

Louisiana Energy Topic

Department of Natural Resources

Technology Assessment Division

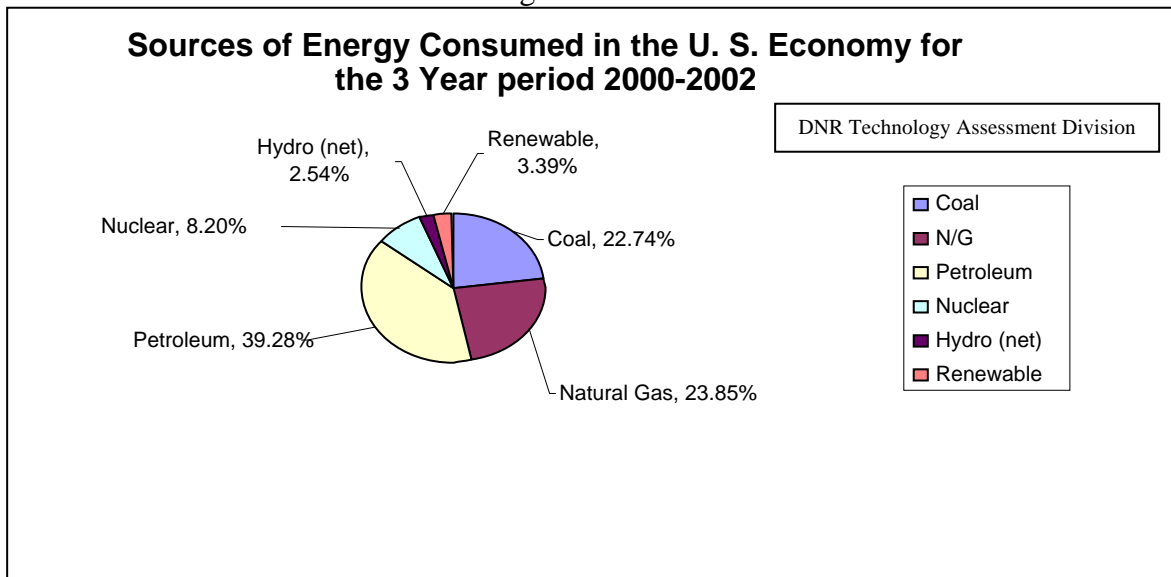
A Supplement to LOUISIANA ENERGY FACTS on Subjects of Special Interest

AMERICA'S WETLANDS: ENERGY CORRIDOR TO THE NATION

**The Department of Energy's (DOE) Strategic Petroleum Reserve (SPR)
Part 2 of 7
by
Bob Sprehe, Energy Economist**

The U. S. uses energy to leverage its physical and intellectual capabilities to raise living standards. Nearly 63% of that energy comes from crude oil and natural gas. These two fossil fuels, especially crude oil, have dominated the energy supply equation for the U. S. economy, not only in the past 100 years, but likely into the foreseeable future.

Figure 1



The importance of crude oil imports to the U. S. economy becomes quite clear from the American Petroleum Institute (API) data tracing historical crude oil production and imports (Figure 2). Over 56% of America's supply of crude oil now comes from foreign imports. With this magnitude of import reliance, the need for a strategic reserve of crude oil supply as a hedge against supply disruptions which could destabilize the U. S. economy is readily apparent.

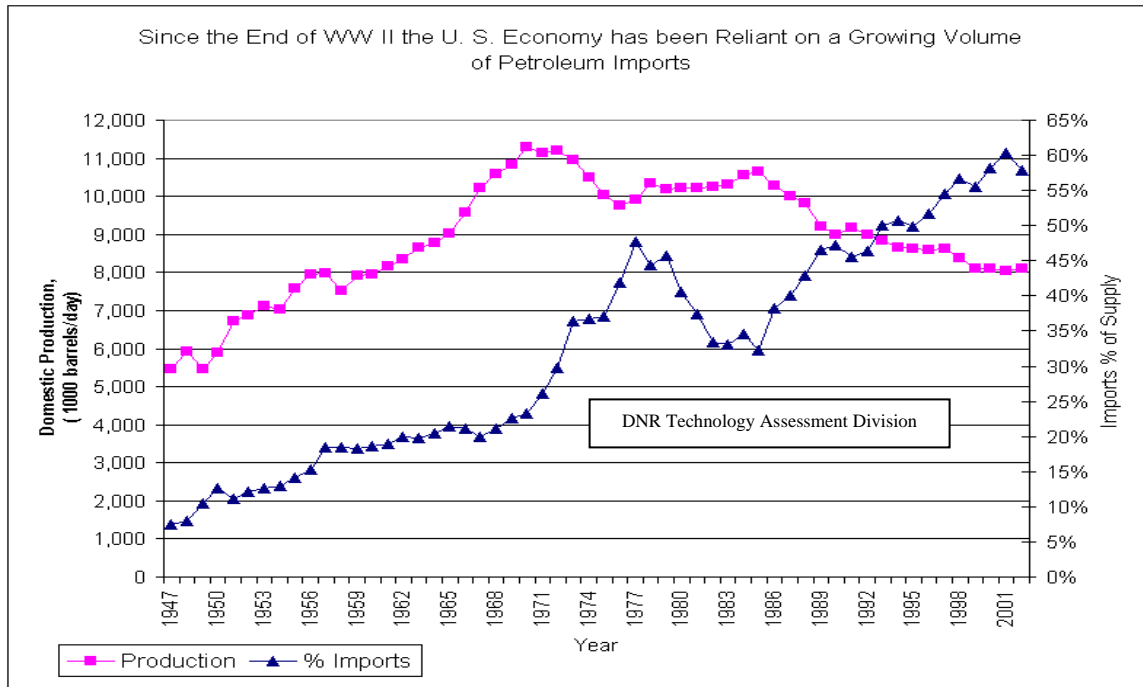
History of Strategic Oil Reserve Policy Discussions

The DOE web site, Fossil.Energy.gov, details the history of policy discussions within Administrations since 1944 and is the primary source for a wealth of knowledge about the SPR.

“Secretary of the Interior Harold Ickes advocated the stockpiling of emergency crude oil in 1944. President Truman’s Minerals Policy Commission proposed a strategic oil supply in 1952. President Eisenhower suggested an oil reserve after the 1956 Suez Crisis. The Cabinet Task Force on Oil Import Control recommended a similar reserve in 1970.”

But the Arab oil embargo of 1973-74 triggered action. President Ford signed the Energy Policy and Conservation Act (EPCA) on December 22, 1975. This legislation declared it to be the policy of the United States to establish a reserve of up to 1 billion barrels of petroleum.

Figure 2



Louisiana’s Wetlands Energy Resources

Because of the existence of a concentration of refineries and distribution points for tankers, barges, and pipelines along the Gulf of Mexico it was logical to look for storage in this geographic area. A large number of subsurface salt domes were identified across Louisiana, Texas, and Mississippi. The subsurface storage of crude oil in salt caverns offered the best security for the Strategic Petroleum Reserve (SPR), low environmental risk, and also the least costly storage mechanism, as salt dome storage is considered about one-tenth the cost of surface storage of crude oil.

Storage locations along the Gulf Coast in Louisiana and Texas were selected because they provided the most flexible means for connecting the SPR storage sites to the existing commercial pipeline and waterways network, subsequently reaching over 50% of the nation’s refineries.

In April 1977, the government acquired several existing salt caverns to serve as the first storage sites. Sites were acquired at 3 locations: Bayou Choctaw, near St. James, Louisiana; West Hackberry, near Hackberry, Louisiana; and Bryan Mound, near Freeport, Texas. In 1982, a fourth complex was added, the Big Hill Storage site near Nederland, Texas. Surface facility construction at Bayou Choctaw and St. James, Louisiana began in June 1977. On July 21, 1977, the first oil was delivered to the SPR, a shipment of Saudi Light crude.

The SPR, currently, has 62 caverns for storage of the SPR crude oil reserve. These salt caverns range between 6 and 30 million barrels in capacity. A typical cavern contains 10 million barrels, is cylindrical in shape, has a diameter of about 200 feet, and a height of about 2,000 feet. The caverns are created by drilling into the salt dome, then circulating fresh water to dissolve the desired cylindrical shape.

President Bush has authorized filling the reserve up to its current capacity of 700 million barrels. The SPR is currently receiving oil and will reach that storage capacity by the 4th Quarter of calendar year 2005. Currently, there are 618.4 million barrels of crude oil in SPR inventory. The priority in managing the SPR, under the direction of the Office of Fossil Fuels, is to maintain the readiness of the oil stockpile for emergency use at the President's direction. The current maximum draw down rate is 4.35 million barrels per day.

The St. James, Louisiana Marine Terminal

Surface facilities for oil cargo handling were also needed to sustain the ongoing operation of the subsurface salt dome storage facilities. DOE constructed a marine terminal site in St. James, Louisiana, St. James Parish at mile marker 158.3 on the Mississippi River, approximately, 45 miles west of New Orleans and 30 miles southeast of Baton Rouge, Louisiana. Marine site construction began in 1978 and was completed in 1980. The facilities comprise 2 main sites: "a main terminal occupying, approximately, 105 acres of land, and 2 marine docks occupying, approximately, 48 acres of land."

"The main terminal consists of 6 surface storage tanks totaling 2,000,000 barrels of capacity, crude oil pumping stations, metering stations, and control and maintenance facilities.

Each marine dock is capable of berthing up to 123,000 Dead Weight Ton (DWT) vessels. Vessel loading or unloading is at the rate of 40,000 barrels per hour at pressures from 50-150 pounds per square inch gauge (psig). Oil Barges may also be loaded at Dock 1 at rates ranging from 3,000 barrels per hour to an 8,000 barrel per hour rate.

These surface facilities also have their own award winning, trained fire fighting crews and fire protection system. Likewise, each of the dock platforms has been designed to contain a 666-barrel oil spill before overflowing. Additional containment equipment stored at the terminal includes, approximately, 2,000 feet of containment boom, and several boats for immediate spill boom deployment and oil spill containment.

SPR: From Louisiana's Wetlands to Wall Street

The Strategic Petroleum Reserve (SPR) is now 25 years old (1978 - 2003). Current capital improvements will extend the operating life to the year 2025.

SPR staff benchmark their operation against similar international facilities. The SPR is the lowest cost operation of its kind in the world.

Cost Categories	Cost Range
Storage Development Cost	\$4.50 - \$5.00/barrel (bbl)
Operating Costs	\$0.205/bbl
Drawdown Costs	\$0.15/bbl

Not only does the Department of Energy (DOE) SPR staff maintain efficient economic operations, but their environmental record has earned award winning performance. Each site has an emergency response team equipped to respond should an emergency situation develop.

DOE's SPR is a responsible operator in Louisiana's Wetlands. This is yet another example of the successful coexistence of oil and gas operations within a sensitive environmental setting while complying with State laws and regulations.

This successful coexistence then facilitates a crucial consumer service: a price discovery mechanism for Wall Street which further facilitates least cost delivery of energy products to America's Consumers.

A most important role for the St. James terminal location, and associated pipeline intersections, is in representing the standards for two forms of Futures contracts in crude oil: (1) St. James Light Sweet Crude Oil, and (2) Mars Sour Crude Oil. Both of these are reference contracts on the New York Mercantile Exchange (NYMEX). [For further information on this Futures market reference see Part 3 of this 7 Part series].

The current SPR inventory by type of crude oil, as of September 8, 2003, was:

Sweet	233.8 million barrels
Sour	384.6 million barrels
Total	618.4 million barrels

NOTE: The Department of Natural Resources wishes to thank the Department of Energy for its cooperation in assembling this part of our 7 part series. We would especially like to thank the retired Deputy Assistant Secretary for Petroleum Reserves, Richard Furiga and Director of Planning and Engineering, Dave Johnson, of Washington, D. C.; Special Assistant to the SPR Project Manager, Ann Rochon, Director, Crude Oil, Drawdown Readiness, and Cavern Integrity Division, Nabil Shourbaji, and Petroleum Engineer, Robert Myers, all from the New Orleans office; and to the Research Librarians at the State Library of Louisiana.

SELECTED LOUISIANA ENERGY STATISTICS

Among the 50 states, Louisiana's rankings (in 2002 unless otherwise indicated) were:

PRIMARY ENERGY PRODUCTION

(Including Louisiana OCS)

- 1st in crude oil
- 2nd in natural gas
- 2nd in total energy

REFINING AND PETROCHEMICALS

- 2nd in refining capacity
- 2nd in primary petrochemical production

PRIMARY ENERGY PRODUCTION

(Excluding Louisiana OCS)

- 4th in natural gas
- 4th in crude oil
- 8th in total energy

ENERGY CONSUMPTION (2001)

- 3rd in industrial energy
- 3rd in per capita energy
- 3rd in natural gas
- 5th in petroleum
- 8th in total energy
- 22nd in residential energy