Plan				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
8.A.1	Develop step-by-step procedures for each SEMS functional area lead to respond to disruptions of electrical, natural gas, diesel and gasoline supplies	2000			2000
8.A.2	Identify additional personnel needed in each functional area to respond to a disruption	500			500
8.A.3	Develop internal (municipal) communications elements for each type of disruption	500			500
8.A.4	Develop external (public) communications elements for each type of disruption	500			500
8.A.5	Circulate proposed EAP provisions for departmental review & comment	0			0
8.A.6	Revise & finalize the EAP components & incorporate into the EOP	500			500
8.A.7	Seek Council approval of the amended EOP	0			0
				Objective Total =	**4000**
8.B.1	Collaborate with the Planning Division to determine the timing and format for a proposed energy assurance revision to the General Plan Update (GPU) Safety Element	0			0
8.B.2	Develop draft revisions to the Safety Element & circulate for department review	3200			3200
8.B.3	Revise to address comments & finalize for submission to the GPU Review Committee	500			500
8.B.4	Continue to participate in the GPU process to ensure inclusion of energy assurance	0			0
				Objective Total =	**3700**
				Goal Total	**3700**

Goal #9	An emergency communications plan is in place to guide delivery of essential information to the general public & the media during an energy disruption				
Objectives	**A. Compose a Format to Communicate Energy Emergency (EE) Information** **B. Identify EE Communication Stakeholders** **C. Identify Communication Distribution Channels** **D. Establish Intelligence Network & Crisis Monitoring Procedures**				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
9.A.1	Develop a format to be used to collect and distribute EE information to the public	500			500
9.A.2	Ensure alignment of the format with other gov't emergency comm. Protocols	250			250
9.A.3	Establish the internal approval process for EE communications to the public	250			250
9.A.4	Establish primary and back-up EE communications officers in all departments	250			250
				Objective Total =	**1250**
9.B.1	Identify and record contact information for public information officers all utilities	100			100
9.B.2	Identify key state, regional, county and local government points-of-contact	250			250
9.B.3	Identify key commercial and institutional points-of-contact	250			250
9.B.4	Identify key media industry points-of-contact	250			250
9.B.5	Identify key internal points-of-contact and method to communicate EE information to municipal personnel	250			250
				Objective Total =	**1100**
9.C.1	Explore use of existing City and other web-based communication channels	250			250
9.C.2	Explore use of pager and text messaging channels to reach stakeholders	250			250
9.C.3	Explore use of radio and internet radio channels to reach stakeholders	250			250
9.C.4	Determine how to input EE communications into area media outlets	250			250
9.C.5	Formulate instructions for distribution of EE communications through these channels	250			250
9.C.6	Prepare press kits appropriate for use with these channels	250			250
				Objective Total =	**1500**
9.D.1	Establish procedures to obtain state, county and utility emergency status updates	250			250
9.D.2	Assign primary and back-up personnel to monitor incident management channels	250			250
9.D.3	Establish reporting format & internal distribution procedures to share state, county & utility information with key internal stakeholders	250			250
				Objective Total =	**750**
				Goal Total	**4600**

Goal #10	The City has the capital necessary to pursue its energy assurance goals, objectives & actions				
Objectives	A. Develop Detailed Budgets for Priority Goal-Objective-Action Sets B. Determine the Most Appropriate Financing Options C. Revise the Energy Assurance Plan (EAP) & Seek Final Council Approval				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
10.A.1	Prioritize all goals giving top priority to goals whose objective and action sets require the smallest capital expenditures	2500			2500
10.A.2	Conduct detailed budget analysis for goals requiring significant expenditures	1000			1000
10.A.3	Compose and circulate for comment and final department head concurrence, budgets for each of the other 11 energy assurance goals	1000			1000
				Objective Total =	**4500**
10.B.1	Explore potential sources of funding including federal, state & regional government agency programs, utility energy efficiency & portfolio program funds, equipment manufacturers & other independent sources	250	$20,000		20250
10.B.2	Prioritize sources & estimate staff commitment to solicit support from each	250			250
10.B.3	Explore alternative ownership arrangements for major technology assets	1000	$10,000		11000
10.B.4	Convene a Council committee to review the products of each action & to generate recommendations for the revision of the Energy Assurance Plan	500			500
				Objective Total =	**32000**
10.C.1	Revise the Energy Assurance Plan, replacing the preliminary budget projections with the departmentally-approved budgets & endorsements for Council consideration	500			500
10.C.2	Calendar the EAP for Council Review, Discussion & Adoption	0			0
				Objective Total =	**500**
				Goal Total	**37000**

Goal #11	Adequate public and private mutual aid agreements serve as an additional source of energy assurance for the City				
Objective	A. Explore & Develop Public & Private Mutual Aid Agreements				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
11.A.1	Develop draft mutual aid agreement provisions for energy assurance covering supply of emergency power generators, supplemental fuelling support, use of shared shelters & personnel assistance in the operation of these systems & facilities	2500	10000		12500
11.A.2	Solicit input from fire departments in other Tulare County municipalities. Revise the draft to accommodate input & recirculate for approval & execution by the Council	2500			2500
11.A.3	Revise the City's existing mutual aid agreements to include the new energy assurance provisions	2500			2500
11.A.4	Explore & execute similar agreements with private entities that would benefit from & enhance the City's energy assurance activities	2500	10000		12500
				Objective Total =	**30000**
				Goal Total	**30000**

Goal #12	The City engages in ongoing energy assurance communication, information sharing & collaboration with adjacent municipalities, Tulare County, state agencies & private entities				
Objective	A. Develop an EA Action Agenda for the Tulare County Emergency Council B. Engage State Agencies in the EA Action Agenda				
Plan Code	**Actions**	**Staff Costs**	**Consultants**	**Equipment**	**Totals**
12.A.1	Formulate a briefing paper and presentation proposing the establishment of an energy assurance (EA) action agenda to be included in the charter & permanent agenda of the Tulare County Operational Area Emergency Council	1000			1000
12.A.2	Circulate the briefing materials to the Energy Working Group members for consideration at a forthcoming meeting	500			500
12.A.3	Discuss & revise the charter amendment & action agenda to address comments	250			250
12.A.4	Work with the Tulare OES to encourage the eight member cities of the Emergency Council to adopt the charter amendment and EA action agenda	0			0
				Objective Total =	**1750**
12.B.1	Circulate the amended Emergency Council charter and energy assurance agenda to the California Energy Commission, Public Utilities Commission for review and comment	500			500
12.B.2	Incorporate state agency input into a revised agenda for discussion among all Emergency Council entities during next quarterly meeting	250			250
12.B.3	Revise the action agenda to accommodate agreements reached & jointly pursue execution of the agenda	250			250
				Objective Total =	**1000**
12.C.1	Solicit private sector engagement in the action agenda by inviting officials from the utilities and privately-owned CF&Is in the region to participate in an Energy Assurance subcommittee to the Emergency Council.	0			0
12.C.2	Pursue: sharing/coordination of restoration information among all agencies and entities during disasters; facilitation of the repair/replacement of infrastructure for fuel, gas, electric, telecommunications, drinking water, wastewater, transportation and medical services after a disaster; and the preparation and response to regional power outages.	0			0
				Objective Total =	**0**
				Goal Total	**2750**

Project Total	**8,002,336**