

ENERGY SHORTAGE CONTINGENCY PLAN

COUNTY OF SAN LUIS OBISPO



1996

San Luis Obispo County - Office of Emergency Services

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Letter of Promulgation



COUNTY OF SAN LUIS OBISPO OFFICE OF EMERGENCY SERVICES

May 21 _____, 1996

To whom it may concern;

The preservation of the public health, the environment and property is an inherent responsibility of local, state, and federal government. The County of San Luis Obispo, in conjunction with other local agencies, has prepared this plan element to ensure an effective local response to an energy shortage.

While no plan can prevent emergencies, including energy shortages, from happening, good plans carried out by knowledgeable and well trained personnel can and will minimize the impacts of a disaster. This plan defines the emergency organization, assigns tasks, specifies policies and general procedures, and provides for coordination of planning efforts of the various emergency staff and service elements.

The objective of the energy shortage plan is to provide a coordinated response effort between local governments, and state and federal agencies so that an energy shortage is effectively managed, energy resources are allocated to critical services, and measures are implemented to decrease the county's energy use.

This plan element is a part of the San Luis Obispo County Emergency Operations Plan. It will be reviewed periodically and revised as necessary to meet changing conditions.

The San Luis Obispo County Board of Supervisors gives its full support to this plan.

Sincerely,

Bud Laurent, Chairperson
Board of Supervisors

Plan Distribution

County of San Luis Obispo:

Emergency Services Director and Deputy
Office of Emergency Services- (Office and Emergency Operations Center)
Sheriff's Office
County Health Department, Environmental Health Division
Planning and Building, Environmental Division-Energy Section
General Services
County Fire Department
County Board of Supervisors/County Clerk
County Agriculture Commissioner
Council of Governments

Cities:

City of Arroyo Grande
City of Atascadero
City of Grover Beach
City of Morro Bay
City of Paso Robles
City of Pismo Beach
City of San Luis Obispo

Fire Districts:

Avila Beach Fire District
Cambria Fire District
Cayucos Fire District
Oceano Fire District
San Miguel Fire District
Santa Margarita Fire
South Bay Fire District
Templeton Fire District

Law Enforcement:

California Highway Patrol
San Luis Obispo Area Office
Templeton Area Office

Revision Page

This Section is for plan holders to record the posting of each official plan revision distributed by the County Office of Emergency Services. Please enter the revision number, the pages changed, the date of the revision was posted, and the initials of the person posting the revision.

<u>Revision #</u>	<u>Pages Changed</u>	<u>Date</u>	<u>Name</u>
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Introduction

1 Introduction

1.1 Purpose

The purpose of this plan is to help San Luis Obispo County deal effectively with an energy supply disruption. The plan addresses various energy shortage scenarios affecting gasoline and diesel, electricity, natural gas, and propane. It is designed to be flexible, allowing for partial or full implementation depending on the type of shortage.

1.2 Scope

The plan will address energy shortages caused by supply disruptions or natural disasters. An example of a supply disruption would be an oil embargo which decreases crude oil feedstocks to refineries, decreasing the amount of gasoline available. A natural disaster could be a fire or an earthquake. The plan is intended to provide procedures that focus on responding to energy shortages. It will be used as part of the county's overall emergency response plan.

1.3 Objectives

The objectives of the plan are as follows:

- A. Provide an emergency management system and communications strategy consistent with existing state and federal emergency response plans;
- B. Prioritize critical energy needs for the continued operation and delivery of essential public services;
- C. Identify energy use reduction measures that will decrease energy consumption by the public, government agencies, and commercial and industrial users;
- D. Prepare an energy resource directory which identifies and describes vital energy users and suppliers;
- E. Conduct an energy shortage drill to exercise the plan and the County's response capabilities;
- F. Monitor the energy situation and provide information to appropriate agencies and organizations;

1.4 Plan Organization

The plan is organized into nine chapters. Chapter one discusses the goals of the plan and also addresses the legal authority by which the plan is applied as well as its relationship to other plans. Chapter two describes how the plan is to be used. It provides a discussion about the situations in which the plan will be activated.

Chapter three describes the criteria which is used to identify priority users of energy. This chapter provides policy guidelines for allocating energy resources to consumers on a priority basis. The emergency management system is discussed in chapter four. This includes a description of the incident command system and the energy emergency response network. The network is a group of energy providers and experts who will advise the unified command or incident commander regarding energy issues.

Chapter five describes possible scenarios that could activate the energy shortage plan. Chapter six addresses training issues. Chapter seven is an energy profile for San Luis Obispo County. This information gives a snapshot in time of the County's energy consumption patterns and resources. It is divided into different categories; transportation, residential, commercial, public facilities, industrial, and agricultural.

Chapter eight contains an extensive list of energy conservation/efficiency strategies to help the county decrease energy use in an emergency situation. Each strategy is described. Chapter nine includes the appendix and checklist that could be used in an energy emergency.

1.5 Relationship to other plans

The Energy Shortage Response Plan is an annex to the San Luis Obispo County Emergency Operations Plan. The Shortage plan is intended to be used as a supporting plan or as a stand alone document, depending on the situation. The Plan is meant to assist the County in responding to any emergency that may involve an energy shortage, or an energy shortage specifically. It is consistent with other County emergency plans and procedures, including, Emergency Broadcast System Plan, the Incident Command System, and the Disaster Management Guides. As such this plan can be used within the County's emergency organizational structure.

The Shortage plan is also consistent with the state's Energy Shortage Contingency Plan, which is prepared by the California Energy Commission. During a localized or regional natural disaster, local jurisdictions would be responsible for

Introduction

implementing the energy shortage plan as needed. If a energy supply disruption were to occur, the California Energy Commission (CEC) would be the Lead agency and would work with the State Office of Emergency Services to direct the response. Figure 1 shows the relationships for various energy shortage scenarios.

1.6 Authorities and References.

The following federal, state and local laws provide the framework and necessary legal authority for this plan:

Federal

- Federal Disaster Relief Act of 1974 (public Law 93-288);
- Federal Civil Defense Act of 1950 (Public Law 920), as amended;
- Strategic Petroleum Reserve Drawdown Plan, Amendment 4, (Public Law 97-299)

State

- California Emergency Services Act (Chapter 7 of Division 1 of title 2 of the Government Code)
- 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 which may be selectively promulgated by the Governor during a State of Emergency
- 13107.5 Investigations: pipeline breaks, fires or explosions closing orders (Chapter 5.5 {Commencing with Section 51010} of Division I of Title 5 of the Government Code)

Local

- San Luis Obispo County Code (Ordinance number 1384) Chapter 2.80 - Emergency Organization and Functions.
- San Luis Obispo County Emergency Operations Plan

Plan Usage

2 Plan Usage

2.1 Using the Plan

This plan can be used in a variety of situations. It can be implemented if a localized natural disaster causes a short term interruption in the supply of energy to the county. It could be implemented if global circumstances cause an emergency energy shortage that affects the county. The following table summarizes the intended uses of this plan:

Table 1: Plan Usage

Emergency Situations for using the Energy Shortage Plan		
Type	Scenario	Plans Used
Local Disaster with no energy supply disruption	Train derailment with a hazardous release	Hazardous Materials Response Plan
Local Disaster with an energy supply disruption	Storms hit the area disrupting electricity supplies	Multi-hazard Functional Plan with support from the Energy Shortage Plan
Disaster in another region that causes a local energy shortage	Earthquake in major petroleum refining and power producing area of the state	Energy Shortage Plan
Supply Disruption	Imports of crude oil stopped or decreased because of global political situation.	Energy Shortage Plan

2.2 Plan Maintenance

The plan will be updated on a regular basis or as needed by the Department of Planning and Building or the County Office of Emergency Services.

2.3 Energy Emergency Coordinator

If there is an energy supply disruption accompanying the disaster, the Energy Emergency Coordinator (EEC) function is a sub-task of the OES overall direction. All fuel needs will be communicated to the Energy Coordinator for prioritization and processing.

2.4 Management

Successful implementation of the plan in an emergency depends upon clear lines of communication, an understanding of management structure and understanding by staff of their own operational responsibilities. The following graphic shows how the plan would be implemented in different emergency situations.

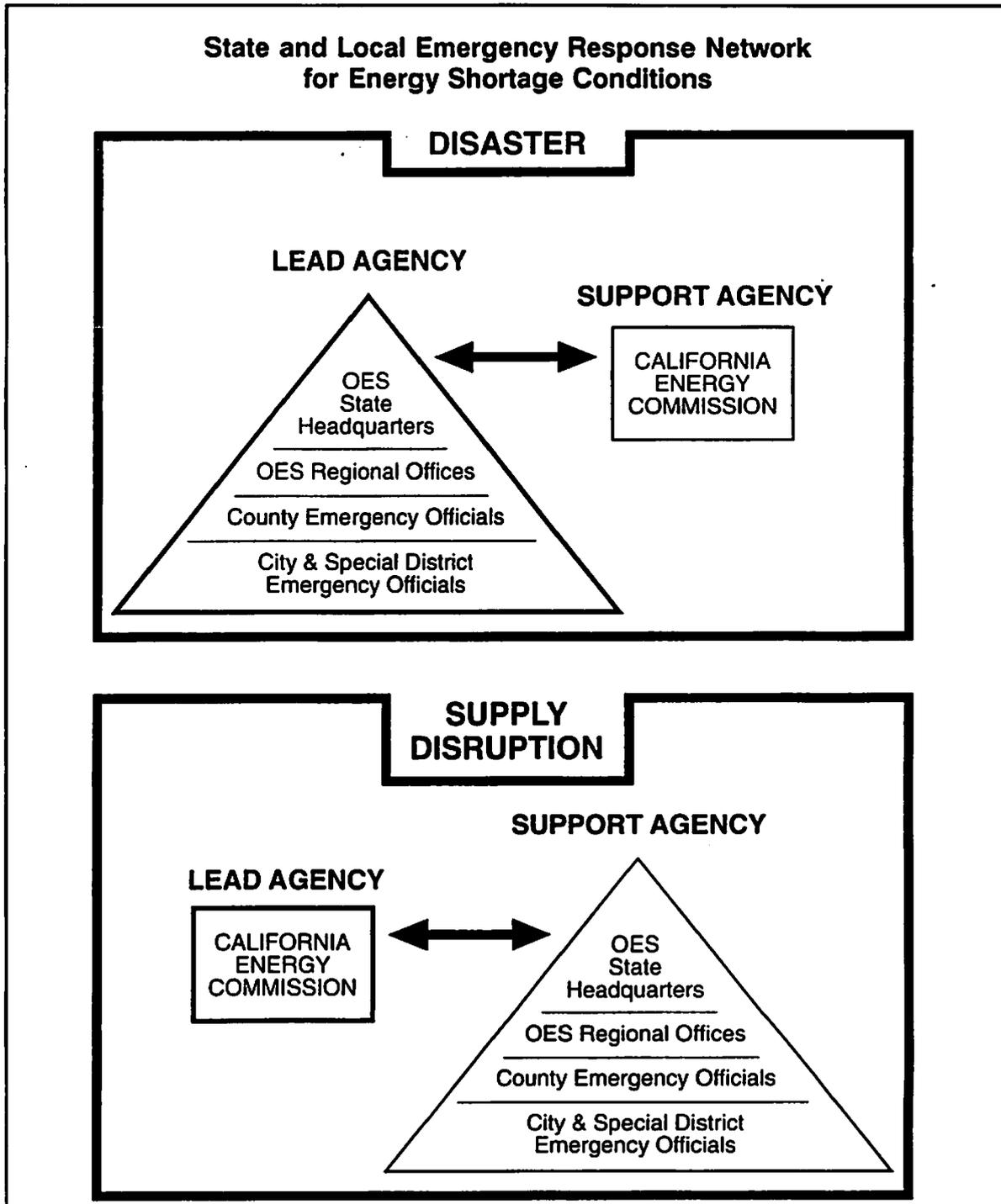


Figure 1 Emergency Response for Energy Shortages

Priority Energy Users

3 Priority Users

3.1 Introduction

In an energy emergency allocating resources to priority users is a vital function of emergency response managers. Determining a priority energy user depends on a user's relationship to public health and safety and if they provide vital resources to the public (water, food, sewer treatment services, etc.).

3.2 Priority User Criteria

The priority user criteria are designed to assist emergency planners in evaluating the users who should have priority when energy resources are allocated. While the criteria helps rank those services that are most critical, it should be used only as a guide for decision making since other users share the need for energy resources.

The criteria are designed to ensure that critical services are maintained during energy shortages. Critical services would include, police and fire protection, hospitals and medical facilities, and water and sewage facilities.

3.3 Energy User Priority Form

The *energy user priority form* will be used to assess the level to which a energy consumer is a critical service. Users that are most critical receive the highest numerical score and should be considered when allocating resources. The criteria are described in the following section.

3.4 Criteria

The following page provides examples of energy users that could be considered high priority consumers. The list is not meant to be comprehensive, but is intended to contain the most critical users. The following page can be used as a separate form to evaluate an energy user.

Priority Users

Priority Users

The following priority users are listed in alphabetical order and are consistent with the state energy shortage contingency plan.

- **Agricultural Production**
- **Agricultural Trucking/Aviation**
- **Aviation Ground Support**
- **Cargo, Freight, Mail Hauling**
- **Emergency Services**
- **Energy Production**
- **Health Care Facilities**
- **Public Transportation**
- **Sanitation Services**
- **Road Service Equipment**
- **Telecommunication**
- **Utility Service (water)**

Priority Users

3.5 Energy User Priority Form

The *energy user priority form* can be used to assess the level to which a energy consumer is a critical service. A ranking of least important is zero, (if a user is not vital to a criteria), and a ranking of 5 for the most vital, (if a user is very important to a criteria) is applied to each energy user. Thus, the users that are most critical receive the highest numerical score and should be considered when allocating resources.

1. Public Health and Safety includes energy users related to the following:

- 5 points: adequate protection from the elements shelter, housing, etc..
- 5 points: police protection, fire protection and response.
- 5 points: sanitation facilities, sewage treatment, water provision pumps and associated mechanisms.
- 3 points: non-emergency health services medical clinics, day time walk-in health services, pharmacies, etc..

2. Emergency Services energy users include the following:

- 5 points: police protection, fire protection and response;
- 5 points: ambulance and paramedic services;
- 4 points: vital public information services.

3. Critical Resource providers include:

- 5 points: food distribution, agricultural production and water providers;
- 5 points: electricity, natural gas, propane;
- 4 points: gasoline/diesel distributors and retailers;

ENERGY USER PRIORITY

CRITERIA	Energy User					
	Less Vital			Most Vital		
Points	0	1	2	3	4	5
1. Public Health and Safety						
2. Emergency Service						
3. Critical Resource						
COMMENTS						SCORE
TOTAL						

Emergency Management

4 Emergency Management

Management and communication are essential elements when responding to energy emergency. The established line of communication for local jurisdictions, particularly to request resources, is from a city to operational area (local OES) to the regional Office of Emergency Services, to State Office of Emergency Services. It is important that these lines of communication be clarified so that during an emergency, resource and information requests can be prioritized and handled efficiently.

4.1 Situation Monitoring and Analysis

The emergency situation will be monitored and analyzed to enable decision makers in the incident command structure to have the most up-to-date information possible. Coordination with state and regional OES liaisons, utility representatives, energy providers and local responders will be done by County OES.

4.2 Incident Command System

The incident command system (ICS) develops in a modular fashion as different parts of the emergency response are activated. ICS provides the organizational structure to appropriately respond to an emergency. Five functional areas can be activated depending on the nature and size of the emergency. These areas include; command, operations, logistics, planning, and finance. The command function is always established and is either a single command structure with one incident commander (IC) or a unified command consisting of two or more IC's. The ICS for a specific incident is set up in relationship to the needs of the incident. Given the multi-jurisdictional nature of an energy shortage, the command structure used would likely be a unified command.

Every incident requires a consolidated action plan. Written action plans are usually required when resources from multiple agencies are used, when several jurisdictions are involved, or when shift changes of personnel or equipment are required. The action plan should cover all strategic goals and objectives as well as support activities needed during the operational period. In prolonged incidents, it may be necessary to develop action plans covering specific operational periods.

Another important part of an effective emergency management system is a practical span-of-control. Span-of-control is defined as the number of subordinates one supervisor can effectively manage. A desirable range is between three to seven persons, with the optimum number being five subordinates per

Emergency Management

supervisor. Command officers must anticipate span-of-control problems, especially during rapid build-up of the incident organization. Effective on-scene management is difficult if too many people are reporting to one supervisor.

4.3 Energy Emergency Response Committee

The Energy Emergency Response Committee would be activated in an energy emergency or other emergency requiring the management of energy resources. The purpose of this committee is evaluate energy needs on a countywide basis. The committee will make recommendations to the command group regarding the distribution and availability of energy resources. The committee should include:

- Local utility representatives
- Retail gasoline/diesel representative
- Wholesale gasoline/diesel representative
- Local government representatives-General Services
- LPG retail and wholesale representative

4.4 Energy Emergency Response Phases

In an energy shortage, the level of preparedness is broken into five phases. These phases are structured to enable a response that enhances the free market forces with a minimum of government intervention. The five phases are:

1. Readiness
2. Verification
3. Pre-emergency
4. Emergency
5. Post emergency

During an energy shortage, the activities prescribed in each phase of preparedness will intensify depending on the severity of the shortage. The point of transition from one phase to another is not absolute. To a large degree, implementation of each phase by the county is a policy decision, recognizing numerous factors and their effect on public perception of the seriousness of the energy emergency.

The California Energy Commission assists this process by helping local jurisdictions with the preparation of local energy shortage contingency plans, monitoring international and domestic events, maintaining a network of public and private-sector and periodic testing of the statewide plan.

Locally the County Office of Emergency Services monitors local events, maintains a local network of public and private-sector contacts and includes testing of the local energy shortage contingency plan in some emergency response drills. It is

Emergency Management

possible that a local energy crisis may occur that does not effect the rest of the state, Such an instance may be a major earthquake in the county. Each phase of preparedness is discussed in the section below.

4.5 Readiness

During the readiness phase activities to be completed include:

- Preparation of emergency plans and procedures.
- Review and update of energy shortage contingency plans.
- Determine the areas of key energy needs and users.
- Report critical energy needs and the effects of supply disruptions.
- Activate the verification phase if an energy shortage is imminent.

4.6 Verification

This phase is the activation of a formal communication network with the State and County Office of Emergency Services (OES), other government agencies, and private industry, as appropriate. County OES staff will rapidly determine the nature, extent and duration of a potential or impending energy shortage.

The county staff will assess the potential impacts of a petroleum or electricity shortage on energy prices and supplies in the county and recommend action to the Emergency Services Director (ESD). If the ESD determines the existence of a protracted energy problem, he may recommend transition to the Pre-Emergency or Emergency phase of the Contingency Plan.

4.7 Pre-Emergency

This phase involves an increased level of government activity as the energy shortage or supply disruption worsens. Upon the Emergency Services Director direction, county OES, through the Information Officer, may appeal to the public to begin voluntary conservation measures to mitigate the impacts of a petroleum or electricity supply disruption. OES staff will assess the effectiveness of these voluntary demand reduction measures. If the ESD determines that the voluntary action has mitigated the expected impacts of the shortage, no additional action is necessary unless action is directed by the state or federal government.

If the ESD determines that the crisis is becoming more severe and warrants implementation of mandatory emergency measures, the ESD may recommend that a local emergency exists thus activating the Shortage Plan's Emergency Phase.

Emergency Management

4.8 Emergency

This phase involves all activities initiated during the Pre-Emergency phase, plus any additional voluntary or mandatory programs which may be needed to respond to a worsening energy shortage. To impose mandatory programs, the Board of Supervisors must first proclaim a local emergency. This gives the ESD the authority to implement mandatory energy saving measures.

4.9 Post Emergency

This phase only occurs once the energy shortage or threat of shortage has passed. This phase is initiated once statewide or local emergency proclamations have been rescinded. All mandatory programs automatically terminate when all emergency proclamations are rescinded. All agencies, the media and the public will be advised when the emergency no longer exists.

County OES with assistance from other county agencies is to conduct a post emergency assessment to determine the effectiveness of the emergency response and prepare a report as to the effectiveness of each program and make recommendations to assure improved results during future energy emergencies.

4.10 Response Measures

Chapter eight of this document contains the energy saving response measures that may be implemented in an energy emergency. Chapter eight should be consulted when making decisions about the measures to be used.

4.11 Emergency Functions

In the county's Emergency Operations Plan, local emergency operations are divided into the emergency functions indicated below. Specific details on organizational and operational concepts, responsibilities for providing support to or accomplishing a given function, and applicable policies and procedures are provided in the Annexes of the Emergency Operations Plan as specified in parenthesis. The Annexes also provide hazard-specific responses to be accomplished by the emergency management staff and field forces.

Managing Emergency Operations (Annex A)

Provides for the overall management and coordination of emergency operations, whether it be the actual management of forces in the field, or coordination of the joint efforts of governmental and private agencies in supporting such operations.

Emergency Management

Fire and Rescue operations (Annex B)

Limits the loss of life and property from fires and other threats and provides emergency medical care and rescue of persons.

Law Enforcement and Traffic Control Operations (Annex C)

Provides for the protection of life and property; enforces applicable laws, orders, and regulations; and provides traffic control on designated highways, streets, and roads.

Medical Operations (Annex D)

Provides care and treatment for the ill and injured during a disaster.

Public Health Operations (Annex E)

Provides public health and environmental sanitation services.

Coroner Operations (Annex F)

Identifies and provides appropriate disposition of human remains.

Care and Shelter Operations (Annex G)

Provides for the basic human needs of residents, and relocates within established shelters.

Movement Operations (Annex H)

Provides for the evacuation and relocation of persons from threatened or affected areas.

Rescue Operations (Annex I)

Carries out coordinated search and rescue operations for the location, provision of immediate care, and safe removal of endangered, trapped, injured and/or isolated persons.

Construction and Engineering Operations (Annex J)

Provides for the procurement, distribution and use of construction and engineering resources.

Emergency Management

Resources and Support Operations (Annex K)

Provides for the procurement, distribution and use of essential resources and services (including equipment, supplies, water, food, fuel, electric power, and transportation).

Radiological Protection (Annex R)

Establishes the basic operational concepts, responsibilities, and techniques to support governmental efforts to save lives and minimize radiation effects in the event of an emergency involving radioactive materials.

Scenarios

5 Scenarios

5.1 Major Petroleum Shortage

General Situation. In 1973, an Arab oil embargo quadrupled oil prices, sending inflationary shock waves through the economies of the United States, Western Europe, and Japan. Gas lines formed in much of California as motorists sought to ensure themselves sufficient fuel. In 1979, events triggered by the revolution in Iran brought on a panic in petroleum consuming countries, gas lines returned, and gas prices doubled. Neither of these crises was particularly long lived.

California remains vulnerable to an oil supply disruption; every passing year leaves the state a little more dependent on foreign oil to fuel its economy. Conditions in the Middle East and other parts of the world remain unstable. The repeat of a petroleum shortage remains an ever-present possibility.

A glance at California's oil import situation shows we depend on foreign sources 5% of its crude oil imports. However, the marketing and distribution of oil is an international operation. No nation or state which imports oil can be considered an isolated island somehow unaffected by what happens elsewhere. Currently (1993) California receives about 47% of its crude oil from in-state production, 48% from Alaska, and 5% from foreign sources. During a shortage of oil from the Middle East, oil companies will probably attempt to equalize supplies nationwide by diverting Alaskan crude oil to Gulf Coast refineries--rather than allowing a surplus to accrue on the West Coast while shortages affect the rest of the country.

It is the policy of the U.S. Department of Energy (DOE) to rely on rapid draw down of the Strategic Petroleum Reserve (SPR) in large volumes during a severe energy emergency. However, even if this reserve is used as intended, it would constitute only a three month nation-wide supply at current consumption levels. Thus, any oil cut-off which lasts more than a few months will severely disrupt the nation and California's economy.

As indicated in the energy profile, petroleum is interdependent with electric and natural gas production and consumption. Petroleum is not only refined to make transportation fuels, but petroleum is used by industry and commerce. Some large industries have the ability to switch from using petroleum to natural gas. If

Scenarios

the price of petroleum rose high enough and remained stable at a high level, such industries would have the incentive to switch fuels. However, such switch-overs cannot be accomplished quickly. And although fuel switch-overs would save on petroleum use, they would substantially increase the use of natural gas by industry, leading to potentially large increases in the price of this fuel.

In the petroleum shortages of 1973 and 1979, government officials could not independently collect and verify information. Thus, such officials were forced to speak based on press releases and second hand information. The result was a loss of credibility for government decision makers as contradictory reports of events became evident to the public. Accurate and timely information is a necessary prerequisite to a credible government response--especially if panic hoarding of gasoline supplies is to be avoided. The network through which petroleum is imported, domestically produced, transported, refined, stored, and distributed to users is extraordinarily complex.

During future petroleum shortages, the California Energy Commission will provide information about the status of various parts of this network at specific intervals.

5.2 Supply Disruption

General Situation. Tensions in Indonesia are on the rise. A rebel movement is seizing control in island after island. The United States, concerned about the potential for loss of oil fields operated by U.S. oil companies, delivers large amounts of military aid to assist the Indonesian government in putting down the revolt. Other countries come to the aid of this rebel movement, and begin attacks on U.S. tanker traffic in the Mediterranean Sea. Lloyds of London refuses to insure any tankers that are operating in the Mediterranean, thus reducing oil shipments to 25 percent of normal levels.

Prices of all forms of energy throughout the country are rising as continuing demand strains shrinking supplies. Events in the Mediterranean and Indonesia have driven up the price for 60-day North Sea Brent Crude Oil futures by \$32.00 per barrel over the past four weeks. Market analysts predict that oil prices will continue to rise as long as this worldwide uncertainty persists.

Consumers in the U.S. are encountering gasoline pump prices averaging \$2.50 per gallon for unleaded regular gasoline, as well as similar increases in the retail cost of heating oil. Fears of shortages, accompanied by still higher prices, are apparent as American consumers keep their tanks filled with fuel. This causes temporary unavailability of gasoline at some stations resulting in gas lines and validating the rumors of a fuel shortage.

Suddenly, the rebels in Indonesia seize control of all the oil fields. This effectively

Scenarios

denies the U.S. of an additional 20 percent of its daily supply of crude oil. Due to the sudden loss of crude oil supplies to California and other West Coast refineries, inquiries are continuing to come in as gasoline availability is becoming a problem in California and surrounding states.

The County's Office of Emergency Services recommends that the Energy Emergency Response Committee be convened to discuss the strategies for responding to a fuel shortage in the County in the event the supply disruption worsens.

5.3 Disaster Scenario

General Situation. A potential exists for two disaster scenarios to cause a related energy emergency within the County. The first scenario is an earthquake.

It is possible that a large magnitude earthquake could affect the county. A large earthquake in the Bay Area or Los Angeles could significantly impact the fuel supply lines coming into the County as well as natural gas and electric supplies. There could be significant delays in receiving supplies of fuel, natural gas or electricity as local energy purveyors re-route those commodities to citizens.

In addition, depending on the severity of the damages to surrounding areas, major freeways could be closed due to damaged roadways and delays. Highway 101 is the main route for gasoline and diesel supplies into the county. Refineries in the Bay Area and Los Angeles provide gasoline and diesel. Damaged refineries and pipelines could lead to shortages.

An earthquake that directly affects San Luis Obispo County would most likely knock out the electricity and natural gas service depending on the severity of the quake. Without electricity, backup generators would be needed to continue critical functions. Propane could be used to supplement natural gas in some situations.

Training

6 Training

The objective of any Emergency Management Organization is efficient and timely response during emergencies. A good plan is a first step toward that objective. However, planning alone will not guarantee preparedness. Training and exercising is essential at all levels of government to make emergency operations personnel operationally ready. All emergency plans should include provision for training.

The best method of training a jurisdiction's staff to manage emergency operations is through exercising. Exercises allow local personnel to become thoroughly familiar with the procedures, facilities and systems which will actually be used in emergency situations.

Exercises can be accomplished in several forms. Table Top Exercises provide a convenient and low cost method of introducing local officials to scenario related problem situations for discussion and problem solving. Such exercises are a good way to see if policies and procedures exist to handle certain issues.

Operations exercises simulate an actual emergency. They typically involve complete Emergency Management Staffs and are designed not only to exercise procedures, but also to test the readiness of personnel, communications, and facilities. Such exercises can be conducted at the EOC level or as field exercises.

The Energy Shortage contingency plan can be tested as a stand alone document addressing only an energy emergency. The plan can also be tested as part of another emergency exercise such as an earthquake drill.

6.1 Content

The drills and exercises will provide an emergency energy scenario designed to affect local residents and jurisdictions. It should include any combination of shortage or specifically address one type of energy emergency such as a gasoline shortage. The scenario should provide enough detail to allow the plan to be implemented. The scenario should also be in the context of other emergency situation if possible.

6.2 Frequency

The plan should be tested using a table top exercise for a specific energy related emergency every two years. The should also be exercised during earthquake drills and other appropriate exercises.

Training

6.3 Drills and Exercises

Drills and exercises should be conducted the County Office of Emergency Services. As they scheduled and scenarios developed an energy emergency component should be developed.

County Energy Profile

7 Energy Consumption in San Luis Obispo County

7.1 Energy Consumption Profile.

The energy conversion and distribution system depends on a network of large scale facilities to convert and deliver energy to market. This system requires energy feedstocks, large industrial complexes for conversion, and an extensive distribution network for delivery. The refined or final product (such as gasoline, - natural gas, or electricity) must then be transported to the end use or market. A natural disaster or global circumstances could cause an energy shortage with such a complex system.

Different sectors of society (e.g., residential, industrial, commercial) use widely different amounts and types of energy. Table 1 provides a summary of the total energy used by a particular sector. In San Luis Obispo County, as with the State, transportation (gasoline and diesel) is the largest use sector with privately owned automobiles using most of this energy. The next largest sectors are residential (electricity and natural gas) and commercial (electricity and natural gas).

The county relies on imported resources. Imported resources include diesel, gasoline, propane, natural gas, and electricity. The following table identifies the county's energy use by sector.

Table 2: Total Energy Use by Sector
San Luis Obispo County 1992

End Use By Sector	Total MBtu	Percent	MBtu Per Capita
Public Facilities	576,991	2	2.68
Residential	5,320,017	20	24.72
Industrial	1,306,722	5	6.07
Commercial	2,706,298	10	12.58
Agriculture	559,242	2	2.60
Transportation	15,873,057	60	73.77
TOTAL	26,342,327	100	122.42

Source: California Energy Commission, *Fuels Report (Appendix A)*, 1992.

Energy Profile

7.2 Energy Used by Power Plants.

Energy resources are imported in the form of enriched uranium and natural gas for conversion into electricity. The electricity produced by Diablo Canyon and Morro Bay power plants is transported to the grid via transmission lines. Power plants, particularly Diablo Canyon, require significant amounts of energy to operate. In the event of a power outage, Diablo Canyon has large back up generators to enable critical systems to remain operational.

7.3 Transportation

Transportation is the largest user of energy in the county. In 1990, the total number of registered vehicles in the county was 216,191. They were broken down as follows; 127,422 automobiles, 53,503 commercial vehicles, 28,449 trailers and 6,817 motorcycles. In the event of a shortage of gasoline and/or diesel fuel, measures to curb consumption and ensure supplies to emergency and public safety services will be implemented.

The total annual vehicle miles traveled in the county was 1.48 billion. Of the 217,162 people in the county in 1990, 70% (153,500) of them had drivers licenses.

Table 3: Gasoline and Diesel Consumption
San Luis Obispo County 1988-91

Year	Gasoline use (gallons)	Diesel used (gallons)	Gas and Diesel Total Gallons
1988	103,178,823	14,445,358	117,624,181.00
1989	105,237,974	14,733,316	119,971,290.00
1990	112,653,198	15,771,447	128,424,645.00
1991	111,077,000	15,369,669	126,446,669.00

Table 4: Transportation Energy End Use
San Luis Obispo County

Use	Percent	MBtu
Passenger Vehicles	55	8,730,181
Light and Medium Trucks	26	4,126,995
Heavy Trucks	15	2,380,959
Busses	1	158,730
Other	3	476,192
TOTAL	100	15,873,057

Energy Profile

7.4 Residential

The residential sector is the largest purchaser of electricity and natural gas in the county. A shortage of electricity and natural gas would impact all users. The residential sector purchased about 44 percent of the electricity consumed in the county and purchased 52 percent of the natural gas. As Table 9 shows, the energy is generally used for space heating, air conditioning, water heating, lighting, refrigeration, and cooking.

Propane is also used by many residents (5,000) in the rural areas as well as places shortage would affect many rural households.

Table 5: Residential Energy End Use
San Luis Obispo County

Use	Percent	MBtu
Lighting/Other	33	1,755,605
Heating	26	1,383,204
Hot Water	26	1,383,204
Refrigeration	11	585,201
Cooling	4	212,800
TOTAL	100	5,320,014

7.5 Commercial

The commercial users of electricity and natural gas represent a broad range of businesses. Of the 235,450,000 kwh of electricity purchased by commercial business, food stores used 20 percent, eating and drinking establishments used 18 percent, hotels used 14 percent, and retail businesses used 13 percent. Generally, this energy is used to provide lighting, cooling, heating, and refrigeration (see Table 11). Impacts of an electricity shortage would be felt throughout this sector. Grocery stores and food service businesses could be acutely affected by a long term shortage.

The commercial sector also purchased 7,975,000 therms of natural gas in 1991. Major users include eating and drinking places (34 percent) and hotels (31 percent). The next major user was personal services (9 percent), including businesses such as laundries, dry cleaning plants, beauty and barber shops, and linen supply services.

**Table 6: Commercial Energy End Use
San Luis Obispo County**

Use	Percent	MBtu
Lighting	30	811,889
Cooling	15	405,944
Heating	9	243,566
Refrigeration	8	216,503
Process Heat and Other	38	1,028,393
TOTAL	100	2,706,295

7.6 Public Facilities and Institutions

The institutional users of electricity and natural gas include health and legal services, postal services, educational facilities, government facilities, and correctional institutions. Lighting is the biggest energy use in most public institutions, as shown on the Table below. The major energy users in this category include: schools and colleges—37 percent; health services, including hospitals, clinics, dentists, and nursing facilities—23 percent; prisons and jails—20 percent; and social services—5 percent. Administrative activities for local government operations use 3,195,000 kwh in 1991, accounting for about 2 percent of the consumption in this sector.

A total of 9,457,000 therms of natural gas was used by the institutional sector in 1991. Schools and colleges used 37 percent, public order, justice and safety activities used 32 percent, and health service establishments used 20 percent. Heating and cooling systems also use a significant portion of total energy.

**Table 7: Public Facilities and Institutions Energy End Use
San Luis Obispo County**

Use	Percent	MBtu
Lighting	40	230,796
Heating	12	69,239
Cooling	16	92,319
Other	32	184,637
TOTAL	100	576,991

Energy Profile

7.7 Industrial

Industrial users of electricity include activities such as oil and gas extraction, petroleum refining activities, electricity generation, pipeline operations, manufacturing establishments, food processing, and sewage treatment facilities. A total of 12,532,000 therms of natural gas was used by the industrial sector. Almost all was used for oil and gas extraction processes such as enhanced oil recovery.

As shown in the table below, petroleum refining activities typically use 34 percent of the energy used in the industrial sector. Motors use another 10 percent, while general heating, lighting and cooling use only 8 percent.

Table 8: Industrial Energy End Use
San Luis Obispo County

Use	Percent	MBtu
Petroleum Processing	34	136,443
Process Heating	25	100,326
Motors	11	44,143
Heating/Cooling/Lights	8	32,104
Others	22	88,287
TOTAL	100.00	401,303

7.8 Agriculture

In 1991, agricultural activities used approximately 6 percent of the electricity (68,996,00 kwh) and 4 percent of the natural gas (2,384,000 therms) in the county.

As shown in the table below, energy use in agriculture is primarily for crop production activities such as water pumping, irrigation, and other field operations.

Table 9: Agriculture Energy End Use
San Luis Obispo County

Use	Percent	MBtu
Water	35	195,734
Field Operations	24	134,218
Fertilizer	13	72,701
Greenhouses	9	50,331
Pesticides	8	44,739
Other	11	61,516
TOTAL	100	559,239

Energy Saving Measures

8 Energy Saving Measures

The measures described in this section are broken into residential, commercial, industrial, transportation, local government and agriculture energy use sectors. Within each sector a variety of measures are proposed for saving energy. The measures include pre-emergency and emergency activities. These should be consulted for establishing a response plan that addresses the emergency situation.

8.1 Menu of Conservation Strategies

The menu of conservation strategies and measures was prepared by the NEOS Corporation for the California Energy Commission. The measures have been condensed for inclusion into the the shortage plan. To use these measures effectively the energy profile chapter should be consulted for energy use patterns.

8.2 Technical Briefs

The measures are described in the following technical briefs. Each brief identifies the energy type, sector, category, measures, and end uses. The purpose of the measure is provided as well as a description of each measure.

8.3 Measure Usage

These measures are to be implemented when an emergency energy situation exists. The measures should be considered for use prior to an emergency situation, but are not required by this plan when non-emergency circumstances exist. Some of the measures are short term and meant for emergency situations which last only a few days. Other measures are more long term and require weeks and in some cases years to implement.

Transportation Energy Saving Measures

T1. Employee Paid Parking

Energy Type:	Petroleum
Sector:	Transportation
Category:	Ridesharing
Measures:	Employee Paid Parking
End Uses:	Automobiles and Pickups; Vans

Purpose: The purpose of this measure is to conserve motor fuel by discouraging single occupancy vehicle (SOV) commuting to work.

Measure Requirements: Employers will be required to provide workers with calculated costs for parking spaces. Development of an equitable corporate policy dealing with parking charges and costs will be required. Additionally, employers may wish to restructure parking cost fees to provide financial incentives for carpooling, vanpooling, and other ridesharing program participants.

Employers need not necessarily collect fees from employees; in some cases employers may elect to provide the cash equivalent of parking costs as a fringe benefit, leaving the employee to apply the funds toward any form of transportation cost, as well as to economize and retain the savings.

In some cases, employers may choose to design the pricing structure to avoid high impacts on lower-paid workers.

Transportation Energy Saving Measures

T2. No-Drive Days

Energy Type:	Petroleum
Sector:	Transportation
Category:	Traffic Management
Measures:	No-Drive Days
End Uses:	Automobiles and Pickups; and Vans

Purpose: The purpose of this measure is to conserve motor fuel by restricting vehicle usage on designated days to only commercial, mass transit, and other essential vehicles. For one workday per week, privately owned autos, pickups and vans with even (or odd) numbered license numbers would not be allowed to be driven on the road.

Measure Requirements: Local governments would be required to develop a plan for no-drive days, disseminate the plan to county residents, and provide for enforcement. For example, every eighth day (Monday, then Tuesday, and so forth) would be a no-drive day for 1/2 (alternating odd or even numbered plate numbers) of the affected vehicles. After a Friday, the next no-drive day would be a Monday, 10 days in the future. Enforcement is expected to be self-funding. Counties may research methods to promote positive coping methods, such as mass transit, and to mitigate counter-productive coping methods, (such as car-swapping arrangements).

Transportation Energy Saving Measures

T3. Gasoline Surcharge (Tax)

Energy Type:	Petroleum
Sector:	Transportation
Category:	Fuel Sales Management
Measures:	Gasoline Surcharge (Tax)
End Uses:	Gasoline Fueled Automobiles and Pickups; Vans; and Trucks

Purpose: The purpose of this measure is to conserve motor fuel by increasing the cost of gasoline through a surcharge tax on each gallon of gasoline. The increased cost is intended to foster more efficient and conservative transportation practices. Reduced automobile use and shifting of use from low-mileage to high-mileage vehicles is intended.

Measure Requirements: Legislation to establish the surcharge would be required, along with additional responsibilities of county revenue collection systems. Due to the economic impacts of the measure, economic assistance programs for the benefit of lower income motorists would also be required. Communications and policy would have to be coordinated with the various federal, state and local tax collection jurisdictions in the county. Revenues could be applied to the county General Fund, or targeted to county fuel emergency programs concurrently underway.

If the tax is applied only in the county, a significant number of motorists will travel outside of the county (and waste fuel doing so) to obtain less expensive gasoline; the measure is best applied to groups of counties, or to the State.

Transportation Energy Saving Measures

T4. Vanpooling Programs

Energy Type:	Petroleum
Sector:	Transportation
Category:	Ridesharing
Measures:	Government Subsidies to Employer Vanpool Programs; Shared Ride Taxis; Subsidized Ride Taxis; Preferred Bus and Vanpool Lanes
End Uses:	Automobiles and Pickups; Vans

Purpose: The purpose of this measure is to conserve motor fuel by encouraging commuters to use organized vanpool services.

Measure Requirements: Incentives will be provided to stimulate increased use of vanpooling. Employers will provide vans and preferential vanpool parking spaces, and will receive subsidies and tax incentives for doing so. Vanpools will be organized by employees, who will operate and maintain the vans. Shared ride taxis will also be subsidized by employers. Preferential bus and vanpool lanes will be designated on major freeways and streets. Overall planning and coordination, and lobbying for tax incentives, subsidized fares, etc., will be done by appropriate public agencies and/or special districts such as Transportation Commissions or Transit Districts.

Transportation Energy Saving Measures

T5. Park and Ride, Pool and Ride Programs

Energy Type:	Petroleum
Sector:	Transportation
Category:	Ridesharing
Measures:	Preferential Carpool Parking; Restricted SOV Parking; Employee Parking Fees; Transportation Management Associations; Rideshare Matching Services; Walk Paths, Bike Lanes, Storage Facilities, Showers, Lockers
End Uses:	Automobiles and Pickups; Vans; and Urban Buses

Purpose: The purpose of this measure is to conserve motor fuel by providing park and ride facilities to encourage commuters to use bus, vanpool, and organized carpool services.

Measure Requirements: Suitable parking locations will be selected and parking lots will be built or identified. Bus routes will be modified as necessary to serve these facilities. Vanpools and carpools will be organized by employers and by private companies. Overall planning and coordination, and lobbying for tax incentives, subsidized fares, etc., will be done by appropriate public agencies and/or special districts such as Transportation Commissions or Transit Districts.

Transportation Energy Saving Measures

T6. Carpooling Programs

Energy Type:	Petroleum
Sector:	Transportation
Category:	Ridesharing
Measures:	Preferential Carpool Parking; Restricted SOV Parking; Employee Parking Fees; Transportation Management Associations; Rideshare Matching Services
End Uses:	Automobiles and Pickups

Purpose: The purpose of this measure is to conserve motor fuel by encouraging commuters to use organized carpool services.

Measure Requirements: Incentives and support programs will be provided to stimulate increased use of ridesharing. Employers will provide preferential carpool parking spaces, and will restrict and raise fees for SOV parking. Carpools will be organized by commuters, by employers, and by private companies. Transportation management associations and rideshare matching services will help commuters find ridesharing partners. Overall planning and coordination, and lobbying for tax incentives, subsidized fares, etc., will be done by appropriate public agencies and/or special districts such as Transportation Commissions or Transit Districts.

Transportation Energy Saving Measures

T7. Service Station Program

Energy Type:	Petroleum
Sector:	Transportation
Category:	Fuel Sales Management
Measures:	Mandatory Posting of Hours and Availability; Minimum/Maximum Fuel Purchase; Mandatory Weekend Opening; Fuel Sales by Appointment.
End Uses:	Automobiles and Pickups; and Vans

Purpose: The purpose of this measure is to conserve motor fuel by minimizing gasoline and diesel wasted during the fuel purchase process, through the measured structuring of fuel sales. A second purpose of structured sales is to promote consumer confidence in the management of the shortage so as to minimize panic buying and "topping-off".

Measure Requirements: In the event of a fuel shortage affecting availability of gasoline or diesel supplies, the potential for further fuel losses associated with inefficient efforts to procure motor fuels is significant. A county program dealing with the management of retail gasoline and diesel sales would require the establishment of a policy for fuel sales, along with the resulting administrative, information, and enforcement agencies necessary to implement that policy.

The primary requirements of the service station program would be the establishment of a county entity responsible for the program. This public entity would be funded by the county to: design the sales policy; provide information; enforce the policy; and monitor effectiveness.

The service station program may slightly reduce motor fuel sales due to the fact that some motorists may occasionally not be able to buy motor fuels because of scheduling difficulties. However, this measures primary function is to minimize further losses in the event of an emergency.

Transportation Energy Saving Measures

T8. Telecommuting

Energy Type: Petroleum

Sector: Transportation

Category: Work Patterns

Measures: Telecommuting

End Uses: Automobiles and Pickups; Vans; and Urban Buses

Purpose: The purpose of this measure is to conserve motor fuel by reducing commuter and business trips through the use of alternative workplaces. These reductions can be achieved through either working at home or at a local satellite office.

Measure Requirements: For telecommuting, businesses would be required to provide sufficient office equipment to allow employees to work predominantly at home, probably for 40% of the time (two days per week). This cost can be remediated to the extent that the employee may be able to bring office equipment home. Telecommuting may also require additional costs for extra telephone lines, maintenance, home-use of utilities, etc.

Transportation Energy Saving Measures

T9. Transit Ridership Incentives

Energy Type:	Petroleum
Sector:	Transportation
Category:	Mass Transit
Measures:	Fare Reimbursement; Government Subsidies, Employer Sponsorship Transit Education, Funding Employee Transit Fares With Employee- Paid Parking Fees, Walk Paths; Bike Lanes; Storage Facilities; Showers; Lockers
End Uses:	Automobiles and Pickups; and Urban Buses

Purpose: The purpose of this measure is to conserve motor fuel by providing various incentives, including government subsidies and employer incentives, in order to encourage commuters to use public transportation.

Measure Requirements: Funding for reimbursements will be required from sponsoring employers and/or government agencies. Possible refunding sources are the various fees collected under disincentive programs from single-occupant vehicle commuters; the extent to which these disincentive fees may be sufficient for funding both reimbursements and mass transit capacity depends upon the actual public response to the reimbursement program. The availability of capacity for the additional ridership will be required. State and local tax credits for the sponsoring employers and federal/state reimbursement for local government agencies may be also required. Overall supervision of the operations by the Transit District will be required.

Transportation Energy Saving Measures

T10. Flexible Work Schedules

Energy Type:	Petroleum
Sector:	Transportation
Category:	Work Patterns
Measures:	Staggered Hours, Four Day Work Week
End Uses:	Automobiles and Pickups; and Vans

Purpose: The purpose of this measure is to conserve motor fuel by reducing commuter trips via changes in work schedules. These reductions can be achieved through staggered hours and four day work weeks.

Measure Requirements: The principal requirement of this primarily employer-based measure is the development of appropriate contingency policies and procedures for employees to follow in the event of a fuel emergency. In some counties, such administrative policies and procedures have already been developed under mandated air quality improvement regulations. The physical requirements for staggered hours and four day work weeks are: access to, or availability of, the workspace; feasibility of conducting operations outside of normal hours; and extended hours of availability of transportation to the workplace.

Transportation Energy Saving Measures

T11. Restrictions of Non-Essential Uses During Shortages

Energy Type:	Petroleum
Sector:	Transportation
Category:	Gasoline Sales Management
Measures:	Limitation on Recreational Vehicle, Boat, and Small Aircraft Use, Fuel Allocation Controls
End Uses:	Automobiles and Pickups; Vans; Aviation; and Boating

Purpose: The purpose of this measure is to conserve motor fuel by limiting the use of vehicles for lower priority purposes, such as recreation, and to ensure availability for high priority purposes through allocation.

Measure Requirements: This measure would require formulation of a policy outlining the types of vehicles and the uses of vehicles which would be restricted by local government ordinance. Implementation of restrictions would result in the greater use of public information capabilities, policing agencies, and government review agencies (for purposes of allowing necessary exceptions, and for public participation).

As a fuel allocation control, restrictions of non-essential uses would create increased responsibilities for fuel regulatory agencies, as well as require closer coordination with fuel suppliers and transporters. Communications and policy would have to be coordinated with the various federal, state and local agencies dealing with motor fuel supplies in the county. Fuel allocation choices would have to be made in a fair, open and equitable manner. Allocation levels may be staged, according to urgency, in order to avoid unnecessary disruptions in motor fuel supplies in the market during early shortage conditions.

Transportation Energy Saving Measures

T12. Odd-Even Fuel Days

Energy Type:	Petroleum
Sector:	Transportation
Category:	Gasoline Sales Management
Measures:	Odd-Even Fuel Days
End Uses:	Automobiles and Pickups; and Vans

Purpose: The purpose of this measure is to conserve motor fuel by limiting fuel sales on designated days. For all days of the week, privately owned autos, pickups and vans with even (or odd) numbered license numbers would be restricted from refueling. This restriction of fuel availability to half of the number of commuter vehicles is intended to foster more efficient and conservative transportation practices.

Measure Requirements: Local governments would be required to develop a plan for odd-even fuel days, disseminate the plan to county residents, and provide for enforcement. Enforcement is expected to be self-funding. Counties may research methods to promote positive coping methods, such as mass transit, and to mitigate counter-productive coping methods, (such as car-swapping arrangements). Safety concerns related to the storing of motor fuels in portable containers may be major focus of the information elements of the program.

Transportation Energy Saving Measures

T13. State Petroleum Fuels Set-Aside Program

Energy Type:	Petroleum
Sector:	Transportation
Category:	Gasoline Sales Management.
Measures:	State Petroleum Fuels Set-Aside Program
End Uses:	Automobiles and Pickups; Vans; and Trucks

Purpose: The purpose of California's Petroleum Fuels Set-Aside Program is to help mitigate regional shortages and hardships for bulk priority users who are unable to acquire essential volumes of fuel at any price. A secondary effect of the set-aside program is that, due to more limited supplies, motor fuel consumption by the non set-aside vehicles in the county will also be reduced.

Measure Requirements: If a petroleum shortage worsens and priority users (police, fire, emergency medical, etc.) are unable to acquire sufficient fuel at any price, and the Governor proclaims a State of Emergency, the state's Petroleum Fuels Set-Aside Program may be implemented. This program will be administered by a Fuels Allocation Officer appointed by the Chairman of the Energy Commission. All fuel delivered through the program will be purchased at the market price. The Fuels Allocation Officer will notify all oil companies who supply California when the set-aside program will be implemented.

Bulk purchasers representing critical services and industries can apply to the Fuels Allocation Officer, who will evaluate the justification for each request. If approved, a fuel supplier will be directed to provide that purchaser an amount consistent with the total available set-aside volume. (The total set-aside volume, by law, may be no more than five percent of the total monthly supply of each fuel type available within the state; no supplier will be required to set aside more than the volume percent designated by the Fuels Allocation Officer.)

Local coordination with wholesale and retail fuel suppliers will be required. In order to qualify for a set-aside fuel allocation, each bulk priority user will have to demonstrate that all other sources of supply, as well as all non-essential fuel uses, have been exhausted. Additional fuel savings will be realized as a secondary effect of this set-aside process.

Transportation Energy Saving Measures

T14. Bus Capacity Redistribution

Energy Type: Petroleum

Sector: Transportation

Category: Mass Transit

Measures: Strategic Maintenance Practices, Headway Redistribution, Rescheduling, Rerouting

End Uses: Automobiles and Pickups; and Urban Buses

Purpose: The purpose of this measure is to conserve motor fuel by redistributing urban bus capacity in order to improve bus service and maximize the number of commuters switching to buses.

Measure Requirements: Availability of Transit District staff for developing an emergency bus schedule, including changes in "headway", routes and schedules will be required. Headway changes will be required as a result of load changes due to the emergency; route changes will be required in order to extend the reach of public transportation into new community areas; and schedule changes will be required due to the expected changes in commuter work patterns during the emergency. In addition to these changes, there will be an additional need for staff participating in "strategic" maintenance programs, which include acceleration or deferment of maintenance, overnight maintenance, and weekend maintenance scheduling.

Residential Energy Saving Measures

R1. Electricity Alternative Rate Structures

Energy Type:	Electricity
Sector:	Residential
Category:	Load Management/Control
Measures:	Time-of-Use Rates; Demand Charges; Increasing Block Rates; Seasonal Rates; Conservation Rates
End Uses:	All Residential

Purpose: The purpose of this measure is to lower overall peak demand requirements and/or reduce overall energy consumption through sending direct price signals to consumers to alter their consumption patterns/usage in a desired manner.

Measure Requirements: Alternative rate structures are an effective mechanism to lower or alter household consumption either as a stand-alone load management strategy or as an incentive for participation in a technology-based conservation/load management program. Alternative rate structures as a market influence strategy perform three functions: provide information to consumers on the true cost of electrical services, provide incentives to use the most efficient equipment or usage patterns, and determine how much electricity a household can afford. A variety of rate structures are available to send the proper price signals to consumers including: (1) time-of-use rates in which consumers are typically charged a higher price for on-peak usage of electricity, and a lower price during off-peak hours, (2) demand charges in which consumers typically pay a lower energy price but are also charged based on their maximum monthly kW usage, (3) increasing block rates in which consumers are charged an increasingly higher rate per energy unit as they reach specified levels of monthly energy usage, (4) seasonal rates in which energy rates are higher during the peak season than the off-peak season, and (5) conservation rates in which reduced rates are offered to consumers who meet minimum household energy efficiency standards.

Implementation of this measure will require extensive interaction with the local electric utility, which will need to perform a cost-of-service and rates analysis to formulate equitable alternative rate structures which reflect the County and local utility objectives. Households which fall under time-of-use rates and/or demand charges will require installation of new metering equipment.

Residential Energy Saving Measures

R1. Reduce/Restrict Uses Shortages

Energy Type:	Natural Gas
Sector:	Residential/Commercial/Industrial
Category:	Load Management/Control
Measures:	Restrict or reduce natural gas consumption utilizing curtailment agreements, isolation areas, and efficiency incentives as established through the CPUC tariff and safety regulations
End Uses:	All Natural Gas appliances and equipment

Purpose: The purpose of this measure is to reduce overall energy consumption through mandating consumers to reduce/restrict natural gas use during an emergency.

Measure Requirements: This measure requires restrictions or reductions of natural gas uses during an energy emergency. These measures would be implemented on an as needed basis to achieve a required level of energy reduction. Measures would be taken to curtail customers as established through tariff agreements starting with large commercial/industrial consumers and ending as a last resort, with isolated areas of residential customers.

Critical facilities such as hospitals, shelters, jails and schools are identified and prioritized accordingly in this curtailment process. Mandatory restriction/reduction of natural gas use in the commercial/industrial sector will be highly effective during a short term energy emergency, or as a stop-gap measure until long term energy reduction strategies are in place for a longer-term emergency or disruption.

Residential Energy Saving Measures

R2. Electricity Voluntary Reduction of Energy Use

Energy Type:	Electricity
Sector:	Residential
Category:	Load Management/Control
Measures:	Manually Adjust Thermostat Setting and Dress Appropriately; Use Quilts, Blankets, Comforters, etc., During Cold Nights; Avoid Using Space Heaters for Supplementary Heating; Line-Dry Clothing; Wash Dishes by Hand; Turn off Lights Not In Use, Avoid Non-Essential Lighting; Use Microwave Oven Instead of Stove; Other.
End Uses:	All Residential

Purpose: The purpose of this measure is to lower overall peak demand requirements and/or reduce overall energy consumption by encouraging customers to voluntarily reduce energy consumption during an energy emergency.

Measure Requirements: Voluntary reduction of energy usage in the residential sector will be highly effective during a short-term energy emergency, or as a stop-gap measure until long-term energy reduction strategies are in place for a longer term emergency or disruption. All of the measures included in the voluntary reduction strategy rely on consumers to sacrifice some comfort level and/or perform household tasks manually (i.e., dishwashing and clothes drying) which are typically performed by machines. Although the measures listed under this program may result in household energy savings of 11% for electrical end uses, these measures are merely presented as an overall guide. Each household participating in voluntary reduction efforts will need to assess their energy usage and identify ways to reduce energy consumption specific to their home.

Implementation of this measure will require extensive marketing and public relations efforts to convey to the public the existence and seriousness of the energy emergency, and the importance of each household doing their part. The local government, perhaps in conjunction with the local utility, should also provide households with information on no-cost conservation activities which are applicable within the County and appropriate for the season.

Residential Energy Saving Measures

R2. Natural Gas Voluntary Reduction of Energy Use

Energy Type:	Natural Gas
Sector:	Residential
Category:	Load Management/Control
Measures:	Manually Adjust Thermostat Setting and Dress Appropriately; Use Quilts, Blankets, Comforters, etc., During Cold Nights; Line-Dry Clothing; Wash Dishes by Hand; Use Microwave Oven Instead of Stove; Miscellaneous Other.
End Uses:	All Residential

Purpose: The purpose of this measure is to lower overall peak demand requirements and/or reduce overall energy consumption by encouraging customers to voluntarily reduce energy consumption during an energy emergency.

Measure Requirements: Voluntary reduction of energy usage in the residential sector will be highly effective during a short-term energy emergency, or as a stop-gap measure until long-term energy reduction strategies are in place for a longer term emergency or disruption. All of the measures included in the voluntary reduction strategy rely on consumers to sacrifice some comfort level and/or perform household task manually (i.e., dishwashing and clothes drying) which are typically performed by machines. Although the measures listed under this program may result in household energy savings of 9% for natural gas end uses, these measures are merely presented as an overall guide. Each household participating in voluntary reduction efforts will need to assess their energy usage and identify ways to reduce energy consumption specific to their home.

Implementation of this measure will require extensive marketing and public relations efforts to convey to the public the existence and seriousness of the energy emergency, and the importance of each household doing their part. The local government, perhaps in conjunction with the local utility, should also provide households with information on no-cost conservation activities which are applicable within the County, and appropriate for the season.

Residential Energy Saving Measures

R3. Energy Efficient Water Heating - Low Cost

Energy Type:	Electricity
Sector:	Residential
Category:	Efficient Equipment and Appliances
Measures:	Low Flow Showerheads, Faucet Aerators; Water Heater Blankets; Thermal Traps; Temperature Setbacks; Pipe Insulation
End Uses:	Domestic Water Heating (DWH)

Purpose: The purpose of this measure is to reduce domestic water heating requirements by reducing losses and hot water demand.

Measure Requirements: Low flow showerheads and faucet aerators reduce the demand for hot water; water heater blankets insulate tanks to reduce heat losses; thermal traps and pipe insulation reduce energy losses due to hot water convection out of the tank; and temperature setbacks further reduce heat losses. Water heater blankets should have a minimum R-11 rating for best results. Blankets, low flow showerheads, and faucet aerators are inexpensive, simple to install, yield substantial savings, and are available at any hardware store. Thermal traps (also called heat traps) are one-way valves which can be installed on most water heaters by a plumber (the materials are inexpensive); they are especially helpful when pipes are difficult to insulate. Pipe insulation is not as effective as thermal traps, and pipes are often inaccessible for insulation retrofitting. However, insulation is very inexpensive and should have a minimum R-3 rating for best results. Setting back the heater's temperature to 120°F is free, and the savings will be substantial for homes whose water heaters are set at higher temperatures (140°F and up).

This measure can be implemented by conducting a series of free public seminars on energy conservation, in which domestic hot water heating measures are specifically addressed. At these seminars, free or reduced rate "measure packages" consisting of low flow showerheads, faucet aerators, water heater blankets, and pipe insulation, complete with instructions, could be available. These seminars would have speakers, demonstrations, and sign-ups for volunteers who would be willing to participate in a door-to-door education/service effort in their community. An alternative would be to develop a program with the local utility, advertised on radio and television, where professional energy assessors would conduct house calls for interested citizens, at reduced rates, and free of charge for the disadvantaged.

Residential Energy Saving Measures

R3. Energy Efficient Water Heating - Low Cost

Energy Type: Natural Gas

Sector: Residential

Category: Efficient Equipment and Appliances

Measures: Low Flow Showerheads, Faucet Aerators; Water Heater Blankets; Thermal Traps; Temperature Setbacks; Pipe Insulation

End Uses: Domestic Water Heating (DWH)

Purpose: The purpose of this measure is to reduce domestic water heating requirements by reducing losses and hot water demand.

Measure Requirements: Low flow showerheads and faucet aerators reduce the demand for hot water; water heater blankets insulate tanks to reduce heat losses; thermal traps and pipe insulation reduce energy losses due to hot water convection out of the tank; and temperature setbacks further reduce heat losses. Water heater blankets should have a minimum R-11 rating for best results. Blankets, low flow showerheads, and faucet aerators are inexpensive, simple to install, yield substantial savings, and are available at any hardware store. Thermal traps (also called heat traps) are one-way valves which can be installed on most water heaters by a plumber (the materials are inexpensive); they are especially helpful when pipes are difficult to insulate. Pipe insulation is not as effective as thermal traps, and pipes are often inaccessible for insulation retrofitting. However insulation is very inexpensive and should have a minimum R-3 rating for best results. Setting back the heater's temperature to 120°F is free, and the savings will be substantial for homes whose water heaters are set at higher temperatures (140° and up).

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Residential Energy Saving Measures

R4. Appliance/Equipment Cycling Control

Energy Type:	Electricity
Sector:	Residential
Category:	Load Management/Control
Measures:	Domestic Water Heater Cycling Control; Air Conditioner Cycling Control; Load Management Thermostats
End Uses:	DWH, Space Cooling, Space Heating

Purpose: The purpose of this measure is to lower overall peak demand requirements by cycling/controlling electric water heaters, air conditioners, and heating units throughout the peak period, and also to provide the secondary benefit of reduced overall energy requirements.

Measure Requirements: Domestic water heater, air conditioner, and heater cycling programs require direct, real-time utility control over household usage patterns. Typically these appliances are cycled only during peak periods or periods of high marginal capacity costs. The conventional method for cycling an air conditioning unit is to send a communication signal (i.e., radio, powerline carrier, ripple, telephone, CATV, etc.) to the customer's receiving unit to shut off the compressor for a fixed period of time, allow it to commence operation for a fixed time period, then shut it off again. Water heater cycling is similar in nature and may even utilize the same controller, but the unit is shut off for a prolonged period of time (up to six hours depending on tank size, consumption rates, and household size) and allowed to resume heating once the peak period has passed. Load management thermostats typically have three operating modes: normal end user control, utility cycling control, and utility load curtailment control. Careful control is necessary on the part of the utility to ensure that the duty cycling and control of appliances/equipment avoids creating system spikes from controlled appliances coming on line simultaneously.

Implementation of this measure requires coordination with the electric utility to ensure that appliances and equipment are being controlled and cycled accurately to address peak load problems. Program participation can reach full saturation if the program is mandated by the local government/utility. This measure requires in-house installation of receiving units, which must be installed by qualified utility personnel or electrical contractors. Program success will be enhanced by offering incentives or implementation of alternative rate structures (i.e., time-of-use rates) in conjunction with the program.

Residential Energy Saving Measures

R5. Insulation/Weatherization - Low Cost

Energy Type:	Electricity
Sector:	Residential
Category:	Building Envelope
Measures:	Duct Insulation; Caulking/Weatherstripping
End Uses:	Space Heating, Space Cooling

Purpose: The purpose of this measure is to reduce space heating and cooling loads by reducing the heat losses and gains through ducts, doors, and windows.

Measure Requirements: Sealing and insulating ducts prevents winter heat losses and summer heat gains into space conditioned air. The sealing of ducts (with duct tape and/or by adjusting duct connections) to prevent air leakage is extremely cost effective, whereas duct insulation is most effective when there is a temperature difference greater than 25°F between the delivered air and the outer surface of the duct. Caulking and weatherstripping seal building envelope air leaks, thereby preventing seasonal losses and gains.

Educational television and radio commercials, which educate the public about these measures and offer accompanying rebates or free installation for the disadvantaged, are one way to gain high participation rates. Also, demonstrations of these measures should be included at any free public seminars and trade shows aimed at energy conservation in which space heating and cooling technology is specifically addressed.

Residential Energy Saving Measures

R5. Insulation/Weatherization - Low Cost

Energy Type:	Natural Gas
Sector:	Residential
Category:	Building Envelope
Measures:	Duct Insulation; Caulking/Weatherstripping
End Uses:	Space Heating, Space Cooling

Purpose: The purpose of this measure is to reduce space heating and cooling loads by reducing the heat losses and gains through ducts, doors, and windows.

Measure Requirements: Sealing and insulating ducts prevents winter heat losses and summer heat gains into space conditioned air. The sealing of ducts (with duct tape and/or by adjusting duct connections) to prevent air leakage is extremely cost effective, whereas duct insulation is most effective when there is a temperature difference greater than 25°F between the delivered air and the outer surface of the duct. Caulking and weatherstripping closes building envelope air leaks, thereby preventing seasonal losses and gains.

Educational television and radio commercials, which educate the public about these measures and offer accompanying rebates or free installation for the disadvantaged, are one way to gain high participation rates. Also, demonstrations of these measures should be included at any free public seminars and trade shows aimed at energy conservation in which space heating and cooling technology is specifically addressed.

Residential Energy Saving Measures

R6. Insulation/Weatherization - High Cost

Energy Type:	Electricity
Sector:	Residential
Category:	Building Envelope
Measures:	Ceiling, Wall, and Floor Insulation; Window Treatments
End Uses:	Space Heating, Space Cooling

Purpose: The purpose of this measure is to reduce space heating and cooling loads by reducing the heat losses and gains through walls, ceilings, floors and windows.

Measure Requirements: Insulation reduces heat losses and gains and can be installed in nearly any building; it is most cost-effective when all applicable areas are insulated and no exposed areas remain. window treatments, which reduce seasonal heat losses and gains, include interior thermal shades, venetian blinds, shutters, drapes, and exterior shutters and shades, reflective window films, and solar shades. Window treatments are most cost-effective when large, uninsulated windows are treated first.

These measures can be demonstrated by conducting a series of free public seminars and trade shows aimed at energy conservation, in which space heating and cooling technology is specifically addressed. Rebates and/or low or no-interest loans could be offered on the spot with free or reduced rate delivery and installation. An alternative would be to develop a program with the local utility, advertised on radio and television, where professional energy assessors would conduct assessment house calls for interested citizens, at reduced rates, and free of charge for the disadvantaged.

Residential Energy Saving Measures

R7. Insulation/Weatherization - High Cost

Energy Type:	Natural Gas
Sector:	Residential
Category:	Building Envelope
Measures:	Ceiling, Wall, and Floor Insulation; Window Treatments
End Uses:	Space Heating, Space Cooling

Purpose: The purpose of this measure is to reduce space heating and cooling loads by reducing the heat losses and gains through walls, ceilings, floors and windows.

Measure Requirements: These measures will impact more heavily on natural gas consumption in the winter months, since there are few natural gas space cooling units. Insulation reduces heat losses and gains and can be installed in nearly any building; it is most cost-effective when all applicable areas are insulated and no exposed areas remain. Window treatments, which reduce seasonal heat losses and gains, include interior thermal shades, venetian blinds, shutters, drapes, and exterior shutters and shades, reflective window films, and solar shades. Window treatments are most cost-effective when large, uninsulated windows are treated first.

These measures can be demonstrated by conducting a series of free public seminars and trade shows aimed at energy conservation, in which space heating and cooling technology is specifically addressed. Rebates and/or low or no-interest loans could be offered on the spot with free or reduced rate delivery and installation. An alternative would be to develop a program with the local utility, advertised on radio and television, where professional energy assessors would conduct assessment house calls for interested citizens, at reduced rates, and free of charge for the disadvantaged.

Residential Energy Saving Measures

R8. Energy Efficient Space Heating - Low Cost

Energy Type:	Natural Gas
Sector:	Residential
Category:	Efficient Equipment and Appliances
Measures:	Tune Furnaces Regularly; Task Heating; Replace/Clean Filters
End Uses:	Space Heating

Purpose: The purpose of this measure is to reduce natural gas consumption by reducing space heating demand and increasing efficiency.

Measure Requirements: Tuning gas furnaces every two years increases their efficiency. Task heating refers to using an individual free-standing space heater only in occupied rooms, thereby eliminating the need to increase the temperature for the whole household with a central system. Replacing/cleaning filters each month increases space heating efficiency and is both inexpensive and simple.

Educational television and radio commercials, which educate the public about these measures and offer accompanying rebates and/or free furnace tuning, are one way to gain high participation rates. Also, these measures should be included in any free public seminars and trade shows aimed at energy conservation, where space heating technology is specifically addressed.

Residential Energy Saving Measures

R8. Energy Efficient Space Heating - Low Cost

Energy Type:	Electricity
Sector:	Residential
Category:	Efficient Equipment and Appliances
Measures:	Task Heating; Replace/Clean Filters
End Uses:	Space Heating

Purpose: The purpose of this measure is to reduce electrical consumption by reducing space heating demand and increasing efficiency.

Measure Requirements: Task heating refers to using an individual free-standing space heater only in occupied rooms, thereby eliminating the need to increase the temperature for the whole household with a central system. Replacing/cleaning filters each month increases space heating efficiency and is both inexpensive and simple.

Educational television and radio commercials, which educate the public about these measures and offer accompanying rebates, are one way to gain high participation rates. Also, these measures should be included in any free public seminars and trade shows aimed at energy conservation where space heating technology is specifically addressed.

Residential Energy Saving Measures

R9. Energy Efficient Refrigerators and Freezers

Energy Type:	Electricity
Sector:	Residential
Category:	Efficient Equipment and Appliances
Measures:	Energy Efficient Refrigerators and Freezers
End Uses:	Refrigeration, Freezing

Purpose: The purpose of this measure is to reduce electrical consumption by using more efficient refrigerators and freezers.

Measure Requirements: Energy efficient refrigerators and freezers reduce energy demand by using more efficient compressors, fans, and by using better insulation.

Educational television and radio commercials, which educate the public about energy efficient refrigerators and freezers and offer accompanying rebates, are one way to gain high participation rates. Also, refrigerators and freezers should be included in any free public seminars and trade shows aimed at energy conservation, where energy efficient appliance technology is specifically addressed.

Residential Energy Saving Measures

R10. Energy Efficient Space Cooling - Low Cost

Energy Type: Electricity
Sector: Residential
Category: Efficient Equipment and Appliances
Measures: Whole House Fans
End Uses: Space Cooling

Purpose: The purpose of this measure is to reduce electrical consumption by reducing or eliminating space cooling demand.

Measure Requirements: Whole house fans are typically installed in the attic floor and pull air in through open windows, thereby cooling the house and reducing air conditioning demands.

Educational television and radio commercials, which educate the public about whole house fans and offer accompanying rebates, are one way to gain high participation rates. Also, whole house fans should be included in any free public seminars and trade shows aimed at energy conservation, in which space cooling technology is specifically addressed.

Commercial Energy Saving Measures

C1. Electricity Alternative Rate Structures

Energy Type:	Electricity
Sector:	Commercial
Category:	Load Management/Control
Measures:	Time-of-Use Rates; Demand Charges; Interruptible Rates; Increasing Block Rates
End Uses:	All Commercial

Purpose: The purpose of this measure is to lower overall peak demand requirements and/or reduce overall energy consumption through sending direct price signals to commercial consumers to alter their consumption patterns/usage in a desired manner.

Measure Requirements: Alternative rate structures are an effective mechanism to lower or alter commercial sector energy consumption either as a stand-alone load management strategy or as an incentive for participation in a conservation/load management program. Alternative rate structures as a market influence strategy perform three functions; provide information to consumers on the true cost of electrical services, provide incentives to use the most efficient equipment or usage patterns, and determine how much electricity a facility can afford. A variety of rate structures are available to send the proper price signals to consumers including: (1) time-of-use rates in which consumers are typically charged a higher price for on-peak usage of electricity, and a lower price during off-peak hours, (2) demand charges in which consumers typically pay a lower energy price but are also charged based on their maximum monthly kilowatt usage, (3) interruptible rates in which consumers are offered a reduced rate for electric service when the customer's service may be subjected to interruptions during periods when the facility's demand for service is high relative to the utility's available capacity, and (4) increasing block rates in which consumers are charged more per unit of energy consumed as they reach pre-set levels of consumption.

Implementation of this measure will require extensive interaction with the local electric utility, which will need to perform a cost-of-service/rates analysis to formulate equitable alternative rate structures which reflect County/local utility objectives. Facilities which fall under time-of-use rates and/or demand charges will require new metering equipment.

Commercial Energy Saving Measures

C1. Reduce /Restrict Uses Shortages

Energy Type:	Natural Gas
Sector:	Residential/Commercial/Industrial
Category:	Load Management/Control
Measures:	Restrict or reduce natural gas consumption utilizing curtailment agreements, isolation areas, and efficiency incentives as established through the CPUC tariff and safety regulations
End Uses:	All Natural Gas appliances and equipment

Purpose: The purpose of this measure is to reduce overall energy consumption through mandating consumers to reduce/restrict natural gas use during an emergency.

Measure Requirements: This measure requires restrictions or reductions of natural gas uses during an energy emergency. These measures would be implemented on an as needed basis to achieve a required level of energy reduction. Measures would be taken to curtail customers as established through tariff agreements starting with large commercial/industrial consumers and ending as a last resort, with isolated areas of residential customers.

Critical facilities such as hospitals, shelters, jails and schools are identified and prioritized accordingly in this curtailment process. Mandatory restriction/reduction of natural gas use in the commercial/industrial sector will be highly effective during a short term energy emergency, or as a stop-gap measure until long term energy reduction strategies are in place for a longer-term emergency or disruption.

Commercial Energy Saving Measures

C2. Reduce/Restrict Non-Essential Uses During Shortages

Energy Type: Electricity

Sector: Commercial

Category: Restriction of Non-Essential Uses During Shortages

Measures: Restrict or Reduce Hours of Operation, or Use of Energy Intensive End-Uses, in Non-Essential Commercial Consumers' Facilities; Restrict Operation of Pool and Spa Heating, Pumping, and/or Filter Systems During Peak Hours; Restrict Non-Essential Heating/Cooling(i.e., Vacant Motel Rooms); Restrict Indoor Business Lighting After Closing, and/or Advertising, Functional and Decorative Lighting; Miscellaneous Other, As Appropriate.

End Uses: All Commercial End Uses Except Refrigeration and Cooking

Purpose: The purpose of this measure is to lower overall peak demand requirements and/or reduce overall energy consumption through mandating commercial sector consumers to reduce/restrict non-essential electrical uses during an energy emergency.

Measure Requirements: This measure requires businesses to restrict or reduce non-essential electrical end uses during an energy emergency. These measures would be implemented on an as-needed basis to achieve a required level of energy reduction or demand savings. Measures which would impact businesses the least such as restricting non-essential heating/cooling and restricting operation of pool and spa heating, pumping, and filtration systems, would be implemented first, and would continue in a pre-prioritized order until non-essential businesses would be closed down or operated on a limited basis. Mandatory restriction/reduction of non-essential energy usage in the commercial sector will be highly effective during a short-term energy emergency, or as a stop-gap measure until long-term energy reduction strategies are in place for a longer-term emergency/disruption.

Implementation of this measure will require extensive marketing and public relations efforts to convey to the public the existence and seriousness of the energy emergency, and the importance of each business doing their part. The local government, perhaps in conjunction with the local utility, should also provide businesses with information on no-cost conservation activities and a prioritized listing of proposed restrictions and reductions prior to an emergency.

Commercial Energy Saving Measures

C2. Reduce/Restrict Non-Essential Uses During Shortages

Energy Type: Natural Gas

Sector: Commercial

Category: Restriction of Non-Essential Uses During Shortages

Measures: Restrict or Reduce Hours of Operation, or Use of Energy Intensive End-Uses, in Non-Essential Commercial Consumers' Facilities; Restrict Operation of Pool and Spa Heating During Peak Hours; Restrict Non-Essential Heating/Cooling (i.e., Vacant Motel Rooms); Miscellaneous Other, As Appropriate.

End Uses: All Commercial End Uses Except Refrigeration and Cooking

Purpose: The purpose of this measure is to reduce overall energy consumption through mandating commercial sector consumers to reduce/restrict non-essential natural gas use during an energy emergency.

Measure Requirements: This measure requires businesses to restrict or reduce non-essential natural gas uses during an energy emergency. These measures would be implemented on an as needed basis to achieve a required level of energy reduction. Measures which would impact on businesses the least such as restricting non-essential heating/cooling and restricting operation of pool and spa heating would be implemented first, and would continue in a pre-prioritized order until non-essential businesses would be closed down or operated on a limited basis. Mandatory restriction/reduction of non-essential energy usage in the commercial sector will be highly effective during a short-term energy emergency, or as a stop-gap measure until long-term energy reduction strategies are in place for a longer-term emergency/disruption.

Implementation of this measure will require extensive marketing and public relations efforts to convey to the public the existence and seriousness of the energy emergency, and the importance of each business doing their part. The local government, perhaps in conjunction with the local utility, should also provide businesses with information on non-cost conservation activities and a prioritized listing of proposed restrictions and reductions prior to an emergency.

Industrial Energy Saving Measures

I1. Alternative Rate Structures

Energy Type:	Electricity
Sector:	Industrial
Category:	Load Management/Control
Measures:	Time-of-Use Rates, Real-Time Pricing Mechanisms; Demand Charges; Interruptible Rates
End Uses:	All Industrial

Purpose: The purpose of this measure is to lower overall peak demand requirements and/or reduce overall energy consumption through sending direct price signals to industrial consumers to alter their consumption patterns/usage in a desired manner.

Measure Requirements: Alternative rate structures are an effective mechanism to lower or alter industrial energy consumption either as a stand-alone load management strategy or as an incentive for participation in a conservation/load management program. Alternative rate structures as a market influence strategy perform three functions: provide information to industrial consumers on the true cost of electrical services, provide incentives to use the most efficient equipment or usage patterns, and determine how much electricity a facility can afford. A variety of rate structures are available to send the proper price signals to industrial consumers including: (1) time-of-use rates in which consumers are typically charged a higher price for on-peak usage of electricity, and a lower price during off-peak hours, or real-time pricing mechanisms in which consumers pay the "true cost" of power at the time it is consumed, (2) demand charges in which consumers typically pay a lower energy price but are also charged based on their maximum monthly kilowatt usage, and (3) interruptible rates in which consumers are offered a special reduced rate for electric service when the customer's service may be subjected to interruptions during periods when the facility's demand for service is high relative to the utility's available capacity.

Implementation of this measure will require extensive interaction with the local electric utility, which will need to perform a cost-of-service study and rates analysis to formulate equitable rate structures which reflect the County/local utility objectives. Facilities which fall under time-of-use rates and/or demand charges will require new metering equipment.

Industrial Energy Saving Measures

12. Electricity Group Load Cooperatives

Energy Type:	Electricity
Sector:	Industrial
Category:	Load Management/Control
Measures:	Establishment of Industrial Users' Cooperatives to Reduce/Shift Operations and Lower Overall Demand to Meet System Requirements
End Uses:	All Industrial

Purpose: The purpose of this measure is to reduce overall energy and peak demand requirements through the establishment of group load cooperatives for load shedding/shifting purposes.

Measure Requirements: The establishment of group load cooperatives which cooperate with the local utility to undertake load shedding activities can provide substantial peak load reductions through curtailing or shifting industrial operations to off-peak periods. The group load cooperative strategy provides a greater amount of reliable, curtailable load than would typically result from an aggregate of individual curtailment commitments. If an individual member cannot on occasion curtail a load as requested on occasion, the other cooperative members can jointly make up the deficit to satisfy the group commitment.

The implementation of group load cooperatives requires the installation of computerized real time verification equipment to ensure compliance with requested curtailment levels. In-depth conservation and load management (C&LM) studies will be required at each member facility to identify the appropriate C&LM strategies and the practical extent to which the facility can contribute to the cooperative.

Implementation of this measure will require the County to work with the local utility to identify and recruit potential cooperative members. Potential group load cooperative members are typically limited to facilities with high load factors and two or three shift operations since they can more easily shift loads to take advantage of available labor during utility off-peak shifts. Further, the County/local utility will need to provide cooperatives with adequate financial incentives to participate, which would include a monetary payment based on the amount of energy/demand shifted or curtailed.

Industrial Energy Saving Measures

I2. Natural Gas Group Load Cooperatives

Energy Type: Natural Gas

Sector: Industrial

Category: Load Management/Control

Measures: Establishment of Industrial Users' Cooperatives to Reduce/Shift Operations and Lower Overall Demand to Meet System Requirements

End Uses: All Industrial

Purpose: The purpose of this measure is to reduce overall energy requirements through the establishment of group load cooperatives to collectively reduce natural gas demand.

Measure Requirements: The establishment of group load cooperatives which cooperate with the local utility to reduce natural gas consumption on demand can provide substantial energy savings. The group load cooperative strategy provides a greater amount of reliable curtailable load than would typically result from an aggregate of individual curtailment commitments. If an individual member cannot curtail load as requested on occasion, the other cooperative members can jointly make up the deficit to satisfy the group commitment. The implementation of group load cooperatives requires the installation of computerized real-time verification equipment to ensure compliance with requested curtailment levels. In-depth conservation studies will be required at each member facility to identify the appropriate conservation strategies and the practical extent to which the facility can contribute to the cooperative.

Implementation of this measure will require the County to work with the local utility to identify and recruit potential cooperative members. Further, the County/local utility will need to provide cooperatives with adequate financial incentives to participate, which would include a monetary payment based on the amount of natural gas conserved upon request.

Industrial Energy Saving Measures

13. Energy Efficient Motors and Drives

Energy Type:	Electricity
Sector:	Industrial
Category:	Energy Efficient Equipment
Measures:	Improved Motor Choice, Sizing, and Maintenance; Electric Motor Supply Improvements; Improved Motor Controls; Improved Mechanical Drivetrains and Bearings
End Uses:	Motors

Purpose: The purpose of this measure is to reduce the energy consumption of motors and drivetrain systems.

Measure Requirements: Improving the choice, size, and maintenance of motors will reduce electrical consumption by preventing oversizing and reducing losses due to poor maintenance. Improving the electrical supply to induction motors not only reduces energy consumption, but will prolong the life of the motor. Improvements include correcting phase imbalances, improper supply voltages, motor power factors, or poor supply waveform. Improved motor control includes switching off idling motors, installing adjustable-speed drives (ASDs, sometimes referred to as variable-speed drives, VSDs), using power-factor controllers, using load management controls; and use of high speed controllers for compressors. Improved mechanical drivetrains and bearings reduce the power transmission losses along the drivetrains, thereby allowing more of the motor's energy to reach the application. Choosing high-efficiency gear trains, chains, belts (i.e., replacing V-belts with synchronous belts), and properly designed and lubricated bearings will help reduce energy consumption.

Educating the industrial sector on the amount of money these measures will save, both in operational and long-term capital costs, will be critical in obtaining high participation rates. One way to begin this education is to offer free or low cost on-site inspections of facilities by energy conservation experts; these inspections would show each plant where energy-saving measures could substantially reduce energy consumption, and therefore operating costs.

Low/no interest loans, grants, or rebates could then be made available from the local government and/or the local utility to help each plant implement suggested conservation measures. Furthermore, the energy consultant could evaluate the plant's maintenance skills and suggest seminars or classes on proper motor and drivetrain operation and maintenance, especially in the critical area of lubrication. Alternately, the county could sponsor free/low cost seminars on important industrial conservation measures.

Industrial Energy Saving Measures

14. Energy Efficient Lighting

Energy Type:	Electricity
Sector:	Industrial
Category:	Efficient Equipment
Measures:	Energy Efficient Lighting Fixtures and Lamps; Electronic Ballasts; Reflectors; Exit Lights; Security Lighting
End Uses:	Lighting

Purpose: The purpose of this measure is to reduce lighting energy requirements in industrial facilities by increasing the efficiency of existing lighting systems.

Measure Requirements: Energy efficient lighting systems can reduce energy and demand requirements while providing an equivalent or improved quality of lighting. In addition, many of the energy efficiency options have a longer lifetime than conventional lighting equipment, and in turn can significantly lower both operations and maintenance costs. The lighting options included in this measure include relamping existing fixtures with energy efficient fluorescent lamps, replacing existing four lamp fixtures with two energy efficient fluorescent lamps and reflectors, replacing standard ballasts (which are now illegal for installation in new construction) with electronic ballasts, replacing exit signs with low-wattage energy efficient signs, and retrofitting outdoor security lighting with either mercury vapor or high pressure sodium (HPS) lamps, or a combination of any of the above measures to achieve the desired end use savings.

This measure can be implemented to achieve maximum participation through public information programs targeted toward industrial facility managers and facility maintenance personnel. Lighting retrofits are typically so highly cost effective that many utilities offer substantial rebates to encourage commercial facilities to retrofit existing lighting systems with more efficient, higher quality systems; others have provided energy efficient lamps and other lighting equipment free to qualifying facilities. Lighting systems are an extremely site-specific technology application, and although the savings can be very significant, the retrofits should be carefully designed according to IES standards to ensure the proper lights are installed for the particular application.

Industrial Energy Saving Measures

15. Electricity Industrial Audits and Incentives

Energy Type:	Electricity
Sector:	Industrial
Category:	Energy Efficient Equipment
Measures:	Industrial Audits and Incentives
End Uses:	All Industrial

Purpose: The purpose of this measure is to reduce energy consumption by showing industrial plants where cost-effective energy conservation measures can be applied and then offering industrial users incentives to implement them.

Measure Requirements: Energy audits identify energy conservation opportunities for an industrial facility and incentives urge the implementation of those measures. Audits usually involve a walk-through of the plant. More in-depth engineering audits are often done for large customers and/or customers that are serious about implementing the measures suggested during a walk-through audit. Studies have shown that audit programs achieve high participation rates (and are therefore highly successful) when the audits are provided free of charge and are coupled with regular personal contact with the facility. Drop-in site visitations and regular telephone contact are critical to a successful program. Post audit follow-ups and incentives are critical for getting recommended conservation measures implemented. Incentives include rebates, grants, loans, shared savings, technical assistance, requests for energy conservation proposals from industrial plants which are then subsidized, and energy conservation bidding.

Audit and incentive programs can be sponsored by the county government itself, or perhaps co-sponsored with a utility. Programs could target the largest users of energy to achieve large savings within 12 months, or the programs could be directed at one type of industry to achieve high participation rates and energy savings. For example, Bonneville Power Administration sent out a request for proposal to aluminum smelter industries and obtained a 90% participation rate over a three year period. Furthermore, the best time to implement energy conservation measures is when an industrial facility is being planned; audit and incentive programs should be available especially for these facilities, and should be marketed when the facilities are applying for permits.

Industrial Energy Saving Measures

15. Natural Gas Industrial Audits and Incentives

Energy Type:	Natural Gas
Sector:	Industrial
Category:	Energy Efficient Equipment
Measures:	Industrial Audits and Incentives
End Uses:	All Industrial

Purpose: The purpose of this measure is to reduce energy consumption by showing industrial plants where cost-effective energy conservation measures can be applied and then offering industrial users incentives to implement them.

Measure Requirements: Energy audits identify energy conservation opportunities for an industrial facility and incentives urge the implementation of those measures. Usually Audits usually involve a walk-through of the plant. More in-depth engineering audits are often done for large customers and/or customers that are serious about implementing the measures suggested during a walk-through audit. Studies have shown that audit programs achieve high participation rates (and are therefore highly successful) when the audits are provided free of charge and are coupled with regular personal contact with the facility. Drop-in site visitations and regular telephone contact are critical to a successful program. Post audit follow-ups and incentives are critical for getting recommended conservation measures implemented. Incentives include rebates, grants, loans, shared savings, technical assistance, requests for energy conservation proposals from industrial plants which are then subsidized, and energy conservation bidding.

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Industrial Energy Saving Measures

16. Electricity Industrial Cool Storage

Energy Type:	Electricity
Sector:	Industrial
Category:	Load Management/Control
Measures:	Ice Storage, Water Storage, Eutectic Salt Storage
End Uses:	Space Cooling

Purpose: The purpose of this measure is to shift industrial cooling electrical demand into the off-peak periods through the installation of cool storage technologies.

Measure Requirements: Commercial cool storage systems can shift from 65-100% of electrical cooling demand requirements into the off-peak period. Generally, cool storage is accomplished through one of three storage media: water, ice, or eutectic salts. Typically, the facility's refrigeration unit is run at night to make chilled water, ice, or change the phase of eutectic salts to store cooling energy in insulated tanks. This stored cooling energy is then used the next day to meet all, or a part of, the facility's cooling requirements. The degree to which cooling demand requirements are shifted is a function of the storage tank size; some tanks are designed to meet only a portion of the day's cooling requirements, while others are designed to meet the full capacity of the system during the hottest day of the year. Cool storage technologies are highly suitable for nearly all space cooling and other industrial cooling applications. Many existing facilities are also suitable, but others may be constrained by space requirements, storage system weight, or architectural considerations.

Successful implementation of an industrial cool storage program will require extensive interaction with the local electric utility to develop alternative rate structures (i.e., time-of-use rates) which promote the use of off-peak cooling. Further, the local government should work with the utility to develop incentives based on \$/kW of cooling demand shifted. Industrial cool storage programs are often implemented in conjunction with commercial cool storage programs. A number of utility programs have also offered to co-fund the feasibility study of the technology application with the facility owner.

Industrial Energy Saving Measures

17. Process Heat Recovery - New Construction/Retrofit

Energy Type:	Electricity
Sector:	Industrial
Category:	Process-Related Technologies
Measures:	Rotary Heat Exchangers; Recuperators; Heat Pipes; Waste-Heat Boilers; Economizers; Heat Pumps
End Uses:	Process Heat

Purpose: The purpose of this measure is to reduce process heat losses.

Measure Requirements: Recovering waste heat for further use in process heating needs reduces electrical demand. Rotary heat exchangers, recuperators, heat pipes, and heat pumps are all air-to-air heat exchangers; heat pipes and recuperators have no moving parts, require no electricity, and are durable. Waste heat boilers and economizers are air-to-liquid heat exchangers. Economizers are used for pre-heating boiler feedwater.

One way to achieve high participation rates is for counties, in conjunction with utilities, to offer incentives for using process heat recovery such as low/no interest loans, rebates, grants, and free or low cost consulting. An alternative is to write legislation requiring industrial plants to use waste heat recovery whenever feasible.

Industrial Energy Saving Measures

17. Process Heat Recovery - New Construction/Retrofit

Energy Type:	Natural Gas
Sector:	Industrial
Category:	Process-Related Technologies
Measures:	Rotary Heat Exchangers; Recuperators; Heat Pipes; Waste-Heat Boilers; Economizers; Heat Pumps
End Uses:	Process Heat

Purpose: The purpose of this measure is to reduce process heat losses.

Measure Requirements: Recovering waste heat for further use in process heating needs reduces natural gas demand. Rotary heat exchangers, recuperators, heat pipes, and heat pumps are all air-to-air heat exchangers; heat pipes and recuperators have no moving parts, require no electricity, and are durable. Waste heat boilers and economizers are air-to-liquid heat exchangers. Economizers are used for pre-heating boiler feedwater.

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Industrial Energy Saving Measures

18. Cogeneration

Energy Type:	Natural Gas
Sector:	Industrial
Category:	Process-Related Technologies
Measures:	Cogeneration
End Uses:	All

Purpose: The purpose of this measure is to reduce natural gas consumption by generating electricity and thermal energy more efficiently.

Measure Requirements: Cogeneration is the process of generating electrical and thermal energy simultaneously, which is more efficient than generating them separately; the electrical and thermal energy are then used internally at the industrial plant, and any excess electricity is sold to the utilities under the Public Utilities Regulatory Policy Act (PURPA). It is extremely important to insure that each industrial facility installing a cogeneration system genuinely has a substantial need for thermal energy; otherwise the facility will approach being a purely electrical generating facility, and the system's efficiency will plummet. Studies have shown that many cogeneration facilities have been built to generate just enough thermal energy to pass the Federal Energy Regulatory Commission's (FERC) standards for qualifying facilities. This sidesteps the purpose of cogeneration in order to gain the higher prices for electricity.

One way to gain high participation rates is to work either with the utilities or independently to offer grants, low/no interest loans, or distribute requests for proposals to promising facilities for cogeneration installation and subsidize the best proposals.

Agricultural Energy Saving Measures

A1. Electricity Irrigation Pumping Plants

Energy Type:	Electricity
Sector:	Agricultural
Category:	Efficient Equipment
Measures:	Irrigation Pump Efficiency Testing and Repair
End Uses:	Water Pumping

Purpose: The purpose of this measure is to reduce water pumping energy requirements through testing of existing pumps, and identifying and performing cost-effective repairs/improvements to increase pump efficiencies.

Measure Requirements: Water pumping is the largest electrical end use in the agricultural sector, and also has the highest potential for reduction of energy use. By increasing the efficiency of existing pumping plants, energy requirements can be significantly reduced, allowing more water to be pumped per kWh, and also extending pump life. The options included in this measure include testing pumps to determine existing efficiencies, water discharge rates, discharge pressures, power requirements, energy consumption, and water pumping levels; and recommending and performing pump repairs/improvements such as repairing or replacing pump components (motor, drive shaft, pump assembly), retrofitting motor bowls with redesigned ones, downsizing pumps to meet pumping requirements, utilizing pipeline sizes that reduce friction, or installing variable speed pumps.

This measure can be implemented to achieve maximum participation through the County providing pump testing services free of charge to agricultural concerns within the County. The County may want to consider a cooperatively funded program with the local electric utility or the local Agricultural Extension Service. After the testing is complete, the pump testing contractors should provide irrigators with information on cost-effective repairs/improvements for specific pumps tested, as well as provide them with information on costs of repairs and projected payback periods. This program is a long-term continuous program, as pumps should be tested every one to two years for efficiency.

Agricultural Energy Saving Measures

A1. Natural Gas Irrigation Pumping Plants

Energy Type:	Natural Gas
Sector:	Agricultural
Category:	Efficient Equipment
Measures:	Irrigation Pump Efficiency Testing and Repair
End Uses:	Water Pumping

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Agricultural Energy Saving Measures

A2. Natural Gas Computerized Irrigation Scheduling

Energy Type:	Natural Gas
Sector:	Agricultural
Category:	Load Management/Control
Measures:	Develop Optimal Irrigation Schedules Based on Real-Time Weather, Soil, and Other Environmental Data
End Uses:	Water Pumping

Purpose: The purpose of this measure is to reduce energy requirements of water pumping loads by developing irrigation schedules which specify the optimal amount and time to irrigate.

Measure Requirements: Irrigators often set irrigation schedules based on previous experience and intuition. In most cases, this results in over-watering of crops since the schedule is based on normal weather conditions and observed crop responses to various levels of watering. Through the utilization of computerized irrigation scheduling software, the irrigator collects real-time weather and other site specific data, and inputs it into the program to calculate the amount of available soil water. From this information, the program forecasts the next irrigation. Irrigating crops at the proper time with the appropriate amount of water will reduce overall energy and water requirements, while providing the irrigator with optimal crop production and increased profits.

This measure can be implemented to achieve maximum participation by offering incentives or reduced natural gas rates to irrigators who participate in the irrigation scheduling program, as well as providing irrigators with information on proper scheduling techniques and case studies of successful scheduling activities.

The County may also want to consider working with the local agricultural extension service to distribute irrigation scheduling software to program participants at no cost or at a reduced rate. This program will also require the installation of a local weather station to provide irrigators with the necessary information on evapotranspiration rates, rainfall, etc., if one is not already in existence in the immediate area.

Agricultural Energy Saving Measures

A2. Electricity Computerized Irrigation Scheduling

Energy Type:	Electricity
Sector:	Agricultural
Category:	Load Management/Control
Measures:	Develop Optimal Irrigation Schedules Based on Real-Time Weather, Soil, and Other Environmental Data
End Uses:	Water Pumping

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Agricultural Energy Saving Measures

A3. Alternative Irrigation and Farming Methods

Energy Type:	Natural Gas
Sector:	Agricultural
Category:	Agricultural Irrigation Efficiency
Measures:	Efficient Soil and Crop Management; Low Energy Precision Application; Drip Irrigation; Level Basin Irrigation; Reduced Pressure Center Pivot Irrigation; Surge Flow Irrigation
End Uses:	Water Pumping

Purpose: The purpose of this measure is to reduce energy requirements of water pumping loads by increasing the application efficiency of existing irrigation systems through implementation of alternative irrigation and farming methods.

Measure Requirements: The types of efficient irrigation and farming methods included in this measure focus on two general areas; soil and crop management, and efficient water application techniques. Appropriate soil and crop management methods may include shortening the length of irrigation runs, laser land leveling, growing indigenous crops, and crop rotation. Efficient water application techniques will vary depending on soil type, field slope, and crop type, but may include low energy precision application (LEPA), drip irrigation, level basin irrigation, reduced pressure center pivot irrigation, and surge flow irrigation.

Maximum participation in agricultural irrigation efficiency programs has generally been achieved when promoted through a three phased effort: education programs, efficiency incentives, and cooperative efforts. Initially, the County may want to promote the program through educational activities such as irrigation efficiency workshops, or fact sheets promoting "success stories" of irrigation efficiency projects to help customers understand the concepts and benefits of the various techniques.

The County may also want to work with the local natural gas utility to offer cash incentives to participants who implement recommended on-farm efficiency improvements. Third, the County could consider cooperative efforts with federal, state, or local agricultural agencies to implement measures, and promote the visibility of program options.

Agricultural Energy Saving Measures

A3. Alternative Irrigation and Farming Methods

Energy Type:	Electricity
Sector:	Agricultural
Category:	Agricultural Irrigation Efficiency
Measures:	Efficient Soil and Crop Management; Low Energy Precision Application; Drip Irrigation; Level Basin Irrigation; Reduced Pressure Center Pivot Irrigation; Surge Flow Irrigation
End Uses:	Water Pumping

Purpose: The purpose of this measure is to reduce energy requirements of water pumping loads by increasing the application efficiency of existing irrigation systems through implementation of alternative irrigation and farming methods.

Measure Requirements: The types of efficient irrigation and farming methods included in this measure focus on two general areas: soil and crop management, and efficient water application techniques. Appropriate soil and crop management methods may include shortening the length of irrigation runs, laser land leveling, growing indigenous crops, and crop rotation. Efficient water application techniques will vary depending on soil type, field slope, and crop type, but may include low energy precision application (LEPA), drip irrigation, level basin irrigation, reduced pressure center pivot irrigation, and surge flow irrigation.

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Agricultural Energy Saving Measures

A4. Irrigation Load Management Strategies

Energy Type:	Electricity
Sector:	Agricultural
Category:	Load Management/Control
Measures:	Irrigation Pump Scheduling; Irrigation Pump Cycling Control
End Uses:	Water Pumping

Purpose: The purpose of this measure is to reduce peak demand requirements by shifting the most inefficient pumping loads to the off-peak periods or through direct cycling control of irrigation pumps.

Measure Requirements: Water pumping in agricultural areas is often a main contributor to seasonal daily peak loads, and can often be easily controlled or shifted to off-peak periods and reduce overall demand requirements. The options included in this measure include development of pump schedules for participating irrigators and/or the installation of cycling controllers on selected pumps which enable the local utility to control pumping loads during peak periods. Pump schedules are a load shifting strategy which typically reduce peak loads by curtailing the most inefficient pumps during the peak period as necessary, and allowing them to meet the necessary water requirements during off-peak periods. Pump cycling controls are similar to the scheduling activity, but the utility maintains direct control over pumps using real-time peak load data to determine which pumping loads are cycled on and off and for what duration of time. For both of these measures it is important that irrigators have the capability to override the schedules/controllers without penalty if crops are endangered.

This measure can be implemented to achieve maximum participation by offering special rates or incentives to irrigators who participate in either the pump scheduling or pump cycling control programs. The County will have to work closely with the local utility and local agricultural experts in the development and implementation of both of these programs to ensure that peak loads are actually reduced, and that schedules and control periods are estimated accurately and without damage to crops. Customer information programs will play a key role in these activities to ensure that irrigators understand the program benefits and the projected cost savings they will achieve through reduced rates or incentives.

Local Government Energy Saving Measures

G1. Public Information and Communications

Energy Type:	All (Petroleum, Natural Gas, Electricity)
Sector:	All (Transportation, Residential, Commercial, Industrial, Agricultural)
Category:	All
Measures:	All
End Uses:	All

Purpose: The purpose of this measure is to 1) gain public cooperation with demand reduction and emergency supply measures by communicating clear, accurate, and relevant information about the nature and expected duration of an energy shortage, and 2) stimulate participation in energy conservation measures during non-emergency times in order to lessen the impacts of an energy shortage.

Measure Requirements: This measure directly supports the implementation of all other energy demand reduction measures. Public information and communication is a critical component of any response to an energy supply disruption or disaster. Publicity is also the key to high participation rates for energy conservation measures which are preparation for energy shortages.

The Public Information Officer (PIO) has prime responsibility for releasing energy emergency instructions and information to the public through the media. Prior to the onset of an energy shortage, the PIO: works with the Energy Emergency Coordinator to add supporting documents, standard operating procedures, checklists, and sample PIO materials to the Energy Shortage Contingency Plan; conducts training exercises; makes provisions for use of a Media Center during an energy emergency; maintains media contacts and working relationships with PIOs in other jurisdictions; and develops sample energy emergency public information releases. During an energy shortage, the PIO releases instructions and information about the energy demand reduction measures that have been selected for implementation. As the shortage progresses, the PIO updates and continues the public information campaign, and reports on the progress of the efforts to reduce demand.

The county Energy Coordinator has the prime responsibility for developing and implementing information campaigns for the energy conservation measures. This may include television and radio advertisements, energy fairs (trade show demonstrating energy conservation technologies), public speaking, energy conservation brochures, and any other forms of public outreach. During times of energy shortage, the energy coordinator and the PIO may appeal to the public to restrict use of non-essential energy usage and vehicle travel.

Local Government Energy Saving Measures

G2. Increase Energy Storage

Energy Type:	Petroleum, Electricity
Sector:	Transportation, Commercial, Industrial, Agricultural
Category:	Energy Storage Strategies
Measures:	Motor Fuel Storage; Pumped Storage; Compressed Air; Battery Storage
End Uses:	All

Purposes: The purpose of this measure is to decrease vulnerability to energy shortages through use of energy storage technologies and practices prior to an energy emergency.

Measure Requirements: This measure does not provide any energy savings in and of itself, but provides for an additional supply which can be tapped during an energy emergency. The measures considered in this strategy are primarily motor fuel storage strategies to provide for emergency fuel supplies under a worst case scenario. During market disruptions or non-disaster related energy shortages, fuel requirements may be met through curtailment of non-essential fuel uses; however, in the case of a local disaster, fuel requirements will increase dramatically, e.g., for emergency vehicles responding to the situation and electricity generators at critical facilities. Under the local disaster scenario, the availability of adequate fuel supplies will be critical to saving lives and property, restoring law and order, and responding to immediate community needs.

To ensure an adequate supply of fuel for emergency situations, this measure provides for a 14 day supply to meet the requirements of an emergency situation by maintaining fuel tank storage levels at a minimum of 60% of full capacity. In cases where an adequate reserve can not be maintained with existing county storage tanks, agreements may be entered into with local gas stations strategically located throughout the county (i.e., near critical facilities with electricity generators, and near emergency vehicle fueling stations) to maintain the additional storage needed for the county by keeping station tanks at 60% of capacity.

Most electricity storage technologies which may prove beneficial in supplying additional energy during shortages are still in the experimental or pilot stages, such as battery storage or compressed air energy storage technologies. Their applications are often limited due to size constraints and other site specific considerations. Pumped hydroelectric storage is a proven technology which could be utilized if an existing or planned site is available, and other considerations such as daily generation requirements and water supplies warrant. Natural gas storage is not a feasible option, as evidenced by utilities' recent removal of storage tanks due to safety considerations.

Local Government Energy Saving Measures

G3. Reduce Energy Use in Government Vehicles and Facilities

Energy Type: All (Petroleum, Natural Gas, Electricity)

Sector: Government: Transportation, Commercial

Category: Government Programs

Measures: Reduce Energy Use by Government Vehicles; Reduce Energy Use in Government Facilities

End Uses: All Transportation; All Commercial Except Refrigeration and Cooking

Purpose: The purpose of this measure is to conserve petroleum, natural gas and electricity by reducing overall energy use by the government sector. Savings are to be incurred by improved efficiency as well as reduced usage of government vehicles and facilities. This measure demonstrates conservation to the public, and it communicates the overall necessity of fuel shortage measures during an energy emergency. A secondary purpose of this measure would be reduced demand for "allocated" fuel sources, thus freeing supplies for public and commercial needs. This measure balances the nature of government fuels allocations with an effective program to restrict government non-essential energy usage.

Measure Requirements: General instructions for the reduction of energy usage will be promulgated and circulated to government managers, who will then identify specific non-essential uses of energy within their departments. Greater restrictions on the use of government vehicles, as well as vehicle efficiency-improvement measures will be needed. A review of building HVAC energy needs will be required, as well as review of possible redistribution of personnel within facilities, or through telecommuting programs. Reductions in government energy usage may be more difficult to achieve during a fuel shortage emergency, since the demand for government services will increase; nevertheless reductions in non-essential consumption should be carried out.

Local Government Energy Saving Measures

G4. Economic Assistance Programs

Energy Type:	Natural Gas, Electricity
Sector:	Residential
Category:	Efficient Equipment and Appliances, Building Envelope
Measures:	Weatherization, Installation of Energy-Saving Devices
End Uses:	Domestic Water Heating, Space Heating, Space Cooling, Lighting

Purpose: The purpose of this measure is to assist low-income households in implementing conservation and efficiency measures.

Measure Requirements: Weatherization of homes (i.e., insulation, caulking, and weather stripping) and use of efficient appliances and lighting can conserve a significant amount of energy. Economic assistance programs provide low-income households, which typically do not invest in these measures, with free or discounted energy-saving products and services. Compact fluorescent lightbulbs, low-flow showerheads, etc., could be installed by volunteers or paid workers who visit homes of eligible households. Major retrofits or weatherization could be performed by professional contractors, with customers using rebate coupons to offset the costs.

During an energy supply disruption, more aggressive conservation programs may be pursued to cope with the reduced supply. In order to help low-income households meet immediate conservation needs, expenditures for economic assistance programs could be temporarily increased to the maximum realizable level. Assistance is critical both for reducing energy use in the low-income sector and for helping low-income households combat growing energy bills, which often increase during supply shortages.

Participating in these programs can be promoted through notices included in utility energy bills. Counties should work with utilities which already operate programs for low-income households in order to locate a sector of the community which is both eligible and likely to participate. Wherever possible, marketing for economic assistance programs should be concentrated in the low-income sector.

5. Energy Efficient Land Use Planning

Energy Type:	All (Petroleum, Natural Gas, Electricity)
Sector:	Transportation, Residential, Commercial, Industrial
Category:	All
Measures:	All
End Uses:	All

Purpose: The purpose of this measure is to reduce consumption of petroleum, natural gas, and electricity through the development of energy efficient planned communities. The measure's goals of reducing local energy usage and dependence will be achieved for newly planned community developments through 1) developing effective alternative transportation options, 2) increasing energy efficiency in new construction, and 3) integrating load management and alternative energy options into development plans.

Measure Requirements: This measure involves a comprehensive effort to include energy efficiency measures and alternative transportation options into new community developments. One of the major considerations included in this measure is the incorporation of a jobs-housing balance and the integration of industrial/commercial/residential areas to reduce commuting distances to jobs, services, and entertainment. This measure also involves the efficient planning of local private/public transportation systems to reduce vehicle miles traveled (VMT) and provide alternative transportation options. The transportation options which should be considered include: bike/pedestrian paths, light rail transit, buses, ferries, and car/vanpool lanes.

Among the natural gas and electricity energy efficiency options which should be incorporated into this measure include: integrated technology options which exploit economies of scale (i.e., cogeneration, district heating, thermal storage, and load management/load shedding capabilities), energy efficient new construction above Title 24 standards (i.e., 15% above minimum standards), and active and passive solar technologies (i.e., photovoltaics, solar water heating, landscaping, and building orientation and glazing options). Recycling facilities should be incorporated into the design of all community trash collection areas so as to reduce fuel consumption from solid waste transportation as well as natural gas and electricity requirements for the manufacturing of glass, aluminum, metals, paper, etc.

This measure will require close cooperation among county energy and planning departments, local utilities, and developers. A public relations/information campaign should also be developed to inform developers and the real estate industry of the marketability of energy efficient planned communities and their benefits.

Local Government Energy Saving Measures

6. Volunteerism

Energy Type:	All (Petroleum, Natural Gas, Electricity)
Sector:	All (Transportation, Residential, Commercial, Industrial, Agricultural)
Category:	All
Measures:	All
End Uses:	All

Purpose: The purpose of this measure is to develop community participation and support for the implementation of energy conservation measures while providing valuable skills and knowledge about energy conservation to each volunteer.

Measure Requirements: This measure directly supports the Public Information and Communications measure by further increasing public awareness through personal outreach. The structure for such an organization may consist simply of a county Energy Coordinator, zone coordinators, and volunteers. The role of the county Energy Coordinator would be to oversee the volunteer programs. The duties may include: organizing recruiting and training efforts; developing demand-side management focuses; funding; development of energy fairs; and the planning of any other activities which would promote the use of energy conservation measures with the help of volunteers. Zone coordinators, who represent various areas of the county, would report to the Energy Coordinator and be responsible for: on-site volunteer recruiting; identifying neighborhoods and business sectors where conservation measures would yield high impacts; organizing cooperative efforts with other volunteer groups; assisting the Energy Coordinator with designing and coordinating energy fairs, seminars, and workshops for their particular region; developing contacts with city energy officials; and overseeing all volunteer work efforts. The role of the volunteers is to educate the public about energy conservation measures by:

- assisting with energy seminars, workshops, and all public outreach programs;
- providing low/no cost energy services such as on-site energy audits and conservation measure installations;
- providing support to economic assistance programs;
- developing educational lectures and programs for school and university students;
- advertising utility rebate programs; and
- organizing neighborhood awareness programs.

The volunteer program would not only stimulate public participation in energy conservation, but could also provide opportunities for the underprivileged to obtain valuable training and experience in the field of energy conservation and management.

Appendices

9 Appendices

The appendices that follow provide response checklists for an energy emergency.

9.1 Appendix A - Managing Emergency Operations

This checklist identifies the actions to be taken at the various phases of response with regard to **Managing Emergency Operations**.

9.2 Appendix B - Fire and Rescue

This checklist identifies the actions to be taken at the various phases of response with regard to **Fire and Rescue** services.

9.3 Appendix C - Law Enforcement and Traffic Control

This checklist identifies the actions to be taken at the various phases of response with regard to **Law Enforcement and Traffic Control** services.

9.4 Appendix D - Medical

This checklist identifies the actions to be taken at the various phases of response with regard to **Medical** services.

9.5 Appendix E - Public Health

This checklist identifies the actions to be taken at the various phases of response with regard to **Public Health** services.

9.6 Appendix F - Care and Shelter

This checklist identifies the actions to be taken at the various phases of response with regard to **Care and Shelter**.

Appendices

9.7 Appendix G - Movement and Transportation

This checklist identifies the actions to be taken at the various phases of response with regard to **Movement and Transportation** services.

9.8 Appendix H - Construction and Engineering

This checklist identifies the actions to be taken at the various phases of response with regard to **Construction and Engineering** services.

9.9 Appendix I - Resources and Support

This checklist identifies the actions to be taken at the various phases of response with regard to **Resources and Support** services.

9.10 Appendix J - Emergency Public Information

This checklist identifies the actions to be taken at the various phases of response with regard to **Emergency Public Information**.

9.11 Appendix K - Energy

This checklist identifies the actions to be taken at the various phases of response with regard to **Energy** services.

Appendices

APPENDIX A MANAGING EMERGENCY OPERATIONS - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Ensure the preparation of energy emergency plans, procedures and Standard Operating Procedures (SOPs).	OES	
Periodically review and ensure that energy emergency plans are updated.	OES	
Direct the Energy Emergency Coordinator to determine the jurisdiction's critical energy needs.	OES	
Direct the Energy Emergency Coordinator to determine the effects of an energy supply disruption.	OES	
Report critical energy needs and effects of energy supply disruptions to the County Board of Supervisors.	GS/OES	
If an energy emergency or a shortage situation is imminent, confer with the California Energy Commission and the State Office of Emergency Services and activate the Verification Phase.	OES Energy Coordinator	
VERIFICATION PHASE:		
Review Pre-Emergency operating guidelines.	OES	
Notify Board of Supervisors, Energy Emergency Coordinator, and the Public Information Officer (PIO) of the nature, extent and duration of a potential energy shortage.	OES	
Direct the staff to confirm information and analysis.	OES	
Establish a briefing schedule for information updating.	PIO	
Ensure County Board of Supervisors are briefed periodically regarding the situation.	PIO	
As necessary, confer with the Energy Emergency Coordinator and PIO to prepare appropriate press releases and media briefings.	PIO	

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APPENDIX A MANAGING EMERGENCY OPERATIONS - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Communicate with the California Energy Commission and State Office of Emergency Services to update information on the potential energy emergency.	OES Energy Coordinator	
Coordinate dissemination of information on the local level.	PIO	
If the situation worsens-go to the Pre-Emergency Phase.	OES	
If the situation lessens-direct Energy Emergency Coordinator to prepare an after-action report.	OES	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Notify the Board of Supervisors, Energy Emergency Coordinator, and other local emergency operations groups of the Pre-Emergency Phase.	OES PIO	
Activate the local emergency management staff to address the energy emergency situation.	OES	
Direct staff to collect, evaluate and report information on their internal and external energy requirements.	OES	
Establish a regular briefing schedule for Board of Supervisors and the Energy Emergency Staff.	PIO	
Review the "menu" of strategies and select the appropriate energy conservation measures to be implemented on the local level.	OES GS	
Coordinate with the Energy Emergency Coordinator and PIO to determine what information from activities in progress should be made available for release.	OES/PIO	
Review this information for completeness and accuracy.	OES	
EMERGENCY PHASE:		
Activate the Emergency Phase of the Energy Shortage Contingency Plan.	OES	

Appendices

APPENDIX A MANAGING EMERGENCY OPERATIONS - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Notify the Board of Supervisors Energy Emergency Coordinator, Emergency Management Staff, PIO, and other local energy operations groups of the Emergency Phase.	OES	
Activate the Emergency Operations Center (EOC) if appropriate.	OES	
Convene the Emergency Staff for briefing on the energy emergency situation.	OES	
Direct Emergency Staff to assess the impact of the Energy Emergency.	OES	
Brief the Board of Supervisors on the energy emergency situation.	OES	
If necessary, proclaim a Local Emergency.	Board of Supv./OES	
Direct the Energy Emergency Coordinator to work with all Emergency Management staff to ensure availability of energy for critical facilities and emergency response vehicles.	OES	

Appendices

APPENDIX B FIRE AND RESCUE - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOP's pertaining to Fire and Rescue.	Fire	
Compile information concerning daily energy requirements.	Fire/ GS	
Estimate energy requirements for emergency conditions.	Fire/ GS	
Analyze emergency fuel pumping/transfer capability.	GS	
Ensure department has established alternate fuel sources.	Fire/GS	
Develop departmental fuel management policies	Fire	
Ensure that alternate power sources are tested and maintained.	OES/GS	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	Fire	
Attend all energy emergency management briefings.	Fire	
Brief in-house management staff.	Fire	
Maintain liaison with local energy suppliers.	GS	
If the situation worsens, go to the Pre-Emergency Phase.	Fire	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	Fire	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	Fire	

Appendices

APPENDIX B FIRE AND RESCUE - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Attend all emergency staff briefings re: energy emergency.	Fire/OES	
Collect, evaluate, and report information on internal energy requirements.	Fire/GS OES	
Report to Emergency Services Director if energy available from usual suppliers is fluctuating or insufficient to meet projected needs.	GS Fleet Services Fire	
Brief staff on potential hazardous public actions such as: hoarding, improper fuel storage, or non-code energy installations.	OES/Fire GS	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	Fire	
Direct the development of appropriate public fire safety information.	Fire PIO	
If situation worsens, go to Emergency Phase.	Fire	
If situation lessens, prepare an after-action report and resume Verification Phase.	Fire	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	Fire/	
Maintain accurate departmental activity log.	Fire EMS	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	Fire EMS GS	
Determine any increased need for energy supplies as a result of increased demand on fire and rescue services, and report findings to Emergency Services Director.	GS Fire EMS	

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APPENDIX B FIRE AND RESCUE - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Attend all emergency staff briefings re: energy emergency.	Fire/OES	
Collect, evaluate, and report information on internal energy requirements.	Fire/GS OES	
Report to Emergency Services Director if energy available from usual suppliers is fluctuating or insufficient to meet projected needs.	GS Fleet Services Fire	
Brief staff on potential hazardous public actions such as: hoarding, improper fuel storage, or non-code energy installations.	OES/Fire GS	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	Fire	
Direct the development of appropriate public fire safety information.	Fire PIO	
If situation worsens, go to Emergency Phase.	Fire	
If situation lessens, prepare an after-action report and resume Verification Phase.	Fire	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	Fire/	
Maintain accurate departmental activity log.	Fire EMS	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	Fire EMS GS	
Determine any increased need for energy supplies as a result of increased demand on fire and rescue services, and report findings to Emergency Services Director.	GS Fire EMS	

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APPENDIX B FIRE AND RESCUE - EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	GS Fire EMS	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	GS PIO Fire	
Provide data to field personnel - ensure accurate information regarding energy use, etc.	Fire EMS PIO/OES	
Ensure preparation of departmental after-action reports.	OES/EMS Fire	

Appendices

**APPENDIX C
LAW ENFORCEMENT AND TRAFFIC CONTROL
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to law enforcement.	Sheriff	
Compile information concerning daily energy requirements.	Sheriff/ GS	
Estimate energy requirements for emergency conditions.	GS/ Sheriff	
Analyze emergency fuel pumping/transfer capabilities.	GS	
Ensure department has established alternate fuel sources.	GS/OES/ Sheriff	
Develop departmental fuel management policies.	Sheriff	
Ensure that alternate power sources are tested and maintained.	GS	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	Sheriff	
Attend all energy emergency management briefings.	OES/ Sheriff	
Brief in-house management staff.	Sheriff/ OES	
Maintain liaison with local energy suppliers.	GS	
If the situation worsens, go to the Pre-Emergency Phase.	Sheriff	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	Sheriff	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency Phase	OES	

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**APPENDIX C
LAW ENFORCEMENT AND TRAFFIC CONTROL
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to law enforcement.	Sheriff	
Compile information concerning daily energy requirements.	Sheriff/ GS	
Estimate energy requirements for emergency conditions.	GS/ Sheriff	
Analyze emergency fuel pumping/transfer capabilities.	GS	
Ensure department has established alternate fuel sources.	GS/OES/ Sheriff	
Develop departmental fuel management policies.	Sheriff	
Ensure that alternate power sources are tested and maintained.	GS	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	Sheriff	
Attend all energy emergency management briefings.	OES/ Sheriff	
Brief in-house management staff.	Sheriff/ OES	
Maintain liaison with local energy suppliers.	GS	
If the situation worsens, go to the Pre-Emergency Phase.	Sheriff	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	Sheriff	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency Phase	OES	

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**APPENDIX C
LAW ENFORCEMENT AND TRAFFIC CONTROL
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all emergency staff briefings re: energy emergency	Sheriff	
Collect, evaluate, and report information on internal energy requirements.	Sheriff/ GS	
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	GS/ OES	
Brief staff on potential illegal practices on obtaining, storage and use of fuel sources.	Sheriff/ Fire/GS	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	Sheriff	
Develop appropriate Public Safety enforcement information for dissemination in the Community.	Sheriff/ PIO	
If situation worsens, go to Emergency Phase.	OES	
If the situation lessens, prepare an after-action report and resume Verification Phase.	Sheriff	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	Sheriff	
Maintain accurate departmental activity log.	Sheriff	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	Sheriff/ GS/OES	
Determine any increased need for energy supplies as a result of increased demand on law enforcement services, and report findings to Emergency Services Director.	Sheriff/ GS/OES	

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**APPENDIX C
LAW ENFORCEMENT AND TRAFFIC CONTROL
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	Sheriff/	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	Sheriff/ PIO	
Provide data to field personnel, ensure accurate information regarding energy use, etc.	Sheriff/ PIO	
Ensure preparation of departmental after-action reports.	Sheriff/ OES	

Appendices

APPENDIX D MEDICAL EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to the medical function.	EMS	
Compile information concerning daily energy requirements.	EMS/GS	
Estimate energy requirements for emergency conditions.	EMS/GS	
Analyze emergency fuel pumping/transfer capability.	EMS/GS	
Ensure department has established alternate fuel sources.	OES/GS/ EMS	
Develop departmental fuel management policies.	GS/EMS/ OES	
VERIFICATION:		
Review pre-emergency operating guidelines.	EMS	
Attend all energy emergency management briefings.	EMS	
Brief in-house medical management staff.	EMS	
Maintain liaison with local energy suppliers.	GS/EMS	
If the situation worsens, go to the Pre-Emergency Phase.	EMS	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	EMS/OES	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Attend all emergency staff briefings re: energy emergency.	EMS	

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**APPENDIX D
MEDICAL
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Collect, evaluate, and report information on internal energy requirements.	EMS/GS/ OES	
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	EMS/GS/ OES	
Brief staff on potential emergency medical services impact due to improper fuel storage and energy utilization.	EMS/ Fire	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	EMS	
If situation worsens, go to Emergency Phase.	EMS	
If the situation lessens, prepare an after-action report and resume Verification Phase.	EMS	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	EMS	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	EMS/GS Sheriff/ Fire	
Determine any increased need for energy supplies as a result of increased demand on Emergency Medical Services, and report findings to Emergency Services Director. (Refer to Emergency Medical Service Annex D in EOP).	EMS/GS	
Assure maintenance of a reliable supply of fuel to run emergency generators at medical facilities. (Refer to Emergency Medical Service Annex D in EOP).	EMS/GS	

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**APPENDIX D
MEDICAL
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	EMS	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	EMS/PIO	
Provide data to field personnel - ensure accurate information regarding energy use, etc.	EMS	
Ensure preparation of departmental after-action reports.	EMS	

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**APPENDIX E
PUBLIC HEALTH
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to Public Health.	Health Agency	
Compile information concerning daily energy requirements.	Health/GS	
Estimate energy requirements for emergency conditions.	Health Agency/GS	
Ensure department has established alternate fuel sources.	Health Agency/GS	
Develop departmental fuel management policies.	Health Agency/GS	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	Health Agency	
Attend all energy emergency management briefings.	Health Agency	
Brief in-house management staff.	Health Agency	
If the situation worsens, go to the Pre-Emergency Phase.	Health Agency	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	Health Agency	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Attend all emergency staff briefings re: Energy emergency.	Public Health	
Collect, evaluate, and report information on internal energy requirements.	Public Health/GS	

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**APPENDIX E
PUBLIC HEALTH
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	Health Agency	
Brief staff on potential public issues regarding the energy emergency.	Health Agency	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	Health Agency	
Release appropriate energy emergency Health Agency information.	Health Agency/PIO	
If situation worsens, go to Emergency Phase.	Health Agency	
If the situation lessens, prepare an after-action report and resume Verification Phase.	Health Agency	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	Health Agency	
Maintain accurate departmental activity log.	Health Agency	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	Health Health	
Determine any increased need for energy supplies as a result of increased demand on Health Agency Services, and report findings to Emergency Services Director.	Health Agency	
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	Health Agency/PIO	

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APPENDIX E PUBLIC HEALTH EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	Health Agency/PIO	
Provide data to field personnel-ensure accurate information regarding energy use, etc.	Health Agency	
Ensure preparation of departmental after-action reports.	Health Agency	

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**APPENDIX F
CARE AND SHELTER
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to care and shelter.	DSS/ Red Cross	
Compile information concerning daily energy requirements.	DSS/ Red Cross/ GS	
Estimate energy requirements for emergency conditions.	DSS/ Red Cross/ GS	
Analyze departmental energy emergency requirements.	DSS/ Red Cross/ GS	
Analyze additional care and shelter energy fuel needs - including shelters and support agencies.	DSS/ Red Cross	
Ensure department, care and shelter providers have established alternate fuel sources.	DSS/ Red Cross/ GS	
Develop departmental fuel management policies.	DSS/ Red Cross	
Ensure that alternate power sources are tested and maintained.	DSS/ Red Cross	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	DSS/ Red Cross	
Attend all energy emergency management briefings.	DSS/ Red Cross	
Brief all care and shelter providers' management staff.	DSS/ Red Cross	
Maintain liaison with local energy suppliers.	GS	

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**APPENDIX F
CARE AND SHELTER
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
If the situation worsens, go to the Pre-Emergency Phase.	DSS/ Red Cross	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	DSS/ Red Cross	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Attend all emergency staff briefings re: energy emergency.	DSS/ Red Cross	
Collect, evaluate, and report information on care and shelter energy requirements.	DSS/ Red Cross	
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	DSS/ Red Cross/ GS	
If situation worsens, go to Emergency Phase.	DSS/ Red Cross	
If situation lessens, prepare an after-action report and resume Verification Phase.	DSS/ Red Cross	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	DSS/ Red Cross	
Maintain accurate departmental activity log.	DSS	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	DSS/ Red Cross	
Assess impact of the energy emergency on provision of care and shelter operations.	DSS/ Red Cross	
Coordinate with the Emergency Management Staff to assure that care and shelter energy needs are met.	DSS/ Red Cross	

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**APPENDIX F
CARE AND SHELTER
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all situation briefings and assist Emergency Services Director in action planning sessions.	DSS/ Red Cross	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	DSS/ Red Cross	
Provide data to field personnel - ensure accurate information regarding energy use, etc.	DSS/ Red Cross	
Ensure preparation of departmental after-action reports.	DSS/ Red Cross	

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**APPENDIX G
MOVEMENT/TRANSPORTATION
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to movement.	Sheriff Eng. Fire	
Compile information concerning daily energy requirements.	GS	
Estimate energy requirements for emergency conditions.	GS	
Analyze emergency fuel pumping/transfer capability.	GS	
Ensure department has established alternate fuel sources.	GS	
Develop departmental fuel management policies.	GS	
Encourage the development and coordination of energy emergency planning by movement resource providers.	Eng.	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	Eng.	
Attend all energy emergency management briefings.	Eng.	
Brief in-house management staff.	Eng.	
Maintain liaison with local energy suppliers.	GS	
Ensure movement resource providers have up-to date energy emergency information. (Fire)	Eng.	
If the situation worsens, go to the Pre-Emergency Phase.	GS	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	GS	

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**APPENDIX G
MOVEMENT/TRANSPORTATION
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency phase.	OES	
Attend all emergency staff briefings re: energy emergency.	Sheriff Eng. Fire	
Collect, evaluate, and report information on movement operations energy requirements.	GS	
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	GS	
If situation worsens, go to Emergency Phase.	Sheriff Eng. Fire	
If situation lessens, prepare an after-action report and resume Verification Phase.	Sheriff Eng. Fire	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	Sheriff Eng. Fire	
Maintain accurate departmental activity log.	Sheriff Eng. Fire	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	Sheriff Eng. Fire	
Determine any increased energy requirements needed for evacuation and personnel transportation and report findings to Emergency Services Director.	GS	

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**APPENDIX G
MOVEMENT/TRANSPORTATION
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	Sheriff Eng. Fire	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	Sheriff Eng. Fire/PIO	
Provide data to field personnel - ensure accurate information regarding energy use, etc. (Fire)	Sheriff Eng.	
Ensure preparation of departmental after-action reports.	Sheriff Eng. Fire	

Appendices

**APPENDIX H
CONSTRUCTION AND ENGINEERING
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to construction and engineering. Compile information concerning daily energy requirements.	Plann. Dept GS	
Estimate energy requirements for emergency conditions.	GS	
Analyze emergency fuel pumping/transfer capability.	GS	
Ensure department has established alternate fuel sources.	GS	
Encourage the development of energy emergency plans by private sector construction and engineering resource providers.	GS/ Plann. Dept./OES	
Develop departmental fuel management policies.	GS/Plann. Dept.	
Ensure that alternate power sources are tested and maintained.	GS	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	Plann. Dept.	
Attend all energy emergency management briefings.	Plann. Dept.	
Brief in-house management staff and other Construction and Engineering resource providers.	Plann. Dept.	
Maintain liaison with local energy suppliers.	GS	
If the situation worsens, go to the Pre-Emergency Phase.	Plann. Dept.	

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**APPENDIX H
CONSTRUCTION AND ENGINEERING
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
If the situation lessens, prepare an after-action report and resume Readiness Phase.	Plann. Dept.	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency Phase.	OES	
Attend all emergency staff briefings re: energy emergency.	OES	
Collect, evaluate and report information on internal energy requirements.	GS/Plann. Dept.	
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	GS	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	GS	
If situation worsens, go to Emergency Phase.	Plann. Dept.	
If situation lessens, prepare an after-action report and resume Verification Phase.	Plann. Dept.	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	Plann. Dept.	
Maintain accurate departmental activity log.	Plann. Dept.	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	Plann. Dept.	

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**APPENDIX H
CONSTRUCTION AND ENGINEERING
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Determine any increased need for energy supplies as a result of increased demand on construction and engineering services and resource providers, and report findings to Emergency Services Director.	Plann. Dept./GS	
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	Plann. Dept.	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	Plann. Dept. PIO	
Provide data to field personnel, ensure accurate information regarding energy use, etc.	Plann. Dept.	
Ensure preparation of departmental after-action reports.	Plann. Dept.	

Appendices

**APPENDIX I
RESOURCES AND SUPPORT
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review all energy emergency plans, procedures and SOPs pertaining to resources and support.	GS	
Compile information concerning daily energy requirements.	GS	
Estimate energy requirements for emergency conditions.	GS	
Analyze emergency fuel pumping/transfer capabilities for resources and support providers.	GS	
Ensure that resources and support providers have established alternate fuel sources.	GS	
Encourage development of resources and support providers' fuel management policies.	GS	
Ensure that alternate power sources are tested and maintained.	GS	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	GS	
Attend all energy emergency management briefings.	GS	
Brief resources and support management staff.	GS	
Maintain liaison with local energy suppliers.	GS	
If the situation worsens, go to the Pre-Emergency Phase.	GS	
If the situation lessens, prepare an after-action report and resume Readiness Phase.	GS	
PRE-EMERGENCY PHASE:		
Activate Pre-Emergency Phase.	OES	

Appendices

**APPENDIX I
RESOURCES AND SUPPORT
EMERGENCY ACTION CHECKLIST
RESPONSE TO AN ENERGY EMERGENCY**

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all emergency staff briefings re: energy emergency.	GS	
Collect, evaluate and report information on resources and support energy requirements.	GS	
Report to Emergency Services Director if energy available from usual supplies is fluctuating or insufficient to meet projected needs.	GS	
Encourage coordination with other emergency service providers regarding nature of the energy emergency.	GS	
In conjunction with the Energy Emergency Coordinator maintain a liaison with utility providers to coordinate the Pre-Emergency Public Information effort.	GS/ Utilities	
If situation worsens, go to Emergency Phase.	GS	
If situation lessens, prepare an after-action report and resume Verification Phase.	GS	
EMERGENCY PHASE:		
Coordinate with policy level decision makers to determine appropriate energy conservation measures.	GS	
Maintain accurate departmental activity log.	GS	
Implement conservation steps in equipment use, emergency operations and personnel transportation.	GS	
Determine any increased need for energy supplies as a result of increased demand on resources and support services, and report findings to Emergency Services Director.	GS/OES	

Appendices

APPENDIX I RESOURCES AND SUPPORT EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Attend all situation briefings and assist Emergency Services Director in all action planning sessions.	GS	
Coordinate with policy group to determine what information from activities in progress should be made available for release through the Public Information Officer.	GS OES PIO	
Provide data to field personnel - ensure accurate information regarding energy use, etc.	GS	
Ensure preparation of departmental after-action reports.	GS	

Appendices

APPENDIX J EMERGENCY PUBLIC INFORMATION CHECKLIST ENERGY EMERGENCY

The following Emergency Public Information (EPI) Checklist is specific to an earthquake emergency and should be considered in addition to the basic EPI Checklist.

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Working with the Energy Emergency Coordinator, prepare and add supporting documents, SOPs, checklists, and sample EPI materials as necessary to fully complement and complete the Energy Shortage Contingency Plan.	OES	
Review parts of plan dealing with public information periodically and update as changes occur.	OES	
Assign EPI Staff and conduct training exercises on a regular basis. Consideration should be given to training more personnel than required in case the Public Information Officer (PIO) is injured or unable to report for duty.	OES/PIO	
In accordance with existing Emergency Plans, make provisions for use of a Media Center during an energy emergency.	OES/PIO	
Maintain media contact lists. Maintain working relationships with local media representatives and share with them the details of this plan and their responsibilities under this plan.	PIO	
Determine media accreditation and visitor control procedures in coordination with fire/law authorities and the Emergency Services Director.	PIO OES	
Maintain working relationships with PIOs in other jurisdictions and at government levels. Maintain telephone contact lists of these officials.	PIO	

Appendices

APPENDIX J EMERGENCY PUBLIC INFORMATION CHECKLIST ENERGY EMERGENCY

The following Emergency Public Information (EPI) Checklist is specific to an earthquake emergency and should be considered in addition to the basic EPI Checklist.

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Ensure that all agencies in the jurisdiction are aware that they must coordinate release of energy emergency information through the PIO.	OES/PIO	
Develop sample energy emergency public information releases.	OES/PIO	
VERIFICATION PHASE:		
Working with the Energy Emergency Coordinator, review and update this portion of the Energy Shortage Contingency Plan.	PIO	
Attend all energy emergency information briefings.	PIO	
Arrange for inspection and installation of communications equipment and other supplies and equipment necessary for EPI functions, including television, radio, maps, automatic telephone answering equipment, (if available) display charts and status boards.	PIO/ISD Commun. OES	
Respond to media and public calls.	PIO	
Initiate use of activity log and media/public contact log.	PIO	
Monitor, record and file media coverage. Provide timely situation reports to the Emergency Services Director, Energy Emergency Coordinator, and other management staff.	PIO	
PRE-EMERGENCY PHASE:		

Appendices

APPENDIX J EMERGENCY PUBLIC INFORMATION CHECKLIST ENERGY EMERGENCY

The following Emergency Public Information (EPI) Checklist is specific to an earthquake emergency and should be considered in addition to the basic EPI Checklist.

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Continue to maintain activity log and media/public contact log.	PIO	
Continue to monitor and record media coverage; provide updates to the Emergency Services Director, Energy Emergency Coordinator, and other management staff.	PIO	
Expand media support staff as necessary.	PIO	
Attend all energy emergency information briefings and policy meetings.	PIO	
Ensure all media releases and press briefing packages are reviewed and approved by Emergency Services Director and Energy Emergency Coordinator.	PIO	
Intensify level of coordination with state and local government PIOs.	PIO	
At the direction of the Emergency Services Director assist with the preparation of television and radio messages calling for public cooperation with energy conservation measures.	PIO/OES	
EMERGENCY PHASE		
If appropriate for arriving media, open Media Center. Maintain Media Center status boards and maps. Post hard copy of news releases.	PIO/OES	
Attend all energy emergency information briefings and policy meetings.	PIO	

Appendices

APPENDIX J EMERGENCY PUBLIC INFORMATION CHECKLIST ENERGY EMERGENCY

The following Emergency Public Information (EPI) Checklist is specific to an earthquake emergency and should be considered in addition to the basic EPI Checklist.

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Distribute press releases and media briefing packages to energy suppliers and local government PIOs.	PIO	
Provide updates on media and public inquiries to Emergency Services Director and Energy Emergency Coordinator.	OES/PIO	
Request EPI staff support from the next higher level of government or from among other community PIOs, or arrange to hire temporary personnel, as necessary.	OES/PIO	
Continue to maintain activity log and media/public contact log.	PIO	
Release emergency instructions/information to the public as necessary through the media. Release "media only" telephone numbers. Record telephone messages for media and public hotlines and update as the situation changes. Release hotline numbers.	PIO	
Produce news releases as required.	PIO	
Respond to media/public inquiry.	PIO/OES	
Gather information on the emergency situation and response actions and maintain EPI status boards and maps. Monitor EOC status boards and resolve conflicts.	PIO/OES	
Consider additional methods of distributing emergency instructions as required.	OES/PIO	
If energy shortage level decreases to less than serious, drop back to Pre-Emergency Phase and develop appropriate after-action reports.	OES	

Appendices

APPENDIX K ENERGY EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
READINESS PHASE:		
Review emergency plans, policies, procedures and programs.	OES	
Convene a local Energy Emergency Task Force to determine the local critical energy needs.	OES/ Energy Task Force	
Determine the local effects of an energy supply disruption. GS	OES	
Develop a local Energy Contingency Plan.	OES	
VERIFICATION PHASE:		
Review pre-emergency operating guidelines.	OES	
Obtain and analyze information provided by the California Energy Commission and the Office of Emergency Services.	OES GS	
Obtain and analyze any local information on the potential energy emergency.	OES GS	
Coordinate with representatives of the local energy providers regarding the potential energy emergency.	OES/GS Utilities Fuel Comp.	
Brief the Director of Emergency Services.	OES GS	
Coordinate information releases with the Public Information Officer (PIO).	OES GS/PIO	
If the situation worsens, go to the Pre-Emergency Phase.	OES	
If the situation lessens, prepare an after-action report.	OES	
PRE-EMERGENCY PHASE:		
Attend all emergency staff briefings regarding the energy emergency situation.	OES	

Appendices

APPENDIX K ENERGY EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY

ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Continue to monitor and review informational updates from the California Energy Commission and the Office of Emergency Services.	OES	
Continue to obtain the appropriate information to analyze the potential impact of a local energy emergency.	OES GS	
Brief the Director of Emergency Services on the energy emergency situation.	OES	
Develop and maintain activity logs.	OES GS	
Ensure activity logs are being maintained by the Emergency Staff.	OES	
Coordinate with General Services Division to notify the California Energy Commission and the Office of Emergency Services of the potential for a local energy emergency.	OES	
Assist PIO with the development of energy emergency public information messages and briefings.	OES PIO	
If the situation worsens, go to the Emergency Phase.	OES	
If the situation lessens, prepare an after-action report.	OES	
EMERGENCY PHASE:		
Attend all Emergency Management Staff OES briefings.	OES	
Collect and analyze all available information on the energy emergency.	OES GS	
Prepare and disseminate summary reports on the energy emergency situation.	OES	

Appendices

APPENDIX K ENERGY EMERGENCY ACTION CHECKLIST RESPONSE TO AN ENERGY EMERGENCY		
ACTION	ASSIGNED TO	ACTION TAKEN/ COMMENTS
Review and recommend the appropriate energy conservation strategies.	OES/GS Energy Task Force	
Assist in the selection and implementation of energy conservation strategies.	OES/GS Energy Task Force	
Coordinate with all Emergency Management staff to ensure the availability of energy for critical facilities and emergency response vehicles.	OES GS	
Assess the energy needs of the private sector.	Engy Task Force	
Coordinate with the Health Information Officer on the development of energy emergency public information messages and briefings.	OES PIO	
Assist in the implementation of Federal and State energy emergency mitigation programs (such as the Petroleum Fuels Set-Aside Program).	OES	
EMERGENCY PHASE:		
Monitor the users and progress of energy emergency conversation strategies.	OES Task Force	
Advise the California Energy Commission and the Region 1 Office of Emergency Services of the impact of the local energy emergency and the progress and effectiveness of mitigation measures.	OES GS	
As the energy emergency situation decreases, drop back to Pre-Emergency Phase and develop appropriate after-action reports.	OES	