Idaho’s Energy Assurance Plan

Public & private coordination to ensure quick and effective responses to energy emergencies and energy resiliency
## Contents

List of Figures ................................................................................................................. 4
List of Tables ..................................................................................................................... 5
Executive Summary .......................................................................................................... 7
State Energy Profile ......................................................................................................... 7
  Resources and Consumption ........................................................................................... 9
  Petroleum ...................................................................................................................... 9
  Natural Gas ................................................................................................................... 9
Coal, Electricity, and Renewables ..................................................................................... 9
Electricity Supply ............................................................................................................ 10
Smart Grid and Cyber Security ....................................................................................... 24
  Smart Grid .................................................................................................................... 24
  Cyber Security ............................................................................................................ 26

**Physical Security** ....................................................................................................... 31

Access Controls .............................................................................................................. 33

Risks/Vulnerabilities ....................................................................................................... 33

  **Preparation** ............................................................................................................. 35
  **Detection and Analysis** ............................................................................................ 35
  **Incident Classification** .............................................................................................. 35
  **Response** ................................................................................................................ 36
  **Follow up** ............................................................................................................... 37
  **Reporting** ............................................................................................................... 37

Idaho Public Utilities, Municipals and Cooperatives ...................................................... 38
Natural Gas Supply ......................................................................................................... 39
Northwest Pipeline Company .......................................................................................... 40
Gas Transmission Northwest Pipeline ............................................................................. 40
Petroleum Supply ........................................................................................................... 42
Product Pipelines ............................................................................................................ 45
Idaho Pipeline Network .................................................................................................. 45
Holly Corporation Product Terminals ............................................................................. 51
Gasoline .......................................................................................................................... 52
Legal Authorities ............................................................................................................. 52

Concept of Operations .................................................................................................... 53

Energy Systems and Vulnerabilities ............................................................................... 53
List of Figures
Figure 1 - Idaho Energy Profile ................................................................. 8
Figure 2 - Electric Energy Capacity by Source ........................................ 11
Figure 3 - Electric Energy Production by Source ...................................... 12
Figure 4 - Electric Energy Imports .......................................................... 13
Figure 5 – Path 19 ..................................................................................... 14
Figure 6 - Path 18 ...................................................................................... 15
Figure 7 - Path 17 ...................................................................................... 16
Figure 8 - Path 16 ...................................................................................... 17
Figure 9 - Midpoint West lines 230 kV and 138 kV lines .......................... 18
Figure 10 - Path 55 ................................................................................... 19
Figure 11 - Path 75 ................................................................................... 20
Figure 12 - Path 14 ................................................................................... 21
Figure 13 - Path 8 ..................................................................................... 22
Figure 10 - The CIA Triangle ................................................................. 27
Figure 11 - Example Security Zone Requirements .................................. 32
Figure 15 - Incident Response Lifecycle .................................................. 34
Figure 16 - Wireshark Screenshot ........................................................... 37
Figure 14 - Idaho Public Utilities, Cooperatives and Municipal .................. 38
Figure 15 - Major Natural Gas Pipelines in Idaho .................................... 39
Figure 16 - Avista Service Territory ......................................................... 41
Figure 17 - Intermountain Gas Service Territory ....................................... 41
Figure 18 - Questar Gas Service Territory (light shaded areas) ................. 42
Figure 19 - U.S. Petroleum Overview ....................................................... 43
Figure 20 - Idaho Petroleum Pipelines ..................................................... 45
Figure 21 - Snake River Crossing in Southern Idaho ................................. 47
Figure 22 - 2010 Idaho Petroleum Use ...................................................... 49
Figure 23 - 2009 Idaho Energy Use by Sector .......................................... 50
Figure 24 - Idaho Retail Fueling Stations by Brand ................................... 52
Figure 25 - Historical Earthquakes in Idaho ............................................. 54
Figure 26 - Western Interconnection Balancing Authorities ...................... 59
Figure 27 - Risk Assessment Template .................................................... 85
Figure 28 - FEMA Presidential Disaster Declarations 1964-2010 .............. 86
List of Tables
Table 1 – Idaho Electric Power Industry Capability by Primary Energy Source (2010) . 10
Table 2 - Idaho Electric Generation by Source (2010) ......................................................... 11
Table 3 - Idaho’s 10 Largest Power Plants by Capacity (2010).............................................. 12
Table 4 - Idaho’s Top Five Retailers of Electric Energy (2010) ............................................ 13
Table 4 - Data Classification Definitions and Examples ......................................................... 29
Table 5 - Risk Level Definitions ............................................................................................ 30
Table 6 - Example Technical Controls .................................................................................. 32
Table 7 – Incident Classification ............................................................................................ 35
Table 5 - Idaho Pipeline Network Information ....................................................................... 46
Table 6 - Natural Gas Vulnerability Matrix ............................................................................ 70
Table 7 - FEMA Declared Disasters - Idaho ......................................................................... 86
Acknowledgement: “This material is based upon work supported by the Department of Energy under Award Number DE-OR000065.”

Disclaimer: “This report prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or agency thereof.”

This document was prepared in collaboration with:

Williams Consulting, Inc.
701 Market Street, Suite 106B
St. Augustine, FL 32095
(904) 810-9831
Executive Summary
The plan is intended to lessen the potential adverse impacts of an electrical, natural gas or petroleum shortage or emergency by providing the Governor with accurate and timely information for decision-making. As a basis for decision, it provides an overview of electrical use in Idaho and possible risk scenarios. It also provides a documented process to coordinate the protection and restoration of Idaho’s energy supply levels that are critical to saving lives and protecting public health, safety and property. This plan specifically attempts to provide a process for logistical recovery from any incident that would precipitate a shortage of needed electrical power and energy resources.

The plan relies upon a mixed strategy response to an energy resource shortage, using a free market approach with government intervention only to the extent necessary to protect the interests of public health, safety and welfare. Activation of the management and information system and the implementation of specific actions occur only when an energy emergency directly or indirectly threatens the life safety and health of Idaho citizens or the natural environment or when a supply shortage substantially disrupts Idaho’s economy and normal operation. Activities such as supply monitoring are necessarily ongoing, as emergencies may not only manifest as a single point disaster but through a disruption of critical services such as security, healthcare and food distribution.

The plan seeks to provide a clear and simple process that will achieve results in a time frame appropriate to the level of shortage or emergency experienced. Actions under this plan need to be obvious and achievable through the efforts of agencies designated by the Idaho Governor’s Office such as the Idaho Bureau of Homeland Security and the Office of Energy Resources and through other government agencies or private market concerns as necessary.

The primary responsibility of the state government is to gather, assess, and share information on energy system damage and estimations of the impact of energy supply shortfalls within affected areas.

The emergency response activities addressing electrical emergencies and shortfalls will be implemented to correspond with the level of severity. This plan provides a simple and systematic framework for actions to be taken should an energy supply shortage or emergency occur. The emergency response identifies implementation during each phase of an event.

The plan also provides information and guidelines delineating protocols that can be viewed by interested parties, industry and executors, in an effort to understand the way in which the state will address an energy supply emergency.

State Energy Profile
Idaho energy infrastructure is the backbone of commerce, transportation, communications, government, health care, and home life. Any prolonged interruption of
the supply of basic energy - be it electrical, natural gas, or transportation fuels - would be devastating to the state and its residents. Idaho increasingly depends on robust, secure, and reliable energy systems to power its economy, maintain its homeland security, and provide for the well being of its citizens. Because energy is a vital part of an interdependent network of critical physical and information infrastructures, it must be protected from deliberate, natural, accidental and systemic attacks or threats.

The first step in defining Idaho’s energy infrastructure is specifying the state’s energy profile. The following graphics provide an overall map of Idaho energy flows and a list of quick energy facts. By following the paths that the energy flows, the energy assets can be located. Following this identification, Idaho’s critical energy infrastructure can be determined, its risks and vulnerabilities can be estimated, and plans made for protection of the assets, mitigation of potential threats against it, and development of an energy assurance plan, which includes actionable incident response guidelines.

Figure 1 - Idaho Energy Profile

---

Resources and Consumption
Idaho is rich in renewable energy resources but has few fossil fuel reserves. The Snake River and several smaller river basins offer Idaho some of the greatest hydroelectric power resources in the nation. Idaho’s geologically active mountain areas have substantial geothermal and wind power potential. The state economy is energy-intensive, and energy-consuming industries include farming, mining, forest products, food processing and transportation equipment. Although Idaho’s total energy consumption is low compared to other states\(^2\), the total population is also low\(^3\), and, as a result, per capita energy consumption is close to the national average\(^4\).

Petroleum
Idaho has no natural gas or oil production within its borders. Idaho markets receive petroleum product supply from refineries in Montana and Utah via two petroleum product pipelines. Total petroleum consumption is low. Idaho is one of the few states that use conventional motor gasoline statewide.\(^5\) (Most states require the use of specific gasoline blends in non-attainment areas due to air-quality considerations.)

Natural Gas
The industrial and residential sectors are Idaho’s largest natural gas-consuming sectors. About 45% of households in Idaho use natural gas as their primary energy source for home heating.\(^6\) Idaho is part of the transportation corridor for shipping natural gas from Canada to the West and Midwest markets via two natural gas pipeline systems. The Gas Transmission Northwest Co. (GTN) pipeline system from Alberta enters the U.S. at Idaho’s Kingsgate Center on the border with Canada before flowing south to California markets.

The Northwest Pipeline system supplies Idaho with gas from Canada via Washington State and if necessary, from Wyoming via Utah taking advantage of the pipeline’s bi-directional capabilities.

Coal, Electricity, and Renewables
Hydroelectric power plants dominate Idaho electricity generation, supplying roughly

---


76% of the State’s production. Natural gas-fired power plants provide 14% of the State’s production, while coal and wood-fired generation and wind turbines supply the remainder. Of Idaho’s 10 largest generating facilities, 6 run on hydroelectric power. Idaho also has dozens of privately owned hydroelectric power projects, including the 450-megawatt Hells Canyon Complex on the Snake River, the largest privately owned hydroelectric power complex in the Nation. In March 2006, the Idaho State legislature passed a 2-year moratorium on licensing or processing proposals for new coal-fired power plants. Although the moratorium has since expired, all subsequent proposals for new coal-fired power plants have been rejected. A nuclear plant has been proposed in Elmore County, just south of Boise that would be the State’s first commercial nuclear plant and would power all of Idaho, as well as provide an opportunity to sell electricity to other states. Several high voltage transmission lines connect Idaho to other western power grids, enabling large interstate electricity transfers, and Idaho currently purchases large amounts of electricity from neighboring States to meet demand. About 34% of Idaho households use electricity as their primary energy source for home heating.\(^7\)

**Electricity Supply**

76% of Idaho’s electric generating capacity is provided by electric utilities and 23.9% is provided by independent power producers and combined heat and power producers. Of these generating resources, 67.8% is hydroelectric.

<table>
<thead>
<tr>
<th>Energy Source</th>
<th>Capacity (MW)</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>17</td>
<td>0.4%</td>
</tr>
<tr>
<td>Petroleum</td>
<td>5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>812</td>
<td>20.3%</td>
</tr>
<tr>
<td>Hydroelectric</td>
<td>2704</td>
<td>67.8%</td>
</tr>
<tr>
<td>Other Renewable</td>
<td>436</td>
<td>10.9%</td>
</tr>
<tr>
<td>Other</td>
<td>15</td>
<td>0.4%</td>
</tr>
<tr>
<td>Total</td>
<td>3990</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

The majority of Idaho’s electric energy production (70%) is hydroelectric and other renewable energy is growing, currently producing nearly 8.4%.

Renewable energy sources can be considered for utilization to provide energy supply when conventional sources are not 100% available, for example during a hydro plant outage due to any number of factors. However, it is important to recognize the significant difference between capacity and production, as illustrated in Figures 2 and 3 below. For example, while wind energy comprises 3.5% of Idaho's electric capacity, it only contributes 2.0% to energy production due to variations in wind patterns.
Idaho is highly dependent on hydroelectric generation for its electric capacity, amounting to 67% and the balance is provided by natural gas fired generation, as depicted in Table 2 below.

### Table 3 - Idaho’s 10 Largest Power Plants by Capacity (2010)

<table>
<thead>
<tr>
<th>Plant</th>
<th>Primary Energy Source or Technology</th>
<th>Operating Company</th>
<th>Net Summer Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Brownlee</td>
<td>Hydroelectric</td>
<td>Idaho Power Co</td>
<td>744</td>
</tr>
<tr>
<td>2. Dworshak</td>
<td>Hydroelectric</td>
<td>USCE-North Pacific Division</td>
<td>400</td>
</tr>
<tr>
<td>3. Cabinet Gorge</td>
<td>Hydroelectric</td>
<td>Avista Corp</td>
<td>255</td>
</tr>
<tr>
<td>4. Rathdrum Power LLC</td>
<td>Gas</td>
<td>Rathdrum Operating Services Co., Inc.</td>
<td>248</td>
</tr>
<tr>
<td>6. Palisades</td>
<td>Hydroelectric</td>
<td>U.S. Bureau of Reclamation</td>
<td>176</td>
</tr>
<tr>
<td>7. Bennett Mountain</td>
<td>Gas</td>
<td>Idaho Power Co</td>
<td>164</td>
</tr>
<tr>
<td>8. Rathdrum</td>
<td>Gas</td>
<td>Avista Corp</td>
<td>132</td>
</tr>
<tr>
<td>9. Goshen Phase II</td>
<td>Other Renewable</td>
<td>AE Power Services LLC</td>
<td>125</td>
</tr>
<tr>
<td>10. American Falls</td>
<td>Hydroelectric</td>
<td>Idaho Power Co</td>
<td>110</td>
</tr>
</tbody>
</table>

MW = Megawatt


Three investor-owned electric utilities, one city and one major cooperative distribute over 91% of the state’s energy production as shown in the table below.
A significant portion of Idaho’s electricity generation has been imported in past years, in the range of 40% to 50% as depicted in Figure 4 below.

This underscores the importance of the electric transmission system and its availability to continuously move interstate energy to markets. A breakdown in the electric transmission system that does not produce a system collapse, could force major power plants to severely curtail output or be shut down. Idaho’s backbone transmission system is predominately 230 kV and 138 kV provides remote area transmission service.

Major electric transmission lines in Idaho and its interconnections are described in the following:

Table 4 - Idaho’s Top Five Retailers of Electric Energy (2010)

<table>
<thead>
<tr>
<th>Entity</th>
<th>Type of Provider</th>
<th>All Sectors</th>
<th>Residential</th>
<th>Commercial</th>
<th>Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Idaho Power Co</td>
<td>Investor-Owned</td>
<td>12,863,563</td>
<td>4,777,822</td>
<td>3,616,109</td>
<td>4,489,632</td>
</tr>
<tr>
<td>2. Avista Corp</td>
<td>Investor-Owned</td>
<td>3,366,733</td>
<td>1,179,482</td>
<td>998,465</td>
<td>1,210,786</td>
</tr>
<tr>
<td>3. PacifiCorp</td>
<td>Investor-Owned</td>
<td>3,328,294</td>
<td>705,128</td>
<td>396,715</td>
<td>2,224,451</td>
</tr>
<tr>
<td>4. City of Idaho Falls</td>
<td>Public</td>
<td>690,314</td>
<td>296,989</td>
<td>310,392</td>
<td>87,933</td>
</tr>
<tr>
<td>5. Kootenai Electric Coop Inc</td>
<td>Cooperative</td>
<td>401,940</td>
<td>278,185</td>
<td>97,959</td>
<td>25,796</td>
</tr>
<tr>
<td>Total Sales, Top Five Providers</td>
<td></td>
<td>20,695,844</td>
<td>7,237,606</td>
<td>5,419,640</td>
<td>8,038,598</td>
</tr>
<tr>
<td>Percent of Total State Sales</td>
<td>91</td>
<td>89</td>
<td>92</td>
<td>91</td>
<td></td>
</tr>
</tbody>
</table>

Path 19 - Bridger West 345 kV lines
The Bridger West path consists of three 345 kV lines originating from Jim Bridger power plant in southeast Wyoming, that are jointly owned by PacifiCorp and Idaho Power companies. These lines make up Western Electric Coordinating Council (WECC) Path 19 rated at 2200 megawatts, and deliver power to Goshen, Kinport, Borah, and Brady substations.

Figure 5 – Path 19
Path 18 - Montana to Idaho 230 kV and 161 kV lines
The Dillon- Big Grassy 161kV line originates in Montana along with the Peterson Flats – Amps 230 kV line to deliver power to Goshen and Brady substations respectively are part of WECC path 18 rated at 337 megawatts for North to South flows. These lines are jointly owned by Northwest Montana, PacifiCorp, and Idaho Power Company.

Figure 6 - Path 18
Path 17 – Borah West 345 kV, 230 kV, and 138 kV lines
The Borah West path consists of three 345 kV lines originating from Kinport and Borah and delivering power to Midpoint substation. Also included are a 230 kV line from Borah substation to Hunt and a 138 kV line from American Falls power plant through Minidoka to deliver power to Adelaide substation. This path owned and operated by Idaho Power Company; although PacifiCorp has long term contracts to utilize up to 1600 megawatts of transfer capability. These lines make up Western Electric Coordinating Council (WECC) Path 17 rated at 2557 megawatts.
Path 16 - Idaho – Sierra

The Idaho – Sierra line is a 345 kV line originating from Humboldt and delivering power to Midpoint substation. This transmission line is jointly owned by Sierra-Pacific and Idaho Power and has the south to north rating of 360 megawatts.

Figure 8 - Path 16
**Midpoint West lines 230 kV and 138 kV lines**
The Midpoint West is comprised of three 230 kV lines from Midpoint substation to Boise Bench substation, and two 138 kV lines from Upper Salmon / Lower Malad power plants to Mountain Home Junction. These are internally monitored lines rated at 1200 megawatts from east to west. These lines are monitored as new wind generation is being installed and affecting transmission capability.

![Figure 9 - Midpoint West lines 230 kV and 138 kV lines](image)
Path 55 - Brownlee East
The Brownlee East path consists of four 230 kV lines from Brownlee power plant to Boise Bench substation, one 230 kV line from Brownlee power plant to Ontario substation, one 138 kV line from Oxbow power plant to Starkey substation, and one 138 kV line from Quartz substation to Ontario substation. This path is owned and operated by Idaho Power and is rated at 1915 megawatts in the west to east direction.

Figure 10 - Path 55
Path 75 - Midpoint – Summer Lake
The Midpoint Summer Lake consists of a 500 kV line originating at Midpoint substation and delivering power to Summer Lake substation in Oregon. This line is rated 1187 megawatts east to west, and 550 megawatts west to east directions. Note this line is also part of Idaho-Northwest (Path 14).

Figure 11 - Path 75
Path 14 - Idaho Northwest
The Idaho Northwest path 14 consists of Midpoint – Summer Lake (path 75) 500 kV line from Midpoint substation to Summer Lake substation located in Oregon. Three 230 kV lines are also included from Imnaha to Lolo substations, Hells Canyon power plant to Enterprise substation, and North Powder to LaGrande substation. This path also includes a 115 kV line from Hines to Harney substation. The path is rated at 2400 megawatts east to west direction and 1200 megawatts west to east direction.

Figure 12 - Path 14
**Path 8 - Montana to Northwest**

The Montana to Northwest path 8 consists of Broadview – Garrison #1 & #2 500 kV lines, Mill Creek – Garrison 230 kV line, Anaconda – Garrison 230 kV line, Ovando – Garrison 230 kV line, Placid Lake – Hot Springs 230 kV line, Rattlesnake 230 / 161 kV transformer, Kerr- Kalispell 115 kV line, Thompson Falls – Burke 115 kV line, and the Crow Creek – Burke 115 kV line. The path is rated at 2200 megawatts east to west direction and 1350 megawatts west to east direction.

*Figure 13 - Path 8*
Future Transmission and Electrical Resource Additions

1. Langley Gulch power plant
   - To responsibly plan for our energy future and ensure a reliable supply of electricity, Idaho Power is constructing the Langley Gulch Power Plant and associated transmission lines. This clean, highly-efficient natural gas-fired power plant will be built on a remote site in Payette County, Idaho.
   - The new power plant was identified as a need in the 2004 and 2006 Integrated Resource Plans (IRP), and as a committed resource in the 2009 IRP. This plant is scheduled for operation in July of 2012.

2. Boardman to Hemingway 500 KV line
   - Idaho Power proposes to construct, operate and maintain a new 500 kilovolt single-circuit electric transmission line from a proposed substation near Boardman, Oregon to the Hemingway Substation near Melba, Idaho – known as the Boardman to Hemingway Transmission Line Project or B2H Project.
   - The B2H Project would ensure future electrical service for Idaho Power customers in Idaho and Oregon, by increasing the transmission line capacity and improving system reliability. The project is scheduled to be completed in 2015.

3. Gateway West Project
   As part of PacifiCorp’s Energy Gateway Transmission Expansion Project, Idaho Power and Rocky Mountain Power are planning to build a new high-voltage transmission line across southern Wyoming and southern Idaho. This project, called Gateway West, will stretch approximately 1,100 miles and supply present and future needs of customers. The project also will enhance electric system reliability in the service areas of both companies. In addition, Gateway West will enable electricity generated from existing and new resources, including wind, to be delivered to customers throughout the region.
   - The proposed route for Gateway West’s Windstar to Populus segment extends from eastern Wyoming to a hub near Downey, Idaho, where it will connect with a segment that will continue through to western Idaho.
   - The proposed route for the Populus to Hemingway segment will originate near Downey Idaho, and run approximately 600 miles across Idaho to a new substation at Hemingway, southwest of Boise. The Populus to Hemingway project will include five expanded or new substations and will enable the companies to access existing and new generating resources, including wind, and deliver electricity from these sources to customers throughout the region.
   - Timeline for the Gateway West project as of January 2011 as follows:
     - Environmental Impact Statement – 2012
     - Permitting and obtaining rights of way – 2011-2015
     - Estimated line in service for customers – 2015-2018

Additional information, including segment maps, is available on the project web-page:
http://www.gatewaywestproject.com
4. Hailey – Ketchum Transmission Line
   - The north valley is currently served by a single 138,000 volt transmission line. An outage on this line results in power loss to all of the Ketchum and Sun Valley area. A second transmission line to the north is critical for reliable electric service, and a plan now exists to provide for that.
   - This project is the result of the Wood River Electric Plan that was developed through a collaborative process with Idaho Power and the Wood River Community Advisory Committee (CAC) in 2007. The Project is scheduled to be in service by 2013.

**Smart Grid and Cyber Security**

As part of the National Association of State Energy Officials (NASEO) referenced in the Smart Grid & Cyber Security for Energy Assurance report\(^8\), the term “Smart Grid” is defined as a modernization of the electricity infrastructure to maintain a reliable and secure system that can meet future growth. It is important to note that the smart grid vision is characterized by a two-way flow of electricity and information that creates an automated, widely distributed electricity network. It will monitor, protect and automatically optimize the operation of its interconnected elements – from both central and distributed generators, through the high-voltage transmission network and the distribution systems, to industrial users and commercial building automation systems; to energy storage installations; and to residential consumers with their thermostats, electric vehicles, appliances, and other household devices.

**Smart Grid**

The smart grid continuously monitors itself to detect unsafe or vulnerable situations that could detract from its high reliability and safe operation. Cyber security features need to be built into all systems and operations, including physical plant monitoring, access control for confidentially, integrity, and privacy protection of customer data.

1. **Self-Healing power grid**
   - The concept of “self-healing” means that the grid detects problems in real time, isolates the problem, and keeps the grid operating during emergencies. The problem areas can be repaired and restored with minimal impact on the wider area.
   - One example of a self-healing network included in Idaho is serving the town of Salmon Idaho. The Salmon area customers are normally served from by 69 kV line from Tendoy substation, which travels across various mountain and timber covered areas. In the event that this line would trip out, an automatic relay scheme will automatically open breakers and switches to allow the Peterson substation to restore the Salmon area load. Due to the remote area and potential disruption of power there are also 2 emergency diesel generators located in the town of Salmon that will automatically provide electrical service to the town of

---

\(^8\) Smart Grid & Cyber Security for Energy Assurance - Planning Elements for Consideration in States’ Energy Assurance Plans, December 2010
Salmon. These emergency diesels will automatically isolate the town from the 69 kV transmission system and restore power to 2 of the feeders in the Salmon substation.

- The City of Meridian Water Treatment plant has an automatic transfer scheme that will provide electrical service from another feeder source in the event that the normal feeder is out of service.
- Micron will have a self-healing network to automatically transfer the electrical supply from Zilog substation to Nampa substation to restore power.
- Photronics has a self-healing network to automatically transfer their electrical supply from two Boise Bench distribution feeders.
- A project is being engineered and studied to install a self-healing network to restore power to multiple customers in Pocatello that would be powered from multiple substations. These sources of power would include Pocatello substation, Alameda substation, and Terry substation.

2. Fault location
As technology advances occur the electric industry has benefitted from the integration of microprocessors in system protection systems. One of the new advances includes the ability for relays to detect the magnitude of the fault current, type of fault that occurred calculate the approximate fault location. Once the approximate location is known, crews can be dispatch to the general location to find the reason for the fault and correct the problem. This technology is proven to be very useful on transmission lines; however when this concept is applied to distribution feeders that may have multiple junctions, tap feeder lines, regulators, and potential alternate sources, the accuracy of fault location may become degraded. The general concept of a potential location is still beneficial to be utilized as a possible location for initial response.

3. AMR
- Rocky Mountain Power will begin installation of automated meter reading technology in its Idaho service territories in 2011.
- The AMR technology employed by Rocky Mountain Power, unlike Advanced Metering Infrastructure, employs radio frequency to collect data from customer meters primarily for the purposes of billing. For the purposes of outage management, the AMR system has limited potential to assist in identifying pockets of single or isolated services to be restored where direct confirmation of service restoration with the customer is not available. The current AMR technology utilized by Rocky Mountain Power does allow for the conversion to limited AMI type applications, should those applications be proven to provide customers with a long-term cost benefit.

4. AMI
- The Advanced metering Infrastructure (AMI) project for Idaho Power Company was started in 2004 with a pilot program for selected remote areas. In 2009 Idaho Power began a project for updating customer meters, with the expectation to have meters installed by 2011 with approximately 99% of the electrical distribution system. This project is expected to provide hourly energy
consumption data, the ability to read and reset peak monthly kW demands, the ability to read kWH and kW for all endpoints on-demand, two-way communications with metered endpoints, and outage management support features.

- The consumer can access their meter information using the internet website http://www.idahopower.com/ to view their usage. This information is intended to allow consumers to observe their power usage and decide what actions they desire to reduce their consumption or utilize power during non peak times. If peak demand pricing is implemented, consumers could decide what appliances are to be used and when to operate them, thus allow consumers control over their electrical costs.

- Plans to integrate the AMI meter data into the utilities Outage Management System (OMS), which would allow operators to detect system outages. This will also allow distribution system operators to determine when all customers affected by the outage have been restored by verifying communication with meters that we part of the outage.

5. **Consumer education / conservation**

Educational programs will help consumers confidently take advantage of new features, services and rate and price offerings to improve their own use and management of their electricity consumption.

6. **Distribution – OMS systems / Mobil Workforce**

- Idaho Power utilizes a centralized dispatch structure that works in conjunction with the Mobil Workforce group to dispatch crews for planned and unplanned outages. This allows crews in the field to be ready to respond to new assignments as system and environmental conditions occur.

- Rocky Mountain Power utilizes the ABB outage management system CADOPS to monitor distribution system status and assign / dispatch crews to unplanned outages. Operators are able to perform circuit ‘switching’ through CADOPS where automated substation equipment is present.

**Cyber Security**

Cyber security involves preventing unauthorized use of, exploitation of, and damage to electronic information and communication systems (National Organization of State Energy Officials, 2011). Restoration of these systems is also a part of cyber security regardless if as part of a deliberate attack or natural event. The overall purpose is to ensure confidentiality, integrity, and availability.

*Confidentiality* is ensuring that only properly authorized users with a demonstrated need have access to information. This can be implemented in numerous ways, for example: encryption, physical access, classification of information as well as training and education.

*Integrity* is the assurance that data had not been changed or manipulated without authorization.
Availability means that the information is accessible to authorized users when they need it in the format they need it (Whitman & Mattord, 2009). This ‘triangle’ of information security can be illustrated in the following manner:

**Figure 14 - The CIA Triangle**

![The CIA Triangle Diagram](image)

(Harris, 2008)

Another area that is sometime added to the ‘triangle’ is non-repudiation. Non-Repudiation is preventing the denial of an action that took place or the claim of an action that did not take place (Keogh, 2010).

Security objectives within an enterprise are ultimately a business decision that is often influenced heavily by legal or regulatory requirements (Stallings & Brown, 2008). Typically a security plan involves four actions: (a) prevention; (b) detection; (c) response; and (d) recovery (Stallings & Brown, 2008).

Additionally, the ‘users’ or customers of an organization’s security efforts want a high degree of confidence that those measures are doing what is expected. This, ultimately, is the goal of information assurance: creating and maintaining a high confidence that security measures are providing the protection expected. The CIA triad as framework for an organization’s information assurance objectives helps to ensure that that confidence is not misplaced and that those measures meet the business needs of the organization.

There are a number of standards that can be used for developing a smart grid security plan. The following provide guidance in this area:

**CIP-002 thru CIP-009**
Cyber security includes preventing damage to, unauthorized use of, or exploitation of electronic information and communication systems and the information contained therein to ensure confidentiality, integrity and availability. Cyber security also includes restoring electronic information and communication systems in the event of terrorist attack or natural disaster.

- The North American Reliability Corporation (NERC) is the Electric Reliability Organization (ERO) certified by the Federal Energy Regulatory Commission to establish and enforce reliability standards for the Bulk Electrical System. NERC standards CIP-001 through CIP-009 dictate the cyber security requirements to for maintaining system reliability.
- The NERC standard CIP-002 includes the asset identification and documentation of the critical cyber assets associated with the critical assets that support the reliable operation of the Bulk Electrical System.
- The NERC standard CIP-003 establishes the minimum security management controls to protect critical cyber assets.
- The NERC Standard CIP-004 requires the personnel have authorized cyber or authorized unescorted physical access to critical cyber assets, including contractors and service vendors, have an appropriate level of personnel risk assessment, training, and security awareness.
- The NERC standard CIP-005 requires the identification and protection of the electronic security parameter(s) inside which all critical cyber assets reside, as well as all access points on the perimeter.
- The NERC standard CIP-006 is intended to ensure the implementation of physical security program for the protection of critical cyber assets.
- The NERC standard CIP-007 requires responsible entities to define methods, processes and procedures for securing those systems determined to be critical cyber assets, as well as the other (non-critical) cyber assets within the electronic security parameter(s).
- The NERC standard CIP-008 ensures the identification, classification, response, and reporting of cyber security incidents related to critical cyber assets.
- The NERC standard CIP-009 ensures that recovery plan(s) are in place for critical cyber assets and that these plans follow established business continuity and disaster recovery techniques and practices.

Additional guidance is found at:

- NIST IR 7628: Smart grid cyber security strategy and requirements.
- NIST SP800-53: Recommended Security Controls for Federal Information Systems and Organizations.

In order to start developing a security plan, utilities need to identify critical cyber assets. The North American Electric Reliability Corporation defines those as:
- Critical assets: Facilities, systems, and equipment that if destroyed, degraded, or otherwise rendered unavailable would affect the reliability or operability of the bulk electric system.
- Cyber assets: Programmable electronic devices and communications networks including hardware, software, and data.
- Critical cyber assets: Cyber assets essential to the reliable operations of critical assets (NERC, 2008).

Examples of such assets might include generation facilities, transmission substations, control centers, SCADA (Supervisory Control and Data Acquisition) systems, usage data as well as any assets that use a routable protocol (Lebanidze, 2011).

These assets should then be classified in some manner to determine to what level they need to be protected by security controls. An example might be public, restricted, and confidential. Public assets if disclosed would not cause any adverse impact to a company or people. Restricted information is typically reserved for company employees and its release could negatively impact the company’s operation and/or security. Confidential information disclosure could seriously affect a company, its mission and security (Harris, 2008).

Personally Identifying Information (PII) is information that could identify the private information of a person. Examples might be their name and social security number, or address; information that when combined could be used to infer who that person is and where they live. Because most utilities use credit card information for billing, they adhere to the PCI Data Standards (Appendix B). While this standard is a private industry initiative, it is expected that in the next legislative session the requirement for compliance will be added to the North Dakota Century Code. Another standard that can be used as guidance for identifying and protecting private information is NIST SP800-12, Guide to Protecting the Confidentiality of Personally Identifiable Information.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>• Disclosure is not desired but would not be adverse to the organization or its personnel</td>
<td>• Current or upcoming projects • Number of employees</td>
</tr>
<tr>
<td>Restricted</td>
<td>• Has some precautions to ensure integrity and confidentiality of data</td>
<td>• Financial information • Project details • Earnings and forecast</td>
</tr>
<tr>
<td>Confidential</td>
<td>• Company use only • Unauthorized disclosure could seriously affect a</td>
<td>• Trade secrets • Competitive information • Health care/Personal</td>
</tr>
</tbody>
</table>
Critical cyber assets should all be placed behind an electronic security perimeter (ESP). This ‘perimeter’ would consist of all of the gateways, routers, firewalls, etc. that impact communications externally. At a minimum, utilities should identify those assets that require an ESP and the access points to each perimeter; for example, firewalls, Virtual Private Network endpoints, web servers, etc. (Lebanidze, 2011).

Once key assets are identified and their boundaries defined, a vulnerability assessment should be done along all of the access points of the ESP. Potential threats, vulnerabilities and risks will be identified that could impact the confidentiality, integrity, or availability of critical cyber assets (Lebanidze, 2011). Most risks fall within one of the following categories: people and policy, process, or technology. Once these risks are identified, the type of impact should be documented. For example, some risks will affect safety; others might cause an outage or monetary damages. Next risks should be ranked by its likelihood. A classification method is shown in table 5.

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Risk Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>The impact to confidentiality, integrity, or availability of information could be expected to have a limited adverse effect on organizational operations, organizational assets, or individuals.</td>
</tr>
<tr>
<td>Moderate</td>
<td>The impact to confidentiality, integrity, or availability of information could be expected to have a serious adverse effect on organizational operations, organizational assets, or individuals.</td>
</tr>
<tr>
<td>High</td>
<td>The impact to confidentiality, integrity, or availability of information could be expected to have a severe or catastrophic adverse effect on organizational operations, organizational assets, or individuals.</td>
</tr>
</tbody>
</table>

(National Institute of Standards and Technology, 2004)

Next a prioritization strategy to mitigate these risks should be developed based on the potential impact and likelihood. And finally, controls to mitigate these risks should be implemented. Once controls have been put in place, testing should occur regularly to assess the efficacy of the controls in mitigating the risk.

The controls to manage the indentified risks can run the gamut from the very technical to those much more administrative in nature. Some areas that may not be obvious but can have significant security implications include; hiring and termination practices, change management, password policy, and application controls. Some of the more extensive and technical areas are covered in the following sections.
Physical Security

Hacking systems is not the only way information and assets can be attacked. Physical security is also important, however, this is one area where utilities typically do quite well. Some issues that physical security should address include “site design and layout, environmental components, emergency response readiness, training, access control, intrusion detection, and power and fire protection (Harris, 2008).” Ultimately, physical security is needed to protect all of a company’s assets from information to people to the actual buildings. Physical security threats include:

1. **Natural environmental threats**: Severe weather, flooding, fires, etc.
2. **Supply system threats**: Power outages, energy disruptions, etc.
3. **Manmade threats**: These can be internal or external – accidents, errors, vandalism, theft, fraud, etc.
4. **Politically motivated threats**: Strikes, riots, terrorist attacks, etc. (Harris, 2008)

Good security planning should balance life safety concerns and other security issues. In other words, protecting human life is always the primary concern. It should also be modeled around a defense in depth; if one layer fails, there are others to deter an intruder. At the same time, the CIA (confidentiality, integrity, availability) triangle should drive the development.

A good security plan should also focus on the following goals:

- **Crime and disruption prevention through deterrence** – warning signs, fences, security guards, etc.
- **Reducing damage through the use of delaying mechanisms** – locks, security barriers, guards, etc.
- **Crime or disruption detection** – CCTVs, smoke detectors, heat sensors, etc.
- **Incident assessment** – response of security personnel to incidents or damage.
- **Response procedures** – incident response, law enforcement notification plan, etc. (Harris, 2008)

When assessing the physical security of a building, some of the things that should be investigated include:

- HVAC security
- Construction materials
- Power distribution systems
- Communication paths and types (copper, telephone, fiber)
- Surrounding hazardous materials
- Exteriors components:
  - Topography
  - Proximity to airports, highways, railroads
- Climate
- Existing fences, cameras, barriers
- Neighbors
- Vehicle activity

Each of these areas will need to be assessed in detail. For example, when assessing the construction materials of a building, things like the fire rating, combustibility of material, weight bearing rating, etc. need to be evaluated. Power systems should be examined for potential electromagnetic or radio frequency interference from lighting, motors, etc.

Security zones should also segregate the interior of key buildings. These zones should have requirements and access control in order to enter. Example sets of requirements are shown below:

**Figure 15 - Example Security Zone Requirements**

![Diagram showing security zones]

**Table 7 - Example Technical Controls**

<table>
<thead>
<tr>
<th>Level</th>
<th>Technical Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public</td>
<td>ID badges, class 3 locks to rooms</td>
</tr>
<tr>
<td>Controlled</td>
<td>Class 2 locks, ID or Employee badges required</td>
</tr>
<tr>
<td>Sensitive</td>
<td>Employee RF Badges Required – Class 1 locks</td>
</tr>
<tr>
<td>Restricted</td>
<td>CCTV monitored, mantrap entry, three factor authentication, Class 1 and Intrusion detection</td>
</tr>
</tbody>
</table>
Once a company has developed and implemented a physical security plan, they should assess that it covers the following areas: deterrence, delay, detection, assessment and response (Harris, 2008). Employees should be trained on the plan and testing should be done to ensure the plan is complete.

**Access Controls**

Put simply access controls “are security features that control how users and systems communicate and interact with other systems and resources (Harris, 2008).” In order to be allow access to a system or resource a user must go through the following steps; (a) Identification, is the person who they say they are; (b) Authentication, verification of identification, usually done via a password, token or other piece of identification; (c) Authorization, once properly identified, the system must determine whether the user has the rights and privileges to access the resource; and (d) Accountability, the user is held accountable for any actions taken while access the resource.

The most common form of authentication is a username and password but there are many others that can be used in combination to create a stronger authentication. Typically, authentication requires at least one of three things: something a person knows (a password or PIN), something a person has (a key or swipe card) and something a person is (retina or fingerprint). Strong authentication combines at least two of these methods. Utilities should consider strong authentication for physical as well as application access. Other access controls subjects that the security program should address include password management policy, access control models, administrative controls, and monitoring. Finally, training on what controls are in place and how they should be used should be conducted for all employees.

**Risks/Vulnerabilities**

Typically cyber security events do not come with advanced warning like other energy disruptions. As such, restoration response may begin before determination has been made as to the actual cause. This could potentially affect evidence recovery.
Incident Response Procedures
Computer security incidents are an ongoing threat and require due diligence to address accordingly in order to mitigate any potential disruption to state critical infrastructure and retain the confidence of its citizens. In order to ensure a quick and proper response to cyber attacks, utilities should have an incident response plan. A good template for an incident response plan is the National Institute on Standards and Technology (NIST) *Computer Security Incident Handling Guide* (Scarfone, Grance, & Masone, 2008).

The Security Incident Response Team (SIRT) within a utility would handle incident response as well as security advisories, vulnerability assessments, intrusion detection, education and awareness and technology watching.

Incident response should follow the life cycle as shown below:

*Figure 16 - Incident Response Lifecycle*

(Local Response Guidelines, 08/2012)
**Preparation**

The incident handling team should ensure that the proper tools and resources are available for handling a security incident. An example list is shown in Appendix C. Other preparatory activities that can be done to mitigate incidents include:

1. Patch Management. The SIRT should be actively involved in ensuring patches are identified, acquired, tested and deployed.
2. Host Security. Hosts should be given adequate and appropriate hardening.
3. Network Security. The network should only allow necessary activity and all connection points should be secured.
4. User training and awareness. The SIRT should work with IT to help make users aware of procedures and policies as well as appropriate use of the network and applications (Scarfone, Grance, & Masone, 2008).

**Detection and Analysis**

Because incidents can come in all shapes and sizes, best practice is to prepare to generally handle any type of incident and train to deal specifically with the more common varieties. Some categories that should be planned for include denial of service, malicious code insertion, unauthorized access, inappropriate usage and any combination of these.

The SIRT should be aware of multiple types of incidents and precursors to a possible incident. Examples might include antivirus alerts, buffer overflow attempts, users’ complaints of slow network response, a large volume of bounced emails, or a deviation in network traffic/volume. Understanding what constitutes ‘normal’ in the daily environment is imperative to identifying when a potential incident might be starting.

**Incident Classification**

Incidents should be classified and prioritized according to the table below:

<table>
<thead>
<tr>
<th>Criticality</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Incidents that <em>has the potential to have a significant or monumental impact on the organization’s business or service to customers</em></td>
<td>Malicious code attacks, including Trojan horse programs and virus infestations</td>
</tr>
<tr>
<td>Medium</td>
<td>Incidents that <em>has a significant or has the potential to have a monumental impact on the organization’s business or service to customers</em></td>
<td>Password cracking attempts</td>
</tr>
</tbody>
</table>
Incidents that have a monumental impact on the organization’s business or service to customers

Response

Once an incident has been identified and the appropriate Incident Response Team member notified, the following steps should be taken:

1. Log files
2. Privileged programs should be verified
3. Examine for system file tampering
4. Sniffer Programs started (see below)
5. Unauthorized services should be identified
6. Review for password file changes
7. Check system and network configurations
8. Look for unusual files
9. Examine other hosts

A further incident escalation may be needed. The use of the SANS incident log sheet located on the network drive is preferred to maintain a proper log of the incident (Appendix D).

Once a potential incident has been identified, a sniffer program like Wireshark should be turned on to begin to capture network traffic for analysis. An example screenshot is show in Figure 16 below.
Follow up

The lead person on the incident response team for each incident is responsible for documenting the incident as well as meeting with the appropriate parties to discuss lessons learned and takeaways from the incident. Questions that should be address include:

- Exactly what happened, and at what times?
- How well did staff and management perform in dealing with the incident?
- Were the documented procedures followed; were they adequate?
- What information was needed sooner?
- Were any steps or actions taken that might have inhibited the recovery?
- What would the staff and management do differently the next time a similar incident occurs?
- What corrective actions can prevent similar incidents in the future?
- What additional tools or resources are needed to detect, analyze, and mitigate future incidents? (Scarfone, Grance, & Masone, 2008)

Reporting

All security incidents should be logged and reported. All medium and high criticality incidents should be reported to law enforcement. All high criticality incidents should also be reported to the media through the State Attorney General’s Office.

Idaho Public Utilities, Municipals and Cooperatives

In addition to municipal utilities and tribal entities, there are a number of cooperatives in Idaho. The service areas are depicted below.

Figure 18 - Idaho Public Utilities, Cooperatives and Municipals

9 Please refer to the Appendix for a listing and contact numbers
10 Idaho Public Utilities Commission
Natural Gas Supply
The following map depicts the major natural gas pipelines and LDC’s (local distribution companies) in Idaho:

Figure 19 - Major Natural Gas Pipelines in Idaho

http://www.puc.state.id.us/fileroom/maps/gas.pdf
**Northwest Pipeline Company**
The Northwest Pipeline Company denoted as Williams Gas Pipeline West in Figure 15, is the primary interstate gas supplier to Idaho and the Pacific Northwest. The Northwest Pipeline system begins at Sumas, Washington, and extends southeast through Oregon, Idaho, northern Utah, Wyoming, and southward into the San Juan Basin in southern Colorado. In addition to delivering Canadian natural gas along the northern section in Washington, Oregon and Idaho, the Northwest system is bidirectional, with the capability to direct natural gas supplies from the prolific Wyoming natural gas fields and the San Juan Basin to these northwest States when needed. Northwest Pipeline Company also is the only source of supply for the Paiute Pipeline Company system, handling 0.2 billion cubic feet (Bcf) per day, which taps the Northwest system at the Idaho/Nevada border and delivers natural gas to the Reno, Nevada area from the northeast (while the Tuscarora Pipeline Company delivers from northern California).

**Gas Transmission Northwest Pipeline**
Gas Transmission Northwest Corporation engages in the ownership and operation of natural gas pipelines in the United States. It operates two pipeline systems, a GTN pipeline system in the Pacific Northwest and North Baja Pipeline system (NBP). The GTN pipeline system consists of approximately 1,350 miles of natural gas transmission pipeline in the Pacific Northwest, with a capacity of approximately 2.9 billion cubic feet of natural gas per day. The pipeline begins at the British Columbia-Idaho border, extends for approximately 612 miles through northern Idaho, southeastern Washington, and central Oregon, and ends at the Oregon-California border, where it connects with other pipelines.

There are three IOU’s (Investor Owned Utilities) in Idaho: Avista, Intermountain Gas, and Questar, whose retail service areas are depicted in the following figures.
Figure 20 - Avista Service Territory

Figure 21 - Intermountain Gas Service Territory
Petroleum Supply

Idaho markets receive petroleum product supply from refineries in Montana and Utah via two petroleum product pipelines owned by Conoco Phillips (Yellowstone Pipeline) and Chevron corporations respectively. Total petroleum consumption is low. Idaho is one of the few States that uses conventional motor gasoline statewide. (Most States require the use of specific gasoline blends in non-attainment areas due to air-quality considerations.)

Approximately seventy percent of Idaho’s gasoline, diesel, and aviation fuel supplies originate from Utah’s five refineries at or near Salt Lake City. These supplies primarily are transported into Idaho through a pipeline that originates in Salt Lake City and traverses southern Idaho before continuing on to Pasco and Spokane, Washington.¹² And, as of 2001, the flow of pipeline can be reversed with fuel coming to the Boise market from the Pasco facility.

¹² Idaho Office of the Attorney General website: http://www2.state.id.us/ag/newsrel/2006/nr_oct132006.htm
The balance of Idaho’s fuel demand primarily is satisfied by production from refineries in Billings, Montana. This is transported to fuel storage terminals in Spokane through the Yellowstone Pipeline System, a joint venture of ConocoPhillips Pipe Line Company.

Emergency guidance for both pipeline companies is on file at the Idaho Public Utilities Commission. The Chevron emergency response guides can be found on line at: http://www.chevron-pipeline.com/communityawareness.asp

Monitoring Petroleum Supplies and Issues and Trends that Affect the Idaho Supply
As of year 2006 the U.S. imports 60 percent of all petroleum used. About half of that comes from the western hemisphere according to the U.S. DOE Energy Information Agency. The year 1951 was the last that U.S. production of petroleum was able to meet consumption needs. Since that time U.S. petroleum consumption has continued to rise even as domestic production continues to go down. Peak production of domestic oil was achieved just preceding the 1973 Arab oil embargo\textsuperscript{13} and has moved steadily in a downward trend since that time.

\textbf{Figure 23 - U.S. Petroleum Overview\textsuperscript{14}}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure23.png}
\caption{U.S. Petroleum Overview}
\end{figure}

\section*{1) Long Term Factors Affecting Petroleum}
The clear message received when viewing the history of consumption and production is that Idaho, and the U.S. as a whole, will continue to be dependent on oil imports to meet our use for the near to midterm future; it is prudent to consider that supply shortfalls of petroleum may come about as a result of demand exceeding supply.

\textsuperscript{13} More information on the 1973 Arab oil embargo and the history of U.S. production and consumption can be found at the EIA website: http://www.eia.doe.gov/pub/oil_gas/petroleum/analysis_publications/chronology/petroleumchronology2000.htm#T_9

\textsuperscript{14} Source: U.S. DOE Energy Information Agency
There are several factors that appear to affect use long term that will shape both the type and extent of emergency situations in the future. Major factors include:

- **Increase in the price of oil**
  The 2006 price per barrel of crude was $59.05. In May 2008, the cost of a barrel of crude reached $125 per barrel, and the price appears to be steadily increasing. The results include reduced petroleum consumption, decline in sale of large SUVs and trucks, decline in house prices in areas distant from city centers, and a number of other travel-related factors. There are many experts who believe that the long-term price of oil will not significantly diminish due to competition from emerging economies and inability to significantly increase worldwide production.

- **Potential impact of plug-in hybrid vehicles**
  Plug-in hybrid vehicles will shift motive power from petroleum to electricity. While petroleum will continue to be a major transportation fuel, the advent of mass produced vehicles that run mostly on electricity for their daily commute will, over time, reduce the impact of petroleum supply interruptions. It should be noted that the impact of plug-in hybrids will be mainly on commuter’s fuel use. Long haul freight will remain more dependent on combustion fuels.

- **Expanded use of biofuels**
  Although controversial, the production of ethanol and biodiesel continues to expand. A less problematic source of ethanol is cellulose. These processes and other methods of converting biomass to fuel are under intense development. Over the next decade we can expect expansion in the use of these fuels to increase. Plug-in hybrids that use biofuels as the mileage extender can leverage biofuel supplies and reduce petroleum use.

- **Increased use of alternative transportation**
  The oil price increase is already driving more people to use mass transit and bicycles across the nation, and Idaho is no exception. As transit systems develop, petroleum use decreases.

- **Urban densification**
  Pressures of fuel price and commute time are causing increased multi-family construction nationally as well as in Boise and other Idaho cities. As people move into urban centers, vehicle use declines. While Idaho’s rural economy will continue to require many vehicle miles, the cities and towns are likely to become more compact and dense rather than continually increasing with unchecked sprawl.

As these changes take place over the coming decades, the impact of a petroleum shortage may decrease. This plan will need to be revisited to keep abreast of developments.
Product Pipelines
Idaho’s product pipelines are shown in the figure below.

Figure 24 - Idaho Petroleum Pipelines

Idaho Pipeline Network
Idaho’s Pipeline Network consists of underground oil and gas pipelines that are owned and operated by various petroleum companies. Below is a summary of the network’s owners and linkage with other modes of transportation.
### Table 9 - Idaho Pipeline Network Information

<table>
<thead>
<tr>
<th>Company</th>
<th>Product</th>
<th>Linkage</th>
<th>Owner</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chevron Pipeline Co., Salt Lake City</td>
<td>Petroleum Products</td>
<td>Salt Lake City, Burley, Umatilla, Spokane, Pocatello</td>
<td>Private</td>
<td>Private</td>
</tr>
<tr>
<td>Chevron Pipeline Co., Northwest Division</td>
<td>Petroleum Products</td>
<td>Montana, Coeur d’Alene, Spokane</td>
<td>Private</td>
<td>Private</td>
</tr>
<tr>
<td>Northwest Pipeline Co.</td>
<td>Natural Gas</td>
<td>Soda Springs, Pocatello, Burley, Boise, Umatilla, Spokane, Coeur d’Alene</td>
<td>Private</td>
<td>Private</td>
</tr>
<tr>
<td>Holly Corp.</td>
<td>Petroleum, Jet Fuel</td>
<td>Mountain Home AFB</td>
<td>USAF</td>
<td>USAF</td>
</tr>
<tr>
<td>Kinley Corp.</td>
<td>JP 4 Jet Fuel</td>
<td>Gowen Field</td>
<td>Govt.</td>
<td>Govt.</td>
</tr>
<tr>
<td>Simplot</td>
<td>Phosphate, Slurry</td>
<td>Couer d’Alene, Pocotello</td>
<td>Private</td>
<td>Private</td>
</tr>
</tbody>
</table>

Private Private

*Bbl = Barrels
** Bcf = Billion Cubic Feet

- Petroleum product pipelines carry gasoline, kerosene, liquid petroleum gas and fuel oil from refineries to bulk terminals or marketing points. Where demand is sufficient, such as jet fuel at air fields, the product pipeline goes directly to the customer.
- There are three types of natural gas pipelines: 1) Field and gathering pipelines transport natural gas from individual wells to a processing point for gas separation and treatment, 2) transmission lines transport gas from a source of supply to a distribution center, a large volume customer, or to an interconnecting source of supply. These lines operate at substantially higher pressure than the other types, and 3) distribution pipelines carry or control the supply of gas from a local center of distribution to the sales meter.

The Salt Lake Products Pipeline System traverses sparsely populated regions in Utah and Idaho. The following photograph illustrates some of the environmental conditions along the line.
The Chevron Pipeline
The Chevron Pipeline accounts for approximately 70 percent of motor fuel transported into Idaho. Beginning in crude oil refineries in Salt Lake City, Utah, the pipeline follows the U.S. Interstate I-84 route into Southeastern Idaho, through Ada County (Boise) and on into Oregon. At the junction of I-84 and I-86, near Declo, Idaho, a spur line runs to a storage facility in Pocatello. Chevron has storage locations in Burley, Pocatello, and Boise Idaho.

Chevron has a very well developed and easy to navigate web site for their pipeline: http://www.chevron-pipeline.com/communityawareness.asp

On the web site are guidelines for: 1) first responders, 2) public officials, 3) developers/excavators, and residents. Although repetitive in general (a good idea for an emergency guidance) each guide has information specific the noted sector. And each guide is complete in both English and Spanish. Emergency numbers by State are generally listed in two locations on each emergency plan. The pipeline is buried except where it surfaces at storage facilities.

The Yellowstone Pipeline
The Yellowstone Pipeline, owned and operated by ConocoPhillips, accounts for approximately 30 percent of motor fuel transported into Idaho. Beginning in Billings Montana, the 10" pipeline crosses into Idaho following Interstate 90 through the Prichard Creek, Idaho area and terminates in Spokane Washington. Portions of the pipeline are above ground, piggy-backing the Interstate 90 bridges as they span waterways along the route. Idaho is included in the Washington Response Zone Emergency Plan. An extensive network of worksites is identified both along the pipeline and throughout waterways and emergency responses are identified for each point
between worksites. The plan is very detailed in identification of hazard identification and mitigation.

ConocoPhillips has a website for pipeline safety. The bulk of the information on the Yellowstone Pipeline was provided via a computer disk (CD) dated 4/2008, and currently resides at the Office of Energy Resources.

Earthquakes are specifically listed as a pipeline hazard under the Yellowstone Pipeline Emergency Plan. Also, it should be noted that there are five dams listed as high risk by the Idaho Department of Water Resources that follow the pipeline and I-90 corridor (Appendix, section II). At the site of these dams the pipeline travels above ground, attaching to bridges that span ravines on the I-90 Interstate.

**Ethanol**

A February 2008 update entitled *Industry/Government R&D Program to Address Pipeline Transportation of Ethanol*, states that the oil pipeline industry is aggressively working to overcome the challenges that currently prevent the shipment of ethanol via pipelines. To date, however, pipeline shipping of ethanol is not allowed. Therefore, if Idaho were to rely on ethanol as either a backup or supplement to imported motor fuel, most stock would need to come from inside the state.

According to the Idaho Office of Energy Resources, in 2006 gasoline and ethanol sales in Idaho were 648 million gallons. Since the 1980’s about 3 million gallons of ethanol have been sold in the state each year. Idaho, in fact, has used less ethanol per capita than any other state. This is changing. In 2006, there was a boost in ethanol sales, jumping to about 3.4 million gallons. Beginning 2008, a total of 58 stations offered E-10 and 3 stations offering E-85. Several months later, approximately 150 stations were offering E-10. Most of Idaho’s ethanol is produced locally from potato waste.

**Petroleum Use**

Total Idaho petroleum use in 2009 was about 28.4 million barrels – 0.4 percent of U.S. share. Of that, motor gasoline was the largest usage at 16.4 million barrels, distillate fuel 10.5 million barrels, liquefied petroleum gases at 1.4 million barrels, and jet fuel at 0.6 million barrels as shown below.

---

15 US DOE Energy Information Administration:
http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=ID
Energy use per capita in Idaho (all energy sources) in 2009 was 330 million BTUs, ranking the state 22\textsuperscript{nd} in total per capita energy use.

The figure below depicts the gross annual energy use (all energy sources) per sector in 2009. Total energy use by buildings, industry and transportation is 508,952 billion BTUs per year. Transportation, petroleum energy, is the lowest overall energy user of the three sectors. The Industrial sector in Idaho uses more energy than either commercial or transportation (mostly electric energy). Idaho’s industrial energy use is higher than the U.S. average mainly because of energy intensive industries such as mining, forestry and agriculture that require significant process loads for extraction and refinement.
Petroleum use accounts for approximately 27 percent of the total energy use in Idaho, mainly consumed in the residential, commercial, industrial, and transportation sectors. The largest use of petroleum by sector is industrial at 169,853 billion BTUs per year. Approximately 5 percent of Idaho households were using petroleum products for heating in year 2000.

Probable Causes of Shortages
At the 2005 rate of consumption, 29,502,000 barrels a year, motor fuel use on an average day is approximately 80 thousand barrels. Idaho’s December 2011 stock was 351 thousand barrels. This means there is only an approximate three to four-day supply on hand should motor fuel stop flowing into the state. Thus, even a short-term curtailment of fuel availability could have a significant and profound effect on Idaho’s economy and the ability to conduct commerce across all sectors. The government should consider incentivizing the investment in additional storage facilities to mitigate the effects of short term interruptions that are long enough duration to exceed the existing in state storage capacity. On-site storage should be encouraged at critical facilities.

The greatest potential for significant petroleum shortfalls is through either: 1) pipeline failure or, 2) inadequate domestic and or imported supplies of petroleum (Appendix, section III). A rupture of either the northern or southern pipelines could cause petroleum shortages in Idaho. A southern (Chevron) pipeline rupture would have larger consequences as it supplies approximately 70 percent of Idaho’s petroleum use. A pipeline rupture could be caused through an earthquake, an accidental breach, an act of terrorism, or, as recently happened in Alaska, from age related failures. In northern

---

16 This number is not inclusive of barrels already in the pipeline.
17 Though a pipeline failure would require rapid mobilization of the transport of fuel for critical need areas, it would in all probability be a problem that could be corrected within the short term. Of more concern, an
Idaho, the Yellowstone pipeline follows the I-90 Interstate corridor that also happens to be an area with five dams that are rated high risk because of age and environmental factors.

Local distribution of petroleum products could be curtailed due to natural disasters such as earthquakes or localized flooding that could shut down highway access to distribution centers and/or retail outlets. This is a less severe emergency than that of a pipeline rupture but would still require a significant level of coordination and mobilization to ensure affected areas are supplied with critical fuel resources.

Scheduled maintenance or shut down of the pipeline could cause a motor fuel shortage and should be monitored.

**Holly Corporation Product Terminals**

The Idaho market for refined products is primarily supplied via Chevron's common carrier pipeline system from refiners located in the Salt Lake City area and products supplied from the Pioneer Pipeline system. Refiners that could potentially supply the Chevron and Pioneer Pipeline systems include Woods Cross, Chevron, Tesoro, Big West, Silver Eagle, Sinclair, ConocoPhillips and ExxonMobil.

In 2003 the Holly Corporation acquired the Woods Cross Refinery, located near Salt Lake City, Utah, and related assets, from ConocoPhillips. The purchase also included a refined products terminal in Spokane, Washington, a 50% ownership interest in refined products terminals in Boise and Burley, Idaho, 25 retail service stations (since sold) located in Utah and Wyoming, and a 10-year exclusive license to market fuels under the Phillips 66 brand in the states of Utah, Wyoming, Idaho and Montana.

Holly has three refined product terminals (two of which are 50% owned), located in Burley and Boise, Idaho and Spokane, Washington, with an aggregate capacity of approximately 500,000 barrels, that serve third-party common carrier pipelines. They also own one refined product terminal near Mountain Home, Idaho with a capacity of 120,000 barrels that serves a nearby United States Air Force Base.

Holly supplies approximately 2% of the refined products consumed in the combined Idaho, Wyoming, eastern Washington and Nevada markets. Their Woods Cross Refinery ships refined products over Chevron's common carrier pipeline system to numerous terminals, including HEP's (Holly Energy Partners) terminals at Boise and Burley, Idaho and Spokane, Washington and to terminals at Pocatello and Boise, Idaho and Pasco, Washington that are owned by Northwest Terminalling Pipeline Company. Holly sells to branded and unbranded customers in these markets.

---

overall shortfall of petroleum nationally, depending on the severity, has potential to have a significant long-term effect on Idaho’s agricultural, transportation, residential and industrial sectors’ ability to produce food and products and maintain current quantities of jobs and qualities of lifestyle and comfort.
Gasoline
Idaho suffers from geographic isolation, according to a 1999 Gas Price Advisory Committee report prepared after a large gasoline price spike noted that there is only one pipeline that supplies the southern part of the state — the Chevron pipeline out of Salt Lake City. Oil company representatives state that the Chevron pipeline operates at capacity (approximately 32,000 barrels per day) during much of the year, particularly during the summer peak season. Generally transportation by truck or other means is not feasible from a cost standpoint, although from time to time there is such a disparity between the rack price in Boise and out-of-state-racks that a jobber can obtain cheaper product by trucking it in.”

“The northern Idaho area benefits from more available supply but with problems encountered from the closure of the Yellowstone pipeline from the Billings refineries in Montana, the supply have suffered restrictions and higher prices.”

Shown in the figure below, Idaho has approximately 900 gasoline fueling stations, 27 stations distributing liquefied petroleum gases, and 3 ethanol (E85) stations.

Legal Authorities
The following Idaho statutes specifically address aspects of emergency management and acts of terrorism:


18 Courtesy of John Crockett, Idaho Office of Energy Resources

The following Federal laws specifically address aspects of emergency management and acts of terrorism:

4. The Post Katrina Emergency Management Reform Act (PKEMRA).

**Concept of Operations**
This Energy Assurance Plan is intended to become a component of the Idaho ESF-12 Energy support function under the State Emergency Operations Plan. As such the concept of operations may be found in the Idaho Emergency Operations Plan maintained by the Idaho Bureau of Homeland Security.

**Energy Systems and Vulnerabilities**
This section contains an overview of the potential causes of energy supply shortages and then addresses mitigation actions in each sector.

**Probable causes of shortages**

1. **Environmental Events - Weather, Earthquakes and Tornados**
   - This classification is the most common of possible shortages. As storms occur they can affect transmission and distribution lines, causing local area outages.
   - Other situations could be icing during cold weather that affects generating power plants.
   - FEMA tracks Presidential Disaster Declarations\(^1\) nationwide. Idaho is in FEMA Region X and from 1964 through January 1, 2010 the northern Idaho counties experienced between 6 to 10 events qualifying for such declarations and the southern Idaho counties experienced 1-5 such events.
   - Over the 1965-2010 period there were 30 specific incidents:
     - 9 – Fire/Wildfire
     - 16 – Flooding
     - 2 – Earthquake/Eruption
     - 1 – Drought
     - 1 – Dam Collapse
     - 1 – Other

---

• Geological and seismological studies show that earthquakes are likely to happen in any of several active zones in Idaho and adjacent states. Idaho has experienced two large earthquakes in historical times—the 1959 **Hebgen Lake earthquake**\(^\text{20}\) (M7.3) and the 1983 **Borah Peak**\(^\text{21}\) **earthquake** (M6.9). Both tremors caused fatalities and millions of dollars in damage. In all parts of Idaho, the historical record of seismicity reveals at least a moderate threat from earthquakes. The Idaho Geological Survey addresses earthquake concerns by studying faults and seismic activity, and by promoting earthquake education programs. The Survey works closely with other agencies such as the **Idaho Bureau of Homeland Security** in planning state and regional earthquake policy and response, and participates in regional organizations such as the **Western States Seismic Policy Council**\(^\text{22}\) (WSSPC).

![Figure 29 - Historical Earthquakes in Idaho\(^\text{23}\)](http://www.idahogeology.org/DrawOnePage.asp?PageID=73)

2. **Loss of Fuel supply for generation**

   - Loss of fuel supply could include extended drought season(s) that affect the hydro generation that is utilized for a significant amount of the electricity.

   - Loss of gas supply to generators can also affect the amount of electricity available for consumers.

3. **Equipment failure**

   - Generation equipment failure could affect the ability to generate power to be delivered to consumers. This can include various situations that could be the result of component failure or degradation.

---


\(^{22}\) [http://www.wsspc.org/](http://www.wsspc.org/)

• Transmission equipment failure can affect the ability to deliver and import electricity to supply customers in Idaho.
• Distribution equipment failures can affect the ability to serve local areas that are part of the distribution system

4. Sabotage
• Sabotage is a possible event that could affect the electrical supply or the ability to deliver power to consumers.

5. Partial or complete bulk electrical system collapse.
• A partial or complete bulk electrical system collapse would affect the ability to deliver power to sections of the state.
• System Restoration would be required to establish transmission, distribution and generation interconnections for reestablishing power to customers.

6. Natural Gas Pipeline Failure
• A partial or complete failure of natural gas transmission in Idaho or neighboring states could limit the amount of natural gas available for import into Idaho, and would impact electric generation and natural gas availability for heating and industrial processes.

7. Petroleum Pipeline Failure
• A petroleum pipeline failure within the Idaho would have little impact on local energy production since there are no refineries operating in Idaho nor are there oil-fired electric generators.
• An oil pipeline within Idaho could however impact the ability of out-of-state electric energy producers and their ability to export electrical energy into Idaho.
• An oil pipeline failure in Idaho could impact delivery of oil of out-of-state refineries and this could in turn impact the availability of refined products for import back into Idaho, affecting primarily the transportation fuels energy sector.

8. Out of State Resource Limitations
• Idaho imports 40% to 50% of its electrical energy imports, and is therefore dependent on the ability of neighboring states energy producers to provide sufficient capacity and energy to support Idaho.
• Electrical out of state resource limitations could be impacted by overloaded lines supplying Idaho’s imports. These out of state resources may be utilizing other state transmission lines which could become constrained; the import capabilities are limited to the amount if energy delivered to our borders.
• Electrical out of state recourse limitations could also be impacted by overloading on lines parallel to our imported energy. Due to electrical characteristics of the Bulk Electrical System, energy will transfer on various paths to reach the consumers. Electrical energy flows on paths which it is not
planned to utilize is defined as Unscheduled Flow. To rectify this problem all affected paths may have to be reduced to protect the integrity of the grid.

- A shortage of available natural gas as inputs to the pipeline system or a failure of critical facilities out-of-state would impact Idaho, as it is dependent on natural gas imports to support gas-fired electric generation and heating and industrial process requirements.

9. Regulatory Requirements

- Regulatory requirements dictated by other government agencies such as the Federal Energy Regulatory Commission (FERC) may impose license restrictions of river flows, reservoir levels, or water quality that may limit generation production
- Regulations may limit thermal unit production in order to comply with laws of the Environmental Protection Agency (EPA).

Energy Sector Mitigation and Response Efforts

While restoration of normal operations and energy supply availability for electric utilities, natural gas facilities and petroleum facilities is the primary responsibility of the facility owners and providers, the Idaho Bureau of Homeland Security provides the appropriate supplemental State assistance and resources to facilitate restoration in a timely manner. In cooperation with other public institutions and the private sector, the state’s primary goals in managing an energy shortage are as follows:

1) Ensure essential public and private services, including critical public health and safety services, are provided during an energy supply shortage.

- Should an emergency occur that affects human health and safety or creates environmental hazards:
  - Contact the affected county disaster service: http://www.idahofireplan.org/disasterservices/
  - Notify local and statewide, as affected, healthcare services
  - Notify the Idaho Highway Patrol and local security services
  - Notify the appropriate Transmission Operator and ensure that response actions are underway
  - Notify the Governor’s Office
  - Notify local media

Electrical: Should an electrical supply shortage occur the first group of actions should center on the provision of notifying emergency services of the magnitude and extent of the situation. This action requires pre-planning: which deals with planning for such an event to occur at some point in the foreseeable future, with a clear understanding of the key players and the varying roles in alleviating severity of the shortage. Government agencies with direct responsibility to respond to electrical supply emergencies and shortages include: 1) the Office of
the Governor Bureau of Homeland Security; 2) North American Reliability Corporation (NERC); 3) Department of Energy (DOE).

**Natural Gas:** Should a natural gas incident occur, the first group of actions should center on making the immediate area of the disaster safe first for people and secondarily safe for property.

Should a natural gas shortage occur, the first group of actions should center on the provision of sufficient natural gas supplies that would allow health and safety services to continue in an uninterrupted manner. This action requires pre-planning which encompasses planning ahead of time for all responses that should be made upon the occurrence of such an event in the foreseeable future, with a clear understanding of the key players and the varying roles in alleviating severity of the shortage.

**Petroleum:** Should a petroleum shortage occur, the first group of actions should center on the provision of fuel and transportation services that would allow health and safety services to continue in an uninterrupted manner. This action requires pre-planning: which deals with planning for such an event to occur at some point in the foreseeable future, with a clear understanding of the key players and the varying roles in alleviating severity of the shortage. Government agencies with direct responsibility to respond to petroleum emergencies and shortages include:

1) The Office of the Governor Bureau of Homeland Security; 2) the U.S. Department of Transportsations’ Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety. 3) Private and industry organizations include the pipeline owners, Chevron and ConocoPhillips and the Western Petroleum Marketers Association (WPMA).

- **Assist in alleviating economic hardships caused by an energy supply shortage.**

**Electric:** It is expected that even limited rotational outages for an electrical supply shortage will cause some level of economic hardship in Idaho’s private and public sectors. Obviously, the severity of economic hardships will increase with the magnitude and extent of the electrical rotational outages or system collapse. Ensuring that strategies are developed that allow for immediate response and mitigation will alleviate the potential economic impact of a shortfall.

**Natural Gas:** It is anticipated that even a partial-day (several hour) shortage of natural gas supply, particularly in the gas transmission system, will cause some level of economic or health-related hardship in Idaho’s private and public sectors. Obviously, the severity of these hardships will increase with each day of a shortfall. Ensuring that strategies are developed that allow for immediate response and mitigation will alleviate the potential economic impact of a shortfall.
Petroleum (transportation fuels): It is expected that even a short one-day petroleum supply shortage will cause some level of economic hardship in Idaho’s private and public sectors. Obviously, the severity of economic hardships will increase with each day of a shortfall. Ensuring that strategies are developed that allow for immediate response and mitigation will alleviate the potential economic impact of a shortfall.

1) Escalation or Emergency Levels

Level of emergency and appropriate responses
The following descriptions can be utilized by the Idaho Bureau of Homeland Security in assessment of the need for government and private industry action.

**Level 1. Normal – Normal operations**
This level describes a situation where no immediate supply problems exist, yet conditions are such that it is possible that problems could develop in the near future. This is a status quo situation, but entities are tracking potential immediate threats (e.g. wildfire, ice storm, terrorist chatter, etc.).

**Level 2. Mild – Customer inconvenience occurs**
Customer inconvenience occurs, however normal business operations are able to be completed.

**Level 3. Moderate – Affects commerce and customer inconvenience**
A situation that affects commerce where energy supply may not be able to meet demand. There are no affects on public health or safety.

**Level 4. Severe – Widespread shortages affecting all stakeholders**
This level identifies a situation in which the unavailability or disruption of the supply of energy poses a clear and foreseeable danger to public health, safety, and welfare.

Preparation Strategies for Possible Supply Shortage

1. Electrical Supply Balancing Authorities
   - Idaho has four Balancing Authorities within the state; these are Avista, Bonneville Power Administration (BPA), Idaho Power and PacifiCorp. These balancing authorities are required to maintain load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.

---

24 Some of the content on this and the next few pages were taken from guidelines developed by the National Association of State Energy Offices (NASEO) and/or the Washington State Energy Assurance and Emergency Preparedness Plan coordinated through the State of Washington Department of community Trade and Economic Development Energy Division.
The Balancing Authorities will follow their procedures to comply with regulations for meeting customer load. Some of these actions could include adjusting generation, purchasing additional imports, or utilizing the NERC Energy Emergency procedures for bulk electrical system reliability.

Transmission Operators
- Transmission operators within the state will monitor and plan for supplying power to their respective customers.
- The transmission operators will work in conjunction with Balancing Authorities to maintain the transmission network for delivering power to the customers.
- Transmission operators will restore the bulk electrical system in the event of a partial or complete electrical system collapse.

Generator Operators
• Generator operators will supply power to Balancing Authorities to accommodate consumer demand.
• Generator operators will plan maintenance and outages when possible to supply power for the balancing authorities’ needs.

Sabotage
• All entities will monitor and report sabotage as required by NERC standard CIP-001 Sabotage Reporting.
• All entities will employ physical security measures as well as cyber-security measures to secure their assets.

2. Natural Gas Supply
Following a disaster or a supply shortage, demand reduction is key to maintaining service for health and safety activities. Since there is limited storage of gas in Idaho on the transmission system or in the distribution systems, line pressures will begin falling immediately, signaling an imbalance in the state’s supply/demand balance.

Generally, there are three ways to reduce demand: increase prices (to dampen demand), improve efficiency (use less energy for the same work), and curtail use (go without or switch to an alternate fuel). In a gas supply shortage, the first two options do not have enough of a short-term response to be effective. Only curtailment of use has the required immediate effect.

Even though the disaster or supply shortage may be on the gas transmission system, curtailment can occur on the distribution system as well as the transmission system, since LDC’s (local distribution companies) directly serve most of the customers. However since transmission companies typically serve the larger loads, these are the customers that can be curtailed the fastest.

Each LDC has emergency curtailment plans which are filed with Idaho’s PUC. Two broad types are curtailments are available. The first type of curtailment is for customers in the LDC’s “interruptible” rate class of service. Generally these customers have an alternate fuel capability available to them and are agreeable to curtailment at short notice in return for the economies they enjoy in their rate classification. In general, once these customers have been curtailed, the LDC’s and transmission companies look to their largest loads for the next group to be curtailed.

In Idaho, electric utilities have a large portion of their generation based on natural gas. Four of the largest capacity power plants are normally fired by gas, accounting for 784 Mw of generation. These enormous consumers of gas are targets for curtailment. Other targets are Idaho’s largest industrial customers.

As the larger customers are curtailed, the gas companies can then target smaller users such as commercial accounts.
3. Petroleum Supply

During a disaster, reduction of petroleum demand is not usually an issue, as fuel may not be able to be moved to where it is needed because of damaged infrastructure, not because of insufficient supply. In a supply shortage, however, demand reduction is key. If additional supply were immediately available, there would be no emergency.

Generally, there are three ways to reduce demand: increase prices (to dampen demand), improve efficiency (use less energy for the same work), and curtail use (go without). In a supply shortage, all three approaches will likely be used. For example, in a petroleum shortage gasoline prices will increase, consumers will be encouraged to use the correct air pressure in tires, among other things, to improve gas mileage, and discretionary driving may be discouraged. Such demand reduction options represent the bulk of the shortfall response options available to the state.

Identification of strategies that will prepare Idaho for a petroleum shortage will help to assure the quickest possible recovery time in the case of a shortfall of supply. Legal precedents and priority lists for allocation of fuels to critical facility users need to be developed to include severe penalties for black-market type of sales circumventing these priority customers need to be in place. Current strategies that should be pursued include:

- Coordinate Plan activities, emergency response, roles and responsibilities with the Bureau of Homeland Security.
- Develop and maintain current directories of petroleum suppliers of services and products.
- Coordinate with petroleum and bio-fuels suppliers and industry representatives to develop a strategy in the response recovery efforts.
- Develop, coordinate and, as necessary, implement contingency plans for petroleum emergencies and shortages.
- Work with support agencies to develop a petroleum shortage and emergency response plan.
- Provide economic incentives to petroleum industry to increase motor fuel reserves within Idaho.

Motor fuels are of course volatile which makes storage costly. Currently, fuel is stored only as a step in transport and delivery of the product to market. In order to expand this type of reserve the market for fuel would need to grow. Of course market growth and subsequent increased capacity for delivery would not alleviate the problem of supply in the case that the fuel flow to the state is reduced due to a catastrophic or economic event. Capacity may need to increase beyond the current three-to-four-day levels.
It is recommended that the State of Idaho communicate with industry and the public on the need and value and logistics for expanding motor fuel storage within Idaho.

- **Storage and refining of crude oil.**
  Idaho may be well served if a large stock of crude were stored with the capability of refining within the state. This would be an industry action but may require some incentive to the industry, and facilitation with the public, in order to locate a refinery within the state boundaries. In light of the infrequency of shortages and the nature of the location of crude supplies this contingency seems to lack the necessary economics to be viable. The economics of refinery construction also hinder this contingency.

It is recommended that the State of Idaho communicate with industry and the public on the need and value and logistics for locating crude reserves and refinery capacity within Idaho.

- **Increase Petroleum Prices**
  Petroleum product price increases are a natural consequence of supply shortages. Because higher prices dampen demand, and because they result from market forces (as opposed to regulatory action), they are key to resolving a shortage. Higher prices are, in fact, the preferred way to address a shortage. Ideally, high prices will draw supply to where it is needed, and no other action will be needed. In severe shortages, prices may climb too high, or last for too long. Additional state action may be needed to put a downward pressure on prices, or even to address the negative impacts of the high prices themselves.

- **Increase Petroleum Efficiency**
  Because three-quarters of Idaho’s petroleum consumption is used for transportation (most of it gasoline for cars and light trucks) transportation alternatives offer the best opportunity for reducing petroleum consumption. The goal is to use fuel more efficiently, either by upgrading vehicle performance, or by employing alternatives to the fuel dependent daily, rush hour, and single occupant vehicle commute.

  o **Improve Vehicle Efficiency**
    By maintaining a vehicle to operate at peak performance, an individual can improve the efficiency of the vehicle, saving money for the individual and fuel in a shortage. The more broadly applied, the greater the fuel savings.

    Provide the public and fleet managers with tips on how to save fuel. Actions include tuning engines, maintaining proper tire pressure, and removing wind resistant equipment like luggage racks, among others. The Automobiles Association of America (AAA) maintains a web site that provides extensive vehicle efficiency suggestions.
By managing car and truck fleets for improved efficiency. By prioritizing work needs, determining vehicle efficiencies, and scheduling work activities, fuel consumption can be reduced.

- **Increase Transit Service**
  Increased transit service increases passenger miles traveled per gallon of fuel consumed.
  - Adjust schedules and routes
  - Provide the public and employers with transit information
  - Increase parking for transit connections
  - Provide incentives for using transit.
  - Increase bus availability (through new purchases or use of school buses).

- **Increase Ride Sharing**
  Increased car pooling/ride sharing increases passenger miles traveled per gallon of fuel consumed.
  - Increase ride-matching capabilities
  - Establish temporary park and pool lots
  - Provide the public and employers with park and pool information
  - Provide incentives for ride sharing, including waiving parking privileges

- **Promote Bicycle Commuting**
  Bicycle commuting lowers fuel use by direct replacement of human power for fuel and by reducing congestion.
  - Provide secure weatherproof bike racks
  - Provide showers and lockers for bike riders
  - Local governments provide bike paths, lanes and bike/transit interfaces

- **Control Parking**
  Parking controls act as a disincentive for driving alone and in certain situations save fuel by reducing congestion.
  - Increase preferential parking for car-pools
  - Increase parking rates, waive parking privileges
  - Restrict parking on critical routes during peak hours
  - Parking with power connections for all electric vehicles. Perhaps subsidized power, for the near future until all electric vehicles become the norm

- **Add Emergency/Temporary High Occupancy Vehicle (HOV) Lanes**
  Increasing HOV capacity while decreasing single occupancy vehicle capacity produces an incentive for commuters to carpool or use transit services, which saves motor fuel. Designate critical arterials, freeway ramps and additional lanes as HOV only.

- **Lower and/or Enforce Speed Limits**
Generally, automobiles consume more motor fuel as traveling speed increases past 50 MPH. Large trucks and SUVs consume more at speeds greater than 40 MPH.

- **Increase Flex-Time**
  - Fewer commute days (e.g. 4-10s, saves 20 percent fuel by limiting commute to four days in five). These savings can be lost if individuals drive on their off day.
  - Staggered commute times (e.g. commuting on off peak hours or days saves fuel by reducing congestion and time stuck in traffic). Can be applied to school schedules, which would release some buses to be used for transit purposes.

- **Expand Teleconferencing and Telecommuting Activities**
  Using communication systems to move information rather than workers save fuel by reducing the number of trips to work or meeting places. This option can have drawbacks, for example, increasing electricity or natural gas consumption because workers stay at home. The options must be considered carefully in a multiple fuel shortage.

- **Request or Mandate a General Reduction in Petroleum Consumption**
  Petroleum is used for many purposes. Without specifying uses, consumers may find many ways to reduce consumption.

- **Reduce Travel (land, air and marine)**
  Travel may be important or discretionary. Consumers should prioritize travel, reducing discretionary consumption first.

- **Hold Fewer Public Events**
  Large public events lead to the consumption of large amounts of fuel because of the number of vehicles traveling to and from the event and from congestion caused by parking. Fairs, for example could be curtailed. Such actions would have economic impacts, and could cause significant disappointment. However during severe shortages such actions could save significant amounts of fuel. The state might curtail events (such as agency retreats) as an example.

- **Provide Increased Transit Service to Public Events**
  Decreases fuel use per person attending events.

- **Turn Down Thermostats (heating oil, propane customers)**
  The value of this option depends on the duration of the emergency. Heating oil and propane are purchased ahead of time and kept in tanks, which are filled on a regular schedule that does not depend on tanks being completely empty. Slowing tank depletion could allow putting off tank refill, lessening demand. However, customers would have to estimate when to refill. This could also create problems for distributors scheduling refills. This option would only have significant value if a petroleum
shortage lasts a reasonably long time.

- Use Substitute Products
  Generally, product substitution will occur naturally because of price changes. For example, bio-diesel may become relatively more affordable as petroleum prices increase. However, government could choose to substitute for petroleum products at an earlier date, helping to ease a potential crisis. Supply of substitute products may or may not be available. Consider developing Hydrogen as an energy source. Hydrogen can be used to store energy from clean energy sources. Hydrogen can be created in homes from natural gas for use in fuel cell vehicles from natural gas in multi use systems that also provide hot water and building heat. Natural gas supplies are being extended well into the future by advances in technology and the US leads the world in reserves. Hydrogen combustion vehicles can be used as dual fuel vehicles during a transition period until fuel cell technology is developed. Oil companies can switch from distributing petro products to hydrogen using the same types of distribution technology.

Many of the preceding options can be implemented a number of ways, for example:
  - As voluntary or mandatory;
  - For unspecified or specified amounts (usually as a percentage);
  - For unspecified or specified sectors (government, residential, commercial, or industrial); and
  - For unspecified or specified uses (leisure boating, agriculture, etc.

ELECTRICAL SHORTAGE AND EMERGENCY RESPONSE

Emergency Response

1. General Approach to Energy Emergency Response

The first step in emergency response is to understand the nature of the emergency. If there is an electrical emergency or shortage in Idaho, the following pages provide guidance to key players for emergency mitigation.

All responses to an energy emergency or supply shortfall should be initiated through the Idaho Bureau of Homeland Security. Depending on the topic either the Bureau of Homeland Security or the Office of Energy Resources needs to ensure that strategies and actions within this plan are monitored and initiated through the direction of the Governor’s office and that the plan strategies and actions remain clear and functional. Operations issues are the responsibility of Homeland Security and policy issues belong to the Office of Energy Resources.

Implementation of plan actions during an emergency should be administered and coordinated through the Office of the Governor and the Idaho Bureau of Homeland Security with advisement from the Idaho Public Utility Commission. It is advised that at
the outset of an energy emergency that identified representatives from the Bureau of Homeland Security and the Public Utility Commission meet to develop strategic actions for immediate alleviation of the emergency.

2. Situation Monitoring and Analysis

Task 1. Monitor energy markets and alert the Bureau of Homeland Security and the Public Utilities Commission of findings

Task 2. Assess vulnerability and determine action
Assessment of vulnerability presupposes that an agency of the State is monitoring the status of energy supplies on a continual basis. As of this time there is no directive or support for the Office of Energy Resources to carry out a monitoring task. Responsibility for addressing this action currently resides in the Idaho Bureau of Homeland Security.

➢ Assist in the conduct of situation assessments.

Task 3. Recommend measures. Take action. Monitor results and provide feedback.
Monitoring the result of measures will require authority and some level of financial support to a responsible agency. The Office of Energy Resources will continue to work with the Idaho Bureau of Homeland Security to identify solutions to issues that affect the full support of the actions and process described in this plan.

➢ Insures that this Plan remains dynamic and that new strategies and actions are added as found necessary through meetings with the Governor’s Office, the Idaho Bureau of Homeland Security and the Idaho Public Utilities Commission.

Task 4. Review lessons learned and modify as appropriate.
The Office of Energy Resources will work with the Idaho Bureau of Homeland Security to identify process for reviewing lessons learned in implementation of this plan.

3. Roles and Responsibilities

Idaho Bureau of Homeland Security
➢ Directs the implementation of this plan.
➢ Operates and maintains the WebEOC and Virtual USA systems for centralized incident identification and communication
➢ Issues media regarding the petroleum shortage and public/private directives for implementation of emergency response actions.
➢ Handles media response to emergency or shortage.
➢ Provides direction and oversight to plan development and implementation.
➢ Coordinates with the Governor’s office to issue media regarding the petroleum shortage and public/private directives for implementation of emergency response actions.
- Provide coordination of state response & recovery activities.
- Assist in providing emergency communications.

**Idaho Public Utility Commission**
Works with Bureau of Homeland Security to provide oversight of the Plan and to incorporate this Plan into their energy emergency planning responsibilities.

**Private Sector**
Avista, Bonneville Power Administration (BPA), Idaho Power, and PacifiCorp, are a members of the Western Electricity Coordinating Council (WECC), one of the eight Regional Entities of the North American Electric Reliability Corporation (NERC). PacifiCorp also supports Regional Reliability Coordinators, who monitor voltages, frequencies, and other reliability indices. System operating standards for utilities in the western part of the United States are developed in accordance with NERC and WECC procedures. This provides for a coordinated effort to deal effectively with protracted energy shortage situations, but do not preclude these entities from shedding load in an emergency situation using the company’s Under Frequency and/or Under Voltage Load Shedding schemes to prevent a blackout or voltage collapse.

**Public Sector**
Local, state and federal Public-Private Partnerships are vital to filling gaps in Emergency Management that neither government nor the private sector can manage alone. These partnerships create a vehicle for cooperation that includes resources, volunteers, information and expertise.

These fundamental needs cannot be met without the “Whole Community” We will be able to enhance our service to our neighbors, citizens, first responders and those affected by disasters when public and private sector representatives work together on the same team.

Under the National Response Framework, the private sector is identified as business and industry, trade organizations, voluntary, academia, nonprofit, faith-based, and other non-governmental organizations.

Many of the jurisdictions in Idaho have already established relationships with our private sector partners but in an informal manner that may not be utilized in times of emergency. Private sector may already be members of Local Emergency Planning Committees (LEPC's) or training, exercise or planning committees. This program will provide a mechanism to ensure these relationships are established and maintained at the local and the state levels.
Some of the things the private sector can do to be better prepared are to make a business continuity plan, store file back-ups off site, encourage employee family disaster plans and become involved with their Emergency Management partners.

The public sector can coordinate with the private sector to begin working together as a team, create protocols for assistance to and from our private sector partners, integrate the private sector into Emergency Operations Plans (EOP’s) and include the private sector in training and exercises.

BHS is providing a single point of contact (POC) dedicated to this program. The POC will coordinate with our private sector partners to guide them in their business emergency planning, and coordinate with local and state jurisdictions along with the private sector to bring them together as a team.

Municipalities and Cooperatives are represented by the Idaho Consumer-Owned Utilities Association (IUCA) and number 20 members plus four associate members.

Tribal authorities include the Burns Paiuk, Couer d’Alene, Kootenai, Nez Perce, and Shoshone-Bannock tribes. There is also a Tribal Emergency Response Committee (TERC).

A listing of these public sector entities in contained in the Appendix.

**Natural Gas Transmission and Distribution**

**Critical Assets:**
There are several categories of critical assets associated with natural gas in relation to its capabilities and continuity as an energy source for the State of Idaho.

**Market assets:**
The natural gas market in Idaho is marked by a primary, nearly exclusive supply system. Northwest Pipeline, part of the Williams Companies, is an interstate transmission pipeline providing over 80 percent of Idaho’s gas supply and the vast majority of the Pacific Northwest’s gas supply through a pipeline system that extends from Colorado to the Canadian border in Washington. The system transports natural gas from Canadian supply basins in the north and from Rocky Mountain supply basins in Wyoming, Colorado, Utah and New Mexico. The Gas Transmission Northwest Co. pipeline is an interstate transmission pipeline system supplying gas to areas in northern Idaho as it transports natural gas from Alberta, entering the U.S. at Idaho’s Kingsgate Center on the border with Canada, and then flowing south to California markets. These interstate transmission systems provide natural gas to the local distribution companies.
in Idaho, Intermountain Gas Company, which serves the lower, more populous part of the state and Avista Corporation, which serves communities in northern Idaho.

The natural gas market is regional, national and international in scope, with market factors including the cost, extent and proximity of gas production (extracting the gas from supply reservoirs), immediate and forecast demand which is affected by the weather, changes in production or supply, economic conditions, etc., and by the commodity market itself which buys and sells gas even as it flows within the system. All of these factors affect the direction of gas flow, the amount of gas packed or compressed in the system, the price of gas and its long-term production and availability.

With the advancement of drilling technology in recent years, and the discovery of vast underground reservoirs of shale gas within the U.S., market analysts predict the U.S. now has enough natural gas supply to become a net exporter of natural gas in the future. The shale formations available for continuing production of natural gas include areas that feed both interstate transmission pipeline systems present in Idaho.

**Physical assets:**
The physical assets of both interstate natural gas transmission pipelines and local distribution companies include the pipe infrastructure; facilities such as valves, compression stations, monitors, gauges, and cathodic protection systems (to avert pipeline corrosion); land or land rights; fleets and transportation equipment; buildings and other structures; telecommunication systems including satellite links; stocks of pipe and material available for maintenance or repair; and a wide variety of contractor-operated resources including air transport and monitoring, geologic and environmental assessment tools, and pipeline construction equipment and materials.

Human assets: Local pipeline managers, operators, pipeline integrity specialists, maintenance crews, technicians and support staff. For interstate pipelines, regional gas control staff (who remotely monitor interstate transmission pipelines 24 hours a day, 365 days each year) engineers, inspectors, land and environmental specialists. Commercial, government affairs and public outreach staff who establish and maintain relationships with customers, communities, public agencies and officials, and coordination between transmission and local distribution companies.

**Organizational assets:**
Pipeline safety and integrity management programs to maintain and assure the safety of natural gas infrastructure and operations processes. Support for and coordination with national, regional and state programs to encourage third party excavators to call 811 before digging to minimize the risk of damage to pipeline infrastructure. Established processes in place to ensure compliance with all relevant oversight and regulation of pipeline activities. Internal programs to integrate safety into all operational planning, processes and corporate culture.

**Vulnerabilities:**
The table below is a summary of typical vulnerabilities to interstate transmission and
local distribution natural gas pipelines. The first column of the table lists the type of vulnerability. The second column comments on or describes general mitigation approaches for each vulnerability type. The third and fourth columns rank the likelihood (L) and severity (S) of each vulnerability type for interstate transmission pipelines and local distribution systems, respectively. The Risk Assessment Code (RAC) provides an overall measure of the risk associated with each vulnerability given the threats and the exposure of each vulnerability to these threats. RAC is obtained by multiplying the likelihood of occurrence (L) times the severity (S) of the impact of an occurrence. Thus RAC is the union of occurrence likelihood and severity. The higher the RAC value, the higher the risk associated with that known vulnerability. Vulnerabilities with higher RAC measures require greater investment in implemented safeguard mitigation, continuous monitoring activities and incidence response resources. The weights given to each term is described in the following table.

Table 10 - Natural Gas Vulnerability Matrix

<table>
<thead>
<tr>
<th>Vulnerability Type</th>
<th>Typical Mitigation</th>
<th>Risk Assessment Code (RAC) for Interstate Transmission</th>
<th>Risk Assessment Code (RAC) for Local Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third-party damage</td>
<td>Common Ground coalition efforts; education and outreach to industry, partners. Note: some areas have a single distribution supply line.</td>
<td>L=2, S=1; RAC=2</td>
<td>L=2, S=2; RAC=4</td>
</tr>
<tr>
<td>Corrosion</td>
<td>Cathodic protection systems; regular in-line inspection and maintenance; physical monitoring, inspection</td>
<td>L=1, S=1; RAC=1</td>
<td>L=1, S=1; RAC=1</td>
</tr>
<tr>
<td>Earth movement/natural geo-event</td>
<td>Understanding of soil characteristics, other ambient conditions; monitoring (possibly remote); engineering/design; access and materials ready for repair/maintenance. Note: Idaho is classified as a Zone 3 area (very active seismically), but movement is typically very small.</td>
<td>L=1, S=2; RAC=2</td>
<td>L=1, S=2; RAC=2</td>
</tr>
<tr>
<td>Manufacturing defect</td>
<td>In-line inspection, risk assessment, preventive maintenance/repair</td>
<td>L=1, S=2; RAC=2</td>
<td>L=1, S=2; RAC=2</td>
</tr>
<tr>
<td>Operator/other human error</td>
<td>Training; quality assurance of processes and procedures</td>
<td>L=1, S=1; RAC=1</td>
<td>L=1, S=1; RAC=1</td>
</tr>
<tr>
<td>Technical system error</td>
<td>System controls and safeguards; ongoing quality assurance; training</td>
<td>L=1; S=3; RAC=3</td>
<td>L=1; S=1; RAC=1</td>
</tr>
<tr>
<td>External attack/sabotage (physical/cyber)</td>
<td>Ultimately not preventable; threat assessment and system safeguards; training; preparation to respond</td>
<td>L=2; S=3; RAC=6</td>
<td>L=2; S=3; RAC=6</td>
</tr>
<tr>
<td>Risky land development/</td>
<td>Building relationships and ongoing communications with land</td>
<td>L=2; S=2; RAC=4</td>
<td>L=2; S=2; RAC=4</td>
</tr>
</tbody>
</table>
### Severity Assessment:
The table below lists three levels of severity in the event of a shortage of natural gas. Each level is defined by the expected impact on natural gas users. For each level, the table lists the appropriate type of industry response.

<table>
<thead>
<tr>
<th>Outage Level</th>
<th>User Impact</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level I: Normal</strong></td>
<td>No expected outage</td>
<td>Normal operations</td>
</tr>
<tr>
<td><strong>Level II: Mild shortage</strong></td>
<td>Discomfort; inconvenience</td>
<td>Local response to mitigate</td>
</tr>
<tr>
<td><strong>Level III: Moderate shortage</strong></td>
<td>Insufficient supply to support customers; no threat to public welfare</td>
<td>Public communications. Urgent repair and remediation efforts. Possible curtailing gas to industrial customers</td>
</tr>
<tr>
<td><strong>Level IV: Severe shortage</strong></td>
<td>Public Health/life threatened</td>
<td>Public communications. Urgent and emergency resources committed to repair and remediation; likely need for public resources to complement industry resources. Definite curtailing and need to utilize alternative energy sources.</td>
</tr>
</tbody>
</table>

---

**Petroleum and Transportation Fuels**

**General Approach to Energy Emergency Response**
The first step in emergency response is to understand the nature of the emergency. If there is a petroleum emergency or shortage in Idaho, the following pages provide guidance to key players for emergency mitigation.

All responses to a petroleum emergency or supply shortfall should be initiated through the Idaho Bureau of Homeland Security. Depending on the topic either the Bureau of Homeland Security or the Office of Energy Resources needs to ensure that strategies and actions within this plan are monitored and initiated through the direction of the Governor’s office and that the plan strategies and actions remain clear and functional. Operations issues are the responsibility of Homeland Security and policy issues belong to the Office of Energy Resources.

Implementation of plan actions during an emergency should be administered and coordinated through the Office of the Governor and the Idaho Bureau of Homeland Security with advisement from the Idaho Public Utility Commission. **It is advised that at**
the outset of a petroleum emergency that identified representatives from the Bureau of Homeland Security and the Public Utility Commission meet to develop strategic actions for immediate alleviation of the emergency. If the emergency involves danger to a pipeline or pipeline breach the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety should be contacted.

Situation Monitoring and Analysis

Task 1. Monitor energy markets and alert the Bureau of Homeland Security and the Public Utilities Commission of findings
This includes monitoring to assess changes and trends in the market that could have an impact on the supply of petroleum products, and monitoring of supply and demand during a noted energy shortage. During a petroleum emergency, monitoring is mandatory. However, at any time during an emergency, a determination must be made about the nature and scope of the monitoring effort.

Monitoring and analysis should be commensurate with the crisis. Average, regional data are easy to come by. Specific data, particularly proprietary data, are more difficult to acquire. Broad analyses of supply and demand can be easily done, but may not provide the level of detail necessary to inform the selection of response options. Robust, detailed analyses may consume significant resources. As a crisis worsens, and tradeoffs between options are weighed, more robust analyses may be required.

- Monitors long and short-term petroleum supply issues each month and reports findings and trends to the Idaho Bureau of Homeland Security at monthly meetings.
  - Read weekly, the New York Times; the Wall Street Journal
  - Monthly phone communications with counterparts in Oregon, Washington, and Nevada to share information on issues and trends
  - Monthly review of the Department of Energy’s EIA website
- Coordinate with the Department of Energy as funded to develop procedures for responding to national/regional energy shortages.
  - Work closely with the IPUC on pipeline issues that may affect energy status.
  - Develop media template for use by the Governor’s Office Public Information Officer in issuing a press release regarding a petroleum emergency.

Task 2. Assess vulnerability and determine action
Assessment of vulnerability presupposes that an agency of the State is monitoring the status of energy supplies on a continual basis. As of this time there is no directive or support for the Office of Energy Resources to carry out a monitoring task. Responsibility for addressing this action currently resides in the Idaho Bureau of

---

25 Authority and financial support for these monitoring activities have not been established.
Homeland Security.
- Assist in the conduct of situation assessments.

**Task 3. Recommend measures. Take action. Monitor results and provide feedback.**
Monitoring the result of measures will require authority and some level of financial support to a responsible agency. The Office of Energy Resources will continue to work with the Idaho Bureau of Homeland Security to identify solutions to issues that affect the full support of the actions and process described in this plan.

- Insures that this Plan remains dynamic and that new strategies and actions are added as found necessary through meetings with the Governor’s Office, the Idaho Bureau of Homeland Security and the Idaho Public Utilities Commission.

**Task 4. Review lessons learned and modify as appropriate.**
The Office of Energy Resources will work with the Idaho Bureau of Homeland Security to identify process for reviewing lessons learned in implementation of this plan. Training exercises and review of those events coupled with proper tracking and debriefing of actual events will be required.

**Roles and Responsibilities**

1. **Idaho Bureau of Homeland Security**
   - Directs the implementation of this plan.
   - Issues media regarding the petroleum shortage and public/private directives for implementation of emergency response actions.
   - Handles media response to emergency or shortage.
   - Provides direction and oversight to plan development and implementation.
   - Coordinates with the Governor’s office to issue media regarding the petroleum shortage and public/private directives for implementation of emergency response actions.
   - Provide coordination of state response & recovery activities.
   - Assist in providing emergency communications.

2. **Idaho Public Utility Commission**
   - Works with Bureau of Homeland Security to provide oversight of the Plan and to incorporate this Plan into their energy emergency planning responsibilities.

3. **U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration Office of Pipeline Safety**
   - Regulate pipelines and expects reports within two hours of the incident.

4. **Private Sector**

---

*Please refer to the Idaho Public Utilities Commission for current contact information*
A key principle in Idaho’s response to petroleum emergencies is that petroleum companies\(^{27}\) and supporting industries have the knowledge, capability and responsibility to solve many problems and to end the emergency. The state looks to the petroleum and bio-fuel industries for information and advice, and seeks to support the affected energy industry in its response efforts. The state is an important actor, with key authorities and capabilities, but is truly a minority partner, until such a time as a shortage becomes severe.

In any emergency, public health and safety is goal one. In a petroleum emergency, high prices and long lines at gas stations can lead to frustration, anger and confrontation. In electricity or natural gas emergency, risks to health and safety result from loss of service, for example, the inability to heat homes in the winter.

Enforcement is key to handling a shortage appropriately and fairly. Many retail outlets might find it difficult to encourage compliance, and if non-compliance becomes widespread, it too could cause frustration. Police forces are not likely to provide enforcement, especially if the controls are implemented voluntarily.

Below are some alternative demand reduction actions that can be taken by the petroleum industry in a non-biased response to a shortage.

- Gasoline stations display flags when fuel is available.
- Limits absolute number of vehicles that can purchase on any given day, reducing potential for long lines.
- Setting a minimum purchase amount reduces topping off. Tank topping means more visits to the station, lengthening lines. Restricting tank topping may complicate things for a distance traveler who would like to top off a tank at the start of a trip.
- Setting a maximum purchase amount limits hoarding. Hoarding exacerbates a shortage setting aside needed fuel.
- Restrictions on the number, size, and type of tank customers are allowed to fill at retail stations limits hoarding and the temptation to set up home based service stations.
- Increases the probability that a dispersed number of stations are open overnight and on weekends, so motorists working odd hours have access

\(^{27}\) Petroleum companies and supporting industries are partially identified as; refiners, wholesale marketers, pipeline companies (crude and products) distribution companies, retail marketers, petroleum industry associations. \(^{27}\) Petroleum companies and supporting industries are partially identified as; refiners, wholesale marketers, pipeline companies (crude and products) distribution companies, retail marketers, petroleum industry associations.
to gasoline and to minimize the generation of long lines at gas stations prior to extended periods of closure (such as over weekends).

Mitigation strategies

1st Determine type and extent of emergency and expected timeline for shortfall or extent of emergency and the direct impact on life and safety of Idaho citizens and on the Idaho environment.
   - Communicate with local or affected police and emergency services and pipeline/petroleum distribution companies to determine response and readiness for response.
   - Immediately communicate with the supply companies to determine if they are following their response protocol and to determine the type and severity of the emergency or shortage.
   - Identify the energy system critical infrastructure involved/affected (i.e. pipeline, tanker, etc.)
   - Identify the geographic area involved/affected.
   - Identify business, industry, institutions, and/or government operations, and the general public affected.
   - Determine the magnitude of the damage or problem and estimated shortage/outage timeframe; and

2nd Ensure that the Governor and staff have been notified of the emergency.

3rd All state agencies will assist, as necessary, the Idaho Bureau of Homeland Security in getting word of the emergency out to the affected public and private parties.

4th Seek to assist industry in stabilization of the supply in their repair or mitigation of a pipeline breach; assist in mobilizing alternate source of supplies.
   - Identify and coordinate the provision of temporary, alternate, or interim energy solutions/sources of emergency fuel.
   - Identify requirements and establish priorities to repair damaged distribution systems.
   - Develop an objective-based action plan to respond and recover from the energy emergency.
   - Coordinate the implementation of proposed response actions.
   - Coordinate the distribution, conservation, curtailment and restoration of Idaho’s petroleum resources as needed.

5th Assistance in implementation of public and private assistance programs may include:
   - Secure transportation and distribution of essential food and other essential living products.
   - Provide fuel for critical agricultural needs such as planting and harvest.
• Provide fuel oil for heating buildings when it is the only heat source.
• Provide fuel for essential services such as emergency vehicles, police transport, and medical transport.
• Provide public transport for essential medical, emergency, police and other service personnel to and from work.
• Critical and essential city services such as wastewater infrastructure and water supply infrastructure may need fuel if running on standby power generators after a disaster that has disrupted normal energy supplies.
• Street departments may need fuel to effect debris removal and allow access to critical infrastructure components for repair or to allow access for rescues.

Product Pipeline Vulnerabilities

Document type: Conference Proceeding Paper
Part of: Pipeline 2001: Advances in Pipelines Engineering & Construction
Abstract: A GIS based geologic hazards assessment was completed for Chevron’s product pipelines extending from Salt Lake City, Utah, to Boise, Idaho. The analysis involved gathering a significant volume of geologic data into a Geographic Information System (GIS) database. Ten hazards were modeled using criteria and weightings for individual inputs. Geologic and modeling algorithms were used to produce grid products for each hazard. Models included both qualitative interpretations for low hazard events, and quantitative evaluations of seismic and hydrologic hazards. The resulting GIS-based geo-hazard potential maps provided spatial qualitative and quantitative information on the geo-hazard potential and risk along a 317 mile long pipeline corridor.

Key features of the system include the location of nearby faults, history and magnitude of nearby seismic events, hydrological features near the line that will be used to identify sites where flooding or erosion might occur, potential landslide hazard areas, and location of mine sites near the line. Chevron's goal is to better understand the potential for geological hazards to impact the pipeline. Chevron will use this new information as part of a comprehensive assessment of pipeline system risks.

28 From: http://cedb.asce.org/cgi/WWWdisplay.cgi?0103335
Action Options/Implementation

Action 1: Utilize Emergency Contact Listings

Idaho State Police

Boise/Ada County Area
- St. Lukes Medical Center
- St. Alphonsus Medical Center
- Ada County Emergency Management

Idaho Disaster Services, all counties

Idaho Government
- Office of the Governor
- Office of Energy Resources
- Idaho Bureau of Homeland Security
- Idaho Public Utility Commission

Idaho Counties/Tribal Contacts

Surrounding States
- Nevada - Division of Energy Management
- Oregon - Office of Energy
- Washington - Department of Community Trade & Economic Development
- Utah – Office of Emergency Services
- Utah - State Energy Advisor's Office

Electric Industry
- Idaho Power Company
- Rocky Mountain Power
- Avista
- Bonneville Power Administration (BPA)

Natural Gas Pipelines
- Northwest Pipeline Company
- Gas Transmission Northwest Pipeline

Natural Gas Distribution
- Avista
- Intermountain Gas
- Questar
Petroleum Pipelines
- Yellowstone Pipe Line Co.\textsuperscript{29}
- Chevron Pipeline Co.\textsuperscript{30}
- Idaho Petroleum Marketers and Convenience Store Association
- Western Petroleum Marketers Association (WPMA)

**Action 2: Monitoring Protocol**
The Office of Energy Resources will monitor national and international trends in imports and domestic production and make findings available to the Governor as needed. This action frames the bigger picture of international and national production and supply. Issues that staff will look for are trends in national oil supply and distribution, current costing information and costing trends, and increase or decrease of per capita fuel use.

In the case of a petroleum supply emergency the Bureau of Homeland Security will monitor emergency status and mitigation efforts.

The Office of Energy Resources, with the following neighboring energy offices, will coordinate to provide information sharing and strategy coordination:
- Idaho Contact: Office of Energy Resources
- Nevada Contact: State of Nevada Division of Energy Management
- Oregon Contact: Oregon Office of Energy
- Washington Contact: Washington Department of Community, Trade & Economic Development.

**Action 3: Monitoring and analysis of shortage**

**Action 4: Coordinate with Idaho Public Utilities Commission**
The Office of Energy Resources will update the Idaho Public Utilities Commission regarding the trends and issues surrounding petroleum availability and potential shortfalls. In addition, the IPUC will be kept in the communications loop if a petroleum emergency should occur.

**Public Information**
Providing the public with information about an energy emergency is generally regarded as the most important government response role. It is clearly the action, other than

\textsuperscript{29} The Office of Energy Resources has on file the ConocoPhillips April, 2008 Emergency Response Plan
\textsuperscript{30} The Office of Energy Resources has on file the Chevron Pipeline Company Emergency Response Plan
monitoring, most often implemented, and implemented if any action is needed at all.

During an emergency, the “word” of the state, particularly the Governor, should be unbiased, authoritative, and caring. The public expects to receive accurate information about the emergency that allows them to protect themselves, their property and their interests, to the best of their ability. In addition, the state has the necessary authorities, contacts, facilities, and experience to address the public at a moment’s notice and under all circumstances.

There are two key reasons to provide information about an energy emergency to the public:
- to help citizens weather the emergency; and
- to tell citizens how to help end the emergency.

1. **Media responses**
The Governor’s office will need a press release for the top 3 levels of emergency (see page 20. Background information provides a context for the current situation. The public will want to know how we got here, and where we might be going.

- **Situation Analyses and Progress Reports**
  A good situation analysis will inform the public about the nature, extent, and possible duration of the emergency; also the potential costs and impacts of the emergency. Allows the public to consider alternatives they can take to address their own situation. Explains what is necessary to end the emergency.

- **Response Plans and Updates**
  Informs the public about steps being taken, or considered, to address the emergency, and how that might affect them. Explains any requests or directives made to the public. Meant to calm the public, show that the emergency can and will be solved, and how they can help.

- **Tips and Instructions**
  Practical information provided to the public to help them get through the emergency, including:
  - Where and how to get good information;
  - Survival options, tips and strategies; and
  - Demand reduction options, tips and strategies.

2. **Media contacts**
   Please refer to the Office of the Governor and/or Bureau of Homeland Security).

3. **Media Options**
   - Analyses, reports, memoranda, presentations.
- Press releases, editorials, public service announcements, media spots, billboards, bus posters, wraps and cards.
- Fact and tip sheets, letters and bill stuffers, e-mail.
- Web pages, hot lines (live/recorded).
- Public meetings, classrooms, workshops.

**Plan Maintenance**

Regular, bi-annual updates are made to the plan as necessary to keep industry and government contacts updated.

Copies of this plan are distributed to the identified contacts, the Office of Energy Resources, the Bureau or Homeland Security and the Idaho Public Utilities Commission.
Appendices

Idaho Consumer Owned Utility Associates Members

Tribal/County Contact Information

Vulnerability/Risk Assessment Tools

Petroleum Supply Shortage

DOE Cyber Security Maturity Model

Glossary of Terms
Idaho Consumer Owned Utility Associates Members

Member Coop/City Name

- City of Albion
- City of Bonners Ferry
- City of Burley
- Clearwater Power Company
- Fall River Rural Electric
- City of Heyburn
- Idaho County Light & Power
- City of Idaho Falls
- Inland Power & Light Co.
- Kootenai Electric Cooperative
- Lost River Electric Coop
- Lower Valley Energy
- Northern Lights, Inc.
- City of Plummer
- Raft River Rural Electric
- City of Rupert
- Salmon River Electric Coop
- City of Soda Springs
- South Side Electric Lines
- United Electric Co.op
- City of Weiser

Associate Members:

- Idaho Energy Authority
- NW Energy Efficiency Alliance
- PNGC Power
- Utah Associated Municipal Power Systems
County/Tribal Contacts

- Ada City/County Emergency Management
- Adams County Civil Defense
- Bannock County Emergency Services
- Bear Lake County Emergency Services
- Benewah County Emergency Management
- Bingham County Emergency Management Services
- Blaine County Disaster Services
- Boise County Emergency Management
- Bonner County Emergency Management
- Bonneville County Emergency Management
- Boundary County Emergency Services
- Burns-Paiute Tribe
- Butte County Sheriff's Office
- Camas County Disaster Services
- Canyon County Emergency Management
- Caribou County Emergency Services
- Cassia County Emergency Management
- Clark County Civil Defense
- Clearwater County Emergency Management
- Coeur d'Alene Tribe
- Custer County
- Elmore County Disaster Services
- Franklin County Emergency Services
- Fremont County Emergency Management
- Gem County Emergency Management
- Gooding County Disaster Services
- Idaho County
- Jefferson County Emergency Management
- Jerome County Office of Emergency Management
- Kootenai County Office of Emergency Management
- Kootenai Tribe of Idaho
- Latah County Disaster Services
- Lemhi County Emergency Services
- Lewis County Emergency Management
- Lincoln County Emergency Management
- Madison County Homeland Security
- Minidoka County Sheriff's Office
- Nez Perce County Office of Emergency Management
- Nez Perce Tribe
- Oneida County Emergency Services
- Owyhee County Emergency Services
- Payette County Disaster Services
- Power County Disaster Services
- Shoshone County
- Shoshone-Bannock Tribes
- Teton County Emergency Management
- Tribal Emergency Response Committee (TERC)
- Twin Falls County Emergency Services
- Valley County Disaster Services
- Washington County Disaster Services
Vulnerability Assessment Tools

Figure 31 - Risk Assessment Template

Threat Groups
1. Deliberate (terrorists, criminals, hackers delinquents, employees)
2. Natural (hurricanes, tornadoes, floods, wildfires, earthquakes)
3. Accidental (pipeline rupture, levee breaches, chemical spills, power outages, nuclear or biological contamination)
4. Systemic (physical inability of energy delivery systems to meet demand)
Table 11 - FEMA Declared Disasters - Idaho

<table>
<thead>
<tr>
<th>Number</th>
<th>Declared</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2853</td>
<td>08/26/2010</td>
<td>Hurd Fire</td>
</tr>
<tr>
<td>1927</td>
<td>07/27/2010</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>1781</td>
<td>07/31/2008</td>
<td>Flooding</td>
</tr>
<tr>
<td>2726</td>
<td>08/30/2007</td>
<td>Cascade Fire Complex</td>
</tr>
<tr>
<td>2725</td>
<td>08/30/2007</td>
<td>East Zone Fire Complex</td>
</tr>
<tr>
<td>2724</td>
<td>08/28/2007</td>
<td>Castle Rock Fire</td>
</tr>
<tr>
<td>1630</td>
<td>02/27/2006</td>
<td>Severe Storms and Flooding</td>
</tr>
<tr>
<td>3244</td>
<td>09/13/2005</td>
<td>Hurricane Katrina Evacuation</td>
</tr>
<tr>
<td>1592</td>
<td>07/06/2005</td>
<td>Heavy Rains and Flooding</td>
</tr>
<tr>
<td>1341</td>
<td>09/01/2000</td>
<td>Wildfires</td>
</tr>
<tr>
<td>1177</td>
<td>06/13/1997</td>
<td>Flooding</td>
</tr>
<tr>
<td>Number</td>
<td>Declared</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>----------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>1154</td>
<td>01/04/1997</td>
<td>Severe Storms/Flooding</td>
</tr>
<tr>
<td>1102</td>
<td>02/11/1996</td>
<td>Storms/Flooding</td>
</tr>
<tr>
<td>697</td>
<td>02/16/1984</td>
<td>ICE JAMS, FLOODING</td>
</tr>
<tr>
<td>694</td>
<td>11/18/1983</td>
<td>Earthquake</td>
</tr>
<tr>
<td>624</td>
<td>05/22/1980</td>
<td>VOLCANIC ERUPTION, MT. ST. HELENS</td>
</tr>
<tr>
<td>2038</td>
<td>08/08/1979</td>
<td>20-mile Fire</td>
</tr>
<tr>
<td>2029</td>
<td>08/20/1977</td>
<td>Wilson Creek Fire</td>
</tr>
<tr>
<td>3040</td>
<td>05/05/1977</td>
<td>Drought</td>
</tr>
<tr>
<td>505</td>
<td>06/06/1976</td>
<td>Dam Collapse</td>
</tr>
<tr>
<td>415</td>
<td>01/25/1974</td>
<td>SEVERE STORMS, SNOWMELT, FLOODING</td>
</tr>
<tr>
<td>324</td>
<td>03/02/1972</td>
<td>SEVERE STORMS, EXTENSIVE FLOODING</td>
</tr>
<tr>
<td>231</td>
<td>08/30/1967</td>
<td>Forest Fires</td>
</tr>
<tr>
<td>186</td>
<td>12/31/1964</td>
<td>Heavy Rains &amp; Flooding</td>
</tr>
<tr>
<td>143</td>
<td>02/14/1963</td>
<td>FLOODS</td>
</tr>
<tr>
<td>120</td>
<td>02/14/1962</td>
<td>FLOODS</td>
</tr>
<tr>
<td>116</td>
<td>06/26/1961</td>
<td>FLOODS</td>
</tr>
<tr>
<td>105</td>
<td>07/22/1960</td>
<td>Fires</td>
</tr>
<tr>
<td>76</td>
<td>05/27/1957</td>
<td>FLOOD</td>
</tr>
<tr>
<td>55</td>
<td>04/21/1956</td>
<td>FLOODS</td>
</tr>
</tbody>
</table>
**Petroleum Supply Shortage**

When petroleum products are in short supply, either locally or regionally, it is sometimes important to distinguish between customers. For example, emergency response vehicles should not go without fuel. Crops should not be lost.

Most allocation programs are implemented directly by energy companies. For example, oil companies allocate fuel to distributors to limit hoarding. Electricity companies restore service to telecommunications facilities, hospitals, police, and fire stations first (if possible).

If the governor should consider implementing mandatory fuel allocation, state law may require that he or she give high priority to supplying vital public services, including, but not limited to:

- essential governmental operations
- public health and safety functions
- emergency services
- public mass transportation systems
- food production and processing facilities, including the provision of water to irrigated agriculture
- energy supply facilities

The following descriptions identify possible scenarios for fuel allocation under a shortage situation:

1. Oil Company Fuel Allocation to Distributors
   On their own initiative, oil companies occasionally allocate fuel to distributors to limit hoarding. Fuel might be allocated at any percentage, e.g. 110 percent, 100 percent, and 70 percent. Allocation at 100 percent and above is purely to limit hoarding or movement of fuel out of region. Allocation below 100 percent is recognition that there is insufficient fuel to meet normal demand. A distinction must be made between oil companies’ contract and spot customers, because allocation and terms of sale may differ between the two. For example, a company may not have any fuel available for spot sales.

2. Emergency Fuel Delivery (Case by Case)
   Occasionally, the state will receive requests for access to fuel. Under such circumstances the Governor’s designated staff will communicate with oil companies, assesses the situation, and may request that oil companies deliver fuel (or resolve the problem in some manner). In certain circumstances, the Idaho Department of Homeland Security might work with oil companies in an effort to set up a localized fuel allocation program. For example, if a city or county was experiencing extreme shortages due to a pipeline breakage or other circumstance that caused the area to be isolated, the Idaho Bureau of Homeland Security might ask oil companies to set up a local program of fuel allocation, to ensure that certain customers (i.e. emergency vehicles) received sufficient fuel.
3. Emergency Fuel Storage Management
Some state agencies have significant fuel storage capability. For example, the Department of Transportation has its own storage tanks and pumping stations for servicing its trucks. Transit companies also often have significant storage capacity and pumping facilities. During an emergency, it may be helpful to identify and manage these facilities in a coordinated manner to maintain inventory and supply priority customers. Mandate and incentivize fuel storage onsite at critical facilities such as city wastewater, water, emergency services, street departments, hospitals, shelters, communications facilities, markets, and fuel retailers. Require plans to use and rotate supplies to keep stockpiles fresh. Establish methods to effect commerce in the absence of normal energy supplies. How will people pay without power, for example, ATMs and credit card machines?

Pipeline Vulnerability
How vulnerable are the pipelines? The following is a January 1, 2008 excerpt from Draft Document 13 of the Idaho Energy Security Draft regarding pipeline vulnerability.

Less attention is given in the Idaho Energy Plan (reference is to the 2007 Idaho Energy Plan) to the geopolitical events in Latin America and its problematic impacts on the Idaho economy, so too goes the discussion and focus about Idaho’s physical dependency on the relatively few pipelines supplying the state. With Idaho’s petroleum and natural gas being supplied by only two oil pipelines and two natural gas pipelines, Idaho’s economy and consumers could be negatively impacted overnight by any terrorist or natural disaster incident that could halt the flow of these resources.

Despite the fact that Idaho’s natural gas and petroleum pipelines are not as vast as the 800-mile Alaska Pipeline, which has been bombed, shot, and sabotaged, Idaho’s pipelines are extensive and lie in expansive un-patrolled rural areas. As such, without the manpower, capability or technology to patrol these pipelines, the Pentagon has declared such rural areas as “indefensible.”

Petroleum products could be shipped to Idaho via other transportation means, should such an incident occur, which would significantly raise the cost of oil products in Idaho. Unfortunately, the nearly 400,000 Idaho consumers who rely on natural gas would be less fortunate as natural gas can currently only be transported via a natural gas pipeline.

Compounding the reliance on this physical infrastructure, Idaho’s natural gas and petroleum pipelines share routes with several major power lines. In specific locations, any attack or disturbance could incidentally knockout the existing pipelines as well as the major power line in the vicinity.

For decades, the state of Idaho and its consumers have relied on out-of-state energy resources to fuel the economy. Rarely, if ever, has the flow of these imported resources...
into the State become a liability or concern for Idaho’s policy-makers. As such, the State of Idaho has done little, compared to surrounding states, to aggressively plan for a future less dependent on imported resources. Unfortunately, this status-quo mindset and a failure to strategically plan will not pay dividends in the long-term. This fact leaves Idaho extremely vulnerable to energy price increases, as a result of the amplified global and domestic demand, and remiss in developing the necessary infrastructure that will be required by any pending federal legislation aimed at reducing greenhouse gases and vehicle emissions, or regulation around renewable energy portfolio standards and renewable fuel standards.

Probable Causes of Shortages

A second excerpt is given below from the January 1, 2008 Idaho Energy Security Draft. This comment is in regard to price volatility and probabilities for petroleum shortages.

While Idaho’s total consumption of petroleum products is low compared to surrounding states, currently, Idahoans consume the most automotive gas in the Northwest per capita, at an average of 8.5 gallons per person per week. To support this need, Idahoans import nearly $2B in petroleum products annually from the oil refineries in Montana and Utah.

These regional refineries are impacted by world markets, where natural and man-made disasters (Katrina, 9/11) and other geopolitical events that can significantly drive up the price of oil. Idahoans and all Americans are economically held hostage with the price of oil hovering above $95 a barrel and the weakening U.S. dollar. If these prices stay around the $95 to $100 mark, the potential of gasoline to go to $4.50 a gallon is quite real according to many economists. Add this to the U.S. dollar at or near an all-time low against foreign currencies-- while a low U.S. dollar allows U.S. exports to increase, it also increases the economic burden of importing resources.

In addition to the instability in the Middle East and its impact on domestic oil prices, a recent Government Accountability Office (GAO) report determined that a sudden loss or re-direction of Venezuelan oil on the world market could raise oil prices $11 resulting in a loss of $23 billion in U.S. domestic production. Should the political regimes in Latin America of Hugo Chavez in Venezuela, Evo Morales in Bolivia, and Rafael Correa in Ecuador form an ad-hoc oil cartel and punish the United States by diverting oil resources, even temporarily, the economic impact on the United States would be far greater than the initial losses in production.

With Idaho’s agriculture sector (and others) steadfastly dependent on oil for transportation and production, with no ability to influence these market factors, and virtually nothing as a back-up plan to weather their impact, Idaho’s economic production in certain sectors could be severely and permanently thwarted. If anything, this GAO report highlights that the cushion between supply and demand has become too small for the United States to absorb and shutdowns in even the smallest oil-producing countries will absolutely have an impact on Idaho and all U.S. consumers because of this current reliance.
DOE Cyber Security Maturity Model

Energy Department Develops Tool with Industry to Help Utilities Strengthen Their Cybersecurity Capabilities
June 28, 2012 - 10:24am

WASHINGTON -- As part of the Obama Administration’s commitment to protecting America’s critical energy infrastructure, U.S. Energy Secretary Steven Chu today announced the release of a new Cybersecurity Self-Evaluation Survey Tool for utilities that will strengthen protection of the nation’s electric grid from cybersecurity threats. Today’s announcement is part of a broader White House initiative to develop a Cybersecurity Capability Maturity Model for the electricity sector, which aims to support the private sector and utilities nationwide in determining their current cybersecurity resources and identifying additional steps to help strengthen their defenses.

“Strengthening cybersecurity of the nation’s electric grid is a shared responsibility that requires constant vigilance, commitment, and cooperation among the public and private sectors,” said Secretary Chu. “The new Cybersecurity Self-Evaluation Survey Tool for utilities is vitally important in today’s environment where new cyber threats continue to emerge. Adoption by the electric sector will further protect critical infrastructure and, at the same time, provide an invaluable view of the industry’s cybersecurity capabilities.”

The Cybersecurity Self-Evaluation Tool utilizes best practices that were developed for the Electricity Subsector Cybersecurity Capability Maturity Model Initiative, which involved a series of workshops with the private sector to draft a maturity model that can be used throughout the electric sector to better protect the grid. Maturity models, which rely on best practices to identify an organization’s strengths and weaknesses, are widely used by other sectors to improve performance, efficiency and quality.

The development of the Cybersecurity Capability Maturity Model was led by the Energy Department in partnership with the Department of Homeland Security (DHS) and in close collaboration with industry, other Federal agencies, Carnegie Mellon University’s Software Engineering Institute, and other stakeholders. More than a dozen utilities nationwide participated in pilot evaluations to help refine the model.

The Cybersecurity Self-Evaluation Tool itself helps electric utilities and grid operators identify opportunities to further develop their own cybersecurity capabilities by posing a series of questions that focus on areas including situational awareness and threat and vulnerability management. A report is then generated that can be used to identify potential gaps and score the organization’s cybersecurity capabilities.

It is recommended that utilities then develop a prioritized plan of action for addressing gaps, conduct evaluations periodically to track their progress with improving their cybersecurity capabilities, and consider additional evaluations when major changes
occur in the business, technology or threat environments. Utilities that choose to provide their anonymous self-assessment results to the Energy Department will receive reports with anonymous benchmarking results of all utilities participating in the “opt-in” program.

The Maturity Model is available online. Utilities can request the Cybersecurity Self Evaluation Survey Tool by contacting the Energy Department at ES-C2M2@hq.doe.gov. The Energy Department is also offering facilitated self-evaluations on request.

The Energy Department has a long history of working closely with Federal partners, including DHS, on cybersecurity of the North American electric grid. The Cybersecurity Maturity Model and Self Evaluation Survey Tool align with the Roadmap to Achieve Energy Delivery Systems Cybersecurity which was developed by industry, facilitated by the Energy Department, and released in September 2011. The Roadmap provides a strategic framework to achieve the vision that, over the next decade, resilient energy delivery systems are designed, installed, operated, and maintained to survive a cyber incident while sustaining critical functions.
### Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aviation Fuel</td>
<td>A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in aviation reciprocating engines. Fuel specifications are provided in ASTM Specification D 910 and Military Specification MIL-G-5572.</td>
</tr>
<tr>
<td>Balancing Authority</td>
<td>The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a Balancing Authority Area, and supports Interconnection frequency in real time.</td>
</tr>
<tr>
<td>Balancing Authority Area</td>
<td>The collection of generation, transmission, and loads within the metered boundaries of the Balancing Authority. The Balancing Authority maintains load-resource balance within this area.</td>
</tr>
<tr>
<td>Barrel</td>
<td>A unit of volume equal to 42 U.S. Gallons.</td>
</tr>
<tr>
<td>Biofuel</td>
<td>A renewable liquid fuel made from plant matter rather than fossil fuels. The current primary biofuels are ethanol and biodiesel.</td>
</tr>
<tr>
<td>Bulk Electrical System</td>
<td>As defined by the Regional Reliability Organization, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. Radial transmission facilities serving only load with one transmission source are generally not included in this definition.</td>
</tr>
<tr>
<td>Contract Path</td>
<td>An agreed upon electrical path for the continuous flow of electrical power between the parties of an Interchange Transaction.</td>
</tr>
<tr>
<td>Critical Assets</td>
<td>Facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of the Bulk Electric System.</td>
</tr>
<tr>
<td>Critical Cyber Assets</td>
<td>Cyber Assets essential to the reliable operation of Critical Assets.</td>
</tr>
<tr>
<td>Crude oil</td>
<td>A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.</td>
</tr>
<tr>
<td>Cyber Assets</td>
<td>Programmable electronic devices and communication networks including hardware, software, and data</td>
</tr>
<tr>
<td>Cyber Security Incident</td>
<td>Any malicious act or suspicious event that:</td>
</tr>
<tr>
<td></td>
<td>• Compromises, or was an attempt to compromise, the Electronic Security Perimeter or Physical Security Perimeter of a Critical Cyber Asset, or;</td>
</tr>
<tr>
<td></td>
<td>• Disrupts, or was an attempt to disrupt, the operation of a Critical Cyber Asset.</td>
</tr>
<tr>
<td>Diesel, No. 1</td>
<td>A light distillate fuel oil that has a distillation temperature of 550 degrees Fahrenheit at the 90-percent recovery point and meets the specifications defined in ASTM Specification D 975.</td>
</tr>
<tr>
<td>Distillate Fuel, No. 1</td>
<td>A light petroleum distillate that can be used as either a diesel fuel or a fuel oil.</td>
</tr>
<tr>
<td>Emergency or BES Emergency</td>
<td>Any abnormal system condition that requires automatic or immediate manual action to prevent or limit the failure of transmission facilities or generation supply that could adversely affect the reliability of the Bulk Electric System.</td>
</tr>
<tr>
<td>Energy Emergency</td>
<td>A condition when a Load-Serving Entity has exhausted all other options and can no longer provide its customers' expected energy requirements.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Ethanol</td>
<td>The same type of alcohol found in alcoholic beverages. It can be used as a fuel, mainly as a biofuel alternative to gasoline, and is widely used in cars in Brazil. Because it is easy to manufacture and process, and can be made from very common crops, such as sugar cane and maize (corn), it is an increasingly common alternative to gasoline in some parts of the world. Ethanol produced from cellulose is known as cellulosic ethanol or ceetol. Most of the ethanol used for fuel in Idaho is produced in Caldwell, Idaho from potato waste.</td>
</tr>
<tr>
<td>Fuel Oil, No. 1</td>
<td>A light distillate fuel oil that has distillation temperatures of 400 degrees Fahrenheit at the 10-percent recovery point and 550 degrees F at the 90-percent recovery point and meets the specifications defined in ASTM Specification D 396</td>
</tr>
<tr>
<td>Independent Power Producer</td>
<td>Any entity that owns or operates an electricity generating facility that is not included in an electric utility’s rate base. This term includes, but is not limited to, cogenerators and small power producers and all other nonutility electricity producers, such as exempt wholesale generators, who sell electricity.</td>
</tr>
<tr>
<td>Interruptible Load or</td>
<td>Demand that the end-use customer makes available to its Load-Serving Entity via contract or agreement for curtailment.</td>
</tr>
<tr>
<td>Interruptible Demand</td>
<td></td>
</tr>
<tr>
<td>Liquefied Petroleum Gases (LPG)</td>
<td>A group of hydrocarbon-based gases derived from crude oil refining or natural gas fractionation. They include: ethane, ethylene, propane, propylene, normal butane, butylenes, isobutene, and isobutyl.</td>
</tr>
<tr>
<td>Load</td>
<td>An end-use device or customer that receives power from the electric system.</td>
</tr>
<tr>
<td>Native Load</td>
<td>The end-use customers that the Load-Serving Entity is obligated to serve</td>
</tr>
<tr>
<td>Operating Procedure</td>
<td>A document that identifies specific steps or tasks that should be taken by one or more specific operating positions to achieve specific operating goal(s). The steps in an Operating Procedure should be followed in the order in which they are presented, and should be performed by the position(s) identified. A document that lists the specific steps for a system operator to take in removing a specific transmission line from service is an example of an Operating Procedure.</td>
</tr>
</tbody>
</table>
| Peak Demand                   | • The highest hourly integrated Net Energy for Load within a Balancing Authority Area occurring within a given period (e.g., day, month, season, or year).  
  • The highest instantaneous demand within the Balancing Authority Area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Pro Forma Tariff              | Usually refers to the standard OATT and/or associated transmission rights mandated by the U.S. Federal Energy Regulatory Commission Order No. 888.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Reliability Coordinator       | The entity that is the highest level of authority who is responsible for the reliable operation of the Bulk Electric System, has the Wide Area view of the Bulk Electric System, and has the operating tools, processes and procedures, including the authority to prevent or mitigate emergency operating situations in both next-day analysis and real-time operations. The Reliability Coordinator has the purview that is broad enough to enable the calculation of Interconnection Reliability Operating Limits, which may be based on the operating parameters of transmission systems beyond any Transmission Operator’s vision.                                                                                              |
| Reserve Sharing Group         | A group whose members consist of two or more Balancing Authorities that collectively maintain, allocate, and supply operating reserves required for each Balancing Authority’s use in recovering from contingencies within the group. Scheduling energy from an Adjacent Balancing Authority to aid recovery need not constitute reserve sharing provided the transaction is
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ramped</td>
<td>ramped in over a period the supplying party could reasonably be expected to load generation in (e.g., ten minutes). If the transaction is ramped in quicker (e.g., between zero and ten minutes) then, for the purposes of Disturbance Control Performance, the Areas become a Reserve Sharing Group.</td>
</tr>
<tr>
<td>Special Protection Scheme (SPS) or Remedial Action Scheme (RAS)</td>
<td>An automatic protection system designed to detect abnormal or predetermined system conditions, and take corrective actions other than and/or in addition to the isolation of faulted components to maintain system reliability. Such action may include changes in demand, generation (MW and Mvar), or system configuration to maintain system stability, acceptable voltage, or power flows. An SPS does not include (a) under-frequency or under-voltage load shedding or (b) fault conditions that must be isolated or (c) out-of-step relaying (not designed as an integral part of an SPS). Also called Remedial Action Scheme.</td>
</tr>
<tr>
<td>Tie Line</td>
<td>A circuit that connects two Balancing Authority Areas.</td>
</tr>
<tr>
<td>Transmission</td>
<td>An interconnected group of lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.</td>
</tr>
<tr>
<td>Transmission Constraint</td>
<td>A limitation on one or more transmission elements that may be reached during normal or contingency system operations.</td>
</tr>
<tr>
<td>Transmission Line</td>
<td>A system of structures, wires, insulators and associated hardware that carry electric energy from one point to another in an electric power system. Lines are operated at relatively high voltages varying from 69 kV up to 765 kV, and are capable of transmitting large quantities of electricity over long distances.</td>
</tr>
<tr>
<td>Transmission Operator</td>
<td>The entity responsible for the reliability of its “local” transmission system, and that operates or directs the operations of the transmission facilities.</td>
</tr>
</tbody>
</table>