



Energy Planning Consultants

Today, we share a mutual concern of a possible motor fuel crisis. Across the U.S. local and state governments are beginning to prepare for a shortage of motor fuel. We are seeing long lines at gasoline stations in Florida and a critical shortage of fuel for emergency generators and emergency response vehicles. Citizens are voicing their complaints to the press causing undue pressure on local and state governments. Energy Planning Consultants (EPC) offers a Fuel Management Plan to better prepare you for the next emergency – motor fuel shortage.

In today's climate, a hurricane may disrupt ninety-five percent of the flow of fuel from refineries and pipelines in the Gulf of Mexico. Previous disruptions by Hurricane Katrina and damage to the refineries have caused gasoline prices to surge above \$3 a gallon in many parts of the country. Fleet managers are facing additional increases in their fuel budgets.

Many state fleet services, local governments, private nonprofits, business and industry maintain, service, and fuel their fleets with their own on-site pumps. Many of these pumps are linked to underground/above ground fuel tanks and depend upon a supply of electricity. In some cases, fleet managers have installed small emergency generators to power their pumps. Most fleet managers depend upon fuel dealers to replenish their tanks. However, most refineries, fuel depots, and retail fuel dealers do not have any emergency power. Many city managers want to know "How long can I last with the fuel I have in my tanks if I can't get a delivery?" Also, who should drive in my city and what emergency fuel conservation measures should I take?

Over the past three decades, Energy Planning Consultants (EPC) has worked with state energy offices to prepare, respond, mitigate, and recover from the effects of energy problems since the early 1990's. Our planning efforts can assist you in managing rising fuel costs, long gasoline lines, get critical fuel to your critical facilities (emergency centers, hospitals, nursing homes, food supply dealers, water and sewer plants, telecommunication networks, refineries and natural gas supplies. Recently, we completed the City of Colorado Springs Fuel Management Plan. EPC is a member of the Denver Metro Area Clean Cities Coalition.

Special Note: To this date, we have not found one gasoline station with an emergency generator. Many local government managers are now beginning to prepare emergency fuel management plans. EPC offers a team of experts ready to train local government officials in effective fuel management planning. Our team includes of professionals have years of experience working with government officials.



If you are interested in a quotation, please contact us through our web site or at (303) 955-1432.



Robert L. Kistner, President & CEO
Energy Planning Consultants Inc.



Background: - A Motor Fuel Management Plan is an important piece of the overall emergency management strategy during a fuel shortage emergency. Our planning efforts include suggestions to:

- Ensure essential public services are provided during a fuel shortage.
- Work with industries to reduce inequities in the distribution of fuel, including petroleum-derived fuels, such as diesel and gasoline.
- Effectively respond to fuel shortage emergency conditions.
- Restore equilibrium of motor fuel products supply as expeditiously as possible.
- Assist in alleviating economic hardships caused by the motor fuel shortage.
- Ensure timely gathering and dissemination of accurate information during a fuel shortage to guide city actions in responding to the motor fuel shortage.

Definition: - A motor fuel shortage/emergency exists whenever supplies of motor fuel are inadequate to meet demand. However, it is useful to delineate the various situations of a motor fuel problem. These are:

1. The physical destruction of refineries, ports, distribution systems and/or components by natural or manmade factors such as hurricanes on the Gulf Coast, floods, and terrorists.
2. Severe, long-lasting temperature extremes, major fuel supply disruptions, natural or human disasters that disrupt energy production or distribution such as fires, tornadoes, floods, storms, or breakdowns.
3. Industrial accidents or sabotage of motor fuel supplies and/or distribution facilities.
4. A sharp, sudden escalation in the price of motor fuel products, resulting from a curtailment of supplies and stocks.
5. A sudden or unexpected surge in demand that cannot be met by actual or expected supply levels. Situations at the local level that may affect an energy emergency are:
 - There is widespread public perception of an imminent fuel shortage causing a surge in the purchase of products.
 - Citizens are unable to receive motor fuel due to reduced supply at the gasoline stations.

The motor fuel shortage management plan identifies a management structure directed by the local government to respond to a motor fuel shortage. The motor fuel management plan is a part of the overall emergency plan for a local government located in Emergency Support Function (ESF) 12.

Your Motor Fuel Storage Tanks: - EPC will identify all motor fuel storage tanks, capacities, and if emergency power is available at fueling stations (sample chart 2 below). Based on their size, generators can “burn” 25-100 gallons per hour. You must know “how many hours before refueling”. If emergency power is not available, we will size the facility for the generator and offer assistance in locating the proper generator. We will also size an above ground tank for your generator and training on how to read the tank. Our generators can be powered by diesel, natural gas, or “dual-fuel” (60% natural gas and 40% diesel. EPC will “tank chart” the existing fuel storage tanks as to size, fuel per inch of volume, and sample and test the motor fuel for adequate performance by our contract laboratory. Some things age gracefully, but

Potential Causes of an Fuel Shortage Event	
Weather	
Gasoline or Diesel:	Roads closed due to snow or flooding.
Oil Embargo	
Petroleum Products:	Reduced supply including propane produced by refineries
Natural Disaster, Any Major Accident	
Reduced supply; disrupted distribution; increased demand fuels; reduced distribution of motor fuels if pipelines and unloading facilities are closed as a result of the disaster and/or power outage.	
Any Other Work Stoppage	
Reduced supply; disrupted distribution; increased demand for alternative fuels; reduced demand	
National Security Emergency/Mobilization/ War/Terrorism/Sabotage	
Increased demand for fuels. Possible reductions in fuel supplies available to the U. S. or other countries increased purchases or geopolitical factors reduce sales to the United States or its allies.	
Chart-1	

Energy Planning Consultants

fuel doesn't. During the aging process, masses of carbon, gum, and resin form in your fuel. Fuels age because they become "chemically unstable". During transportation, storage and use, fuels are exposed to oxygen and heat. During transportation, storage and use, fuels are exposed to oxygen and heat. This exposure causes the atoms in the fuel lose their balance (i.e. become unstable), molecular reactions take place, and the aging process begins. This happens to all fuels, even today's reformulated "clean" fuels. This happens to all fuels, even today's reformulated "clean" fuels. The motor fuel masses become too large to burn completely, and the combustion process is compromised.

So what is the result of this aging process and incomplete combustion? Your fleet vehicles do not perform as designed. Emergency generators often start – sputter - and then fail to operate under the full electrical load of your facility (remember that emergency generator “test” on Monday? – in most cases the full building load was not tested. Fuel burns less efficiently, energy and power are lost, and fuel efficiency is reduced. The unburned matter forms abrasive, damaging deposits on your engines and fuel systems. In the end, your engine delivers less and wears out faster. Fuels age because they become "chemically unstable". The good news is, this aging process can be halted and even reversed. If the fuel is kept in balance - kept "chemically stable" - then aging does not occur. We offer recommendations and/or solutions for restoring the fuel.

Fuel Tank Capacity and Quantity on _____				
Location	Tank Capacity	Gasoline	Diesel Fuel	Emergency Generator
Tank #1				
Tank #2				
Tank #3				
Compressed Natural Gas Facility				
Totals				
Chart-2				

Your Motor Fuel Supply: - Motor fuel (gasoline, diesel, kerosene, propane, aviation gasoline, and aviation jet transport fuel trucks hauling from various terminals and contract dealers around the state deliver your fuel. EPC will identify supply sources and alternate sources of motor fuel. This will include a survey of motor fuel storage capacities, fuel delivery options, and interviews with local motor fuel suppliers. We include a 24x7 contact list (phones, fax, cell) of fuel dealers, transport companies, and how to use the state's Emergency Fuel Allocation System when you can't get fuel through your regular ordering process. **Remember** – most local gasoline stations do not have emergency power. When electricity fails - you must rely on a generator-supported delivery system.

Motor Fuel Use by Departments or Agencies				
Department	Gallons Used Year 2003	Gallons Used Year 2004	10%-Reg 5%-Emer	Gallon Target Year 2005
Airport	73,658	70,492	0.9	63,443
Cemetery	5,004	6,118	0.9	5,506
City Attorney	1,001	884	0.9	796

This is a "Sample Chart" of our efforts to determine base-line of fuel use by departments and agencies. This will be used during emergency fuel allocations.

Fleet Management	21,407	21,352	0.9	19,217
Police	122,934	86,408	0.9	77,767
Police - Emergency	251,435	262,711	0.95	249,575
Police - PSST - Emergency	38,693	62,738	0.95	59,601
Police - PSST Vehicles	1,873	4,624	0.9	4,161
Public Works	458,881	488,187	0.9	439,368
CS Total Gallons	2,659,526	2,704,281	0.91527	2,475,193
Chart-3				

Your Motor Fuel Usage: - EPC will interview your city manager, fleet manager, finance director, and other key local government officials to determine your actual fuel use per day, month, and year for a two-year time frame. This information is then entered into a database to “drive” the fuel management plan (see Chart-3 for example). We then evaluate your use of all vehicles and the inventory of rolling stock. Alternate fuel vehicles and alternate fuel sources are then evaluated to ensure that the best fuel-saving techniques are being implemented. We will offer our suggestions, if requested. We will suggest certain vehicles that may only be used during a fuel shortage emergency (see Chart-4)

Your Vulnerability to a Motor Fuel Shortage: - Every state and local government is vulnerable to a motor fuel shortage. Chart-1 lists the





potential causes of a motor fuel shortage. EPC's Fuel Management Plan will include information about the roles and responsibilities of state and local government managers during a motor fuel shortage emergency and possible actions to take in the response mode. Officials must be alert for any changing international supply changes. Locally a power outage could cripple the supply chain.

Your Motor Fuel Management Plan: - The plan is designed to provide certain "triggers" to alert the staff of an immediate supply change. The plan establishes two broad types of demand reduction measures for a petroleum shortage emergency. The first response is a public appeal for voluntary fuel conservation. The second response, in the

Fuel Emergency Vehicle Listing	
This Chart is Used to List Official Vehicles Authorized to Operate in a Fuel Shortage Emergency	
Chart-4	

event the shortage worsens and the Mayor proclaims an emergency, is a series of mandatory measures to reduce petroleum consumption. The severity of a fuel shortage can be estimated but not calculated exactly. Indicators include the allocation

fraction of each supplier, the aggregate allocation fraction for the state, and the number of emergency or hardship requests for city and state set—aside. However, due to the various supply arrangements, the distribution systems, local growth rates and patterns, some areas may experience more problems than others. Thus, a motor fuel shortage may be more acute in certain localized areas. This must be taken into consideration when determining responses. For this and other reasons, the different phases of this fuel management plan may not follow a fixed shortage level.

Responses to motor fuel shortages will evolve in a series of sequenced phases. In each Phase, the measures taken and the governmental powers evoked may become progressively more stringent to meet increasingly severe shortages, depending on all circumstances. The plan uses both conservation measures and public communication to manage the fuel program from the state and local government and local citizens view.

Normal Operations – Fuel Supply Normal: State and local governments, and private industries shall continue to implement currently accepted and proven conservation measures to forestall a more serious gasoline shortage.

Guarded – Prepare for Fuel Reduction and Monitor Fuel Supply: Mild shortage. Characterized by scattered local shortages evidenced by occasional queuing at the gas pumps. State and local governments response requires voluntary conservation measures plus increased enforcement of the speed limit.

Fuel Shortage Emergency Alert and Fuel Reduction Phases & Measures	
	Normal Operations – Fuel Supply Normal
	Guarded – Prepare for Fuel Reduction Monitor Fuel Supply
	Phase I – Elevated – Implement 10% Fuel Reduction Program and Measures
	Phase II – High Alert – Implement 25% Fuel Reduction Program and Measures
	Phase III- Severe Alert – Implement 50% Fuel Reduction Program and Measures
Chart - 5 - Alert Phases	

Phase I – Elevated – Implement 10% Fuel Reduction Program: long lines in all areas of the State and local governments response requires additional mandatory measures.

Phase II – High Alert – Implement 25% Fuel Reduction Program:

Phase III – Severe Alert – Implement 50% Fuel Reduction Program: Severe shortage. Characterized by daily long lines at the gas pumps, as well as sharply reduced retail sales, increased absenteeism at work, and/or decreased revenues in the tourist industry.

Certain Trigger Points to Activate the Fuel Management Plan

During a total power outage in the state and local government area, believed to last more than 2-days, the state and local government should immediately go to a Phase **III – Severe Shortage** (no electricity at the pipelines and refineries). This will conserve fuel in the storage tanks.

Energy Planning Consultants

Additional Efforts of City During Phase III – Severe Shortage

Chart 6 provides a 10, 25, and 50 percent fuel savings by the state and local government. This will be developed from fleet statistics and could be used during a critical shortage and allocate fuel reductions by organization. **Chart 7 (Below)** provides valuable information to the state and local government manager should determine “**How Long to Empty**”. If no fuel is expected in the immediate 5-days the City should consider fuel reduction measures such as 10%, 25% and 50%. Remember - “What you have in your tanks is all you will get” during a total power outage.

Suggested Emergency Fuel Allocations					
Department	Gallons Used in 2004	Monthly Gallon Allocation	Monthly Allocation with 10% Emergency Reduction	Monthly Allocation with 25% Emergency Reduction	Monthly Allocation with 50% Emergency Reduction
Fire Department (Example Only)					
Fleet Management (Example Only)					
Parking Meters (Example Only)					
Parks/Recreation (Example Only)					
Police (Example Only)					
Public Works (Example Only)					
Total Gallons Used					
Total Cost					
Monthly Fuel Savings with Emergency Fuel Reductions					

This Chart is Used to Gather Historical Fuel Usage Information. The Fuel Usage Chart is Used in Calculating Monthly Fuel Allocations to City Departments in 20-25-50% Reductions.

Chart - 6 Suggested Motor Fuel Allocations

Employee Assistance During a Motor Fuel Shortage Emergency

Local government employees may be asked to use conservations measures. This action will require employees to locate their fuel to travel to work. Employees may be asked to use the public transportation, ridesharing, and other means first. In an extreme emergency city authorized fleet motor fuel cards may be issued to employees to obtain fuel from the various city fueling facilities.

Project Deliverables: - EPC will prepare the Fuel Management Plan. This plan will include a working description of all aspects of the program, including staff operations. This includes background details, interviews, surveys, and databases. EPC will meet with gasoline retailers, bulk motor-fuel dealers, and the terminals to better understand the local area potential problems. Our plan will address each of the problem areas and offer solutions to mitigating the risk. EPC will review all vehicles for fuel consumption and historical fuel use by departments. This information will be displayed in charts to provide an immediate source of information and a decision tool to use when a fuel shortage occurs. EPC staff will present the Fuel Management Plan to the state and local government and others along with our suggestions for improving the fuel supply in an emergency. EPC will establish a secure-web page for each project (login and password). We will use this page to enable authorized officials to download documents during our project. We will submit monthly progress reports by E-mail to our local government project manager.

Emergency Fuel Allocation Days to Empty – Without Re-Fueling						
Unleaded Gasoline Motor Fuel		Average Daily Fuel Use	Days to Empty at Normal Fuel Use	Days to Empty at 10% Fuel Reduction	Days to Empty at 25% Fuel Reduction	Days to Empty at 50% Fuel Reduction
Gallons @ 100% Maximum Capacity						
Gallons @ 50% Capacity (normal)						
Average Daily Gasoline Fuel Use with 10% Reduction						
Average Daily Gasoline Fuel Use with 25% Reduction						
Average Daily Gasoline Fuel Use with 50% Reduction						
Diesel Motor Fuel		Average Daily Fuel Use	Days to Empty at Normal Fuel Use	Days to Empty at 10% Fuel Reduction	Days to Empty at 25% Fuel Reduction	Days to Empty at 50% Fuel Reduction
Gallons @ 100% Maximum Capacity						
Gallons @ 50% Capacity (normal)						
Average Daily Diesel Fuel Use with 10% Reduction						
Average Daily Diesel Fuel Use with 25% Reduction						
Average Daily Diesel Fuel Use with 50% Reduction						

This Chart is Used by Management to Calculate How Many Days to "EMPTY" the City May Last Using the Allocations

This Chart is Used by Management to Calculate How Many Days to "EMPTY" the City May Last Using the Allocations

Chart - 7

Our Experience: - Energy Planning Consultants has is managed by Robert Kistner who has over three decades of professional emergency management experience including disaster recovery for business, damage assessment, and hazard mitigation. Since 1982, our work has included energy emergency planning, floodplain management, mitigation and disaster recovery planning.



Our Clients	
Arkansas Governor's Energy Office	City of Austin, TX
AT&T	City and County of Denver
Arapahoe County Assessor's Office	City of Cheyenne, WY
Arapahoe County Sheriff's Dept.	City of Colorado Springs Fire Department
Boulder Public Works Department	City of Corpus Christi, TX
Boulder County Sheriff's Office, CO	City of Greenwood Village, CO
Colorado Dept. of Natural Resources	City of Lakewood, CO
Colorado Office Emergency Management	City of Longmont, CO
Colorado State University	City of Manhattan KS
Colorado Water Conservation Board	City of Parsons, WV
Data Connect Corporation, CO	City of Portland, OR
Eagle County Sheriff's Office, CO	City of Topeka, Kansas
El Paso County, CO	State of Delaware Energy Office
Federal Emergency Management Agency	State of Illinois Water Resources
Fort Worth/Tarrant County, TX	State of Kansas Corporation Commission
International Conference Code Officials	State of North Carolina Emergency Mgt.
Jefferson County Colorado	State of Texas Emergency Management
Larimer County Colorado	State of Wyoming Emergency Mgt.
Marathon Oil Company	State of Wyoming Energy Office
McLaughlin Water Engineers, Denver, CO	TCI (Tele-Communications Inc.)
Pueblo County Colorado	U.S. Justice Department
SoftRisk Technologies Ltd., Toronto	U.S. Department of Energy
Travis County, Austin, TX	City of Austin, TX
Tucker County, WV	City and County of Denver
Weld County, CO	City of Cheyenne, WY

Our Staff:

Robert L. "Bob" Kistner, President and CEO - Bob Kistner has over four-decades of experience serving federal, state, local governments, and private organizations throughout the country and several foreign states. He has become a highly respected energy emergency response planner through a unique combination of hands-on experience and a desire to uncover and evaluate the latest technologies in the industry. His talent for staying one step ahead of the trends has made him a much sought-after industry speaker. In his frequent speaking engagements, Bob addresses topics such as the state of technology, what's happening in the disaster recovery management field, and energy emergency response planning. His experience with hundreds of clients and responding to more than 25 major disasters has honed his skills in energy management and disaster recovery management. Bob has written over 50 books and articles on emergencies and disaster recovery topics. He served over 20-years with the US Army Corps of Engineers, 10-years with Federal Emergency Management Agency (FEMA), and as an employee with the states of Colorado and Utah.





Energy Planning Consultants

In 1982-83, as the disaster recovery manager, he assisted the Town of Estes Park, Colorado in the recovery from the dam failure disaster. In 1983-84, he served as the disaster recovery manager for the State of Utah, after flooding and mudslides occurred. During the summer of 1984 to 1985, he served as a contract public assistance officer to Colorado after flooding and landslides on the Western-Slope. After that he assisted Tucker County, West Virginia in their recovery efforts. In 1986, he joined the Colorado Office of Emergency Management (OEM) serving as planner, hazard mitigation officer and public assistance officer. During his tenure with OEM he served as executive director of the Colorado Natural Hazards Mitigation Council. He **"wrote the book"** on damage assessment, prepared numerous hazard mitigation plans for communities, a FEMA drought management plan, emergency plans for dams, plans for cities and counties, the 1992 Colorado Emergency Operations Plan, and the 1999 Colorado Petroleum Fuels Contingency Plan. He has served as an adjunct faculty member at the University of Colorado (CS), and the Federal Emergency Management (FEMA) National Emergency Training Center. Bob coordinates his activities with industry by constantly reviewing technology products for their ability to solve energy and disaster recovery management related problems in a cost effective way. We are a member of the Denver Metro Clean Cities Coalition, Denver and Africa Working Against Aids (DAWA), and United Nations Colorado Chapter



his



Our References:

Governor's Office of Energy Management and Conservation – Bob Kistner prepared the 2002, 2003, and the new 2005 Colorado Energy Emergency Response Plan.

State of Kansas, Kansas Corporation Commission, Energy Office – Prepared numerous plans and procedures for the State of Kansas Energy Office. This includes the 2003 Kansas Energy Emergency Response Plan

State of Wyoming, Wyoming Business Council, Energy Office – Prepared numerous planning documents including the 2003 Wyoming Energy Emergency Response Plan.