Energy

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EXECUTIVE SUMMARY

Energy Basics and the Democrats' War on Energy

The United States uses more energy than any other country in the world, mostly consuming coal, oil, petroleum products and gas. As appetites for fuel and electricity consumption have increased, domestic production of energy sources has been unable to keep up, largely due to Democrats' attempts to block domestic production and development of our resources, requiring the United States to import from foreign sources. Dependence on foreign sources makes U.S. energy prices vulnerable to the rise and fall of global markets and too reliant on unstable, and sometimes hostile, foreign sources for its energy.

United States Energy Statistics

In 2011, energy produced in the United States provided about 80 percent of the nation's energy needs. Currently, most energy produced in the United States comes from fossil fuels – coal, natural gas and crude oil. Natural gas is currently the leading energy source produced in the United States with its production exceeding coal production in 2010 for the first time since 1981. This is followed by coal, crude oil, nuclear electric power, biomass and natural gas plant liquids.

Most of the energy consumed in the United States, however, comes from crude oil-based petroleum – a majority of which is imported from foreign sources – used mostly for transportation and industrial purposes. The U.S. is the world's largest petroleum consumer (about 20 percent of the world total) consuming about 18.8 million barrels per day in 2011. In addition to crude oil, the United States also imports refined petroleum products like gasoline. Because the U.S. is the world's largest oil importer, it may seem surprising that it also exported about three million barrels a day of oil in 2011. Renewable energy resources collectively supply a relatively small portion of production (about 10 percent) and total energy consumption (about seven percent).

Coal is the most common fuel for generating electricity in the U.S. – nearly half (44.9 percent) of our electricity is generated by coal. Natural gas is the next leading fuel for generating electricity at just over 23 percent.

As of this writing, Texas is the state with the largest total energy production producing 11,915 trillion Btu.

Energy Sources

Energy sources are of two types: nonrenewable and renewable. The four most common nonrenewable energy sources in the United States are: oil and petroleum products (including gasoline, diesel fuel, heating oil and propane), natural gas, coal and uranium (nuclear energy). Fossil fuels are nonrenewable, but not all nonrenewable energy sources are fossil fuels. Coal, petroleum, natural gas and propane are all considered fossil fuels because they were formed from the buried remains of plants and animals that lived millions of years ago. Uranium is not a fossil fuel, but is a nonrenewable fuel.

Unlike fossil fuels, renewable energy sources regenerate and can be sustained indefinitely. The five renewable sources used most often are: biomass, water, geothermal, wind and solar. In 2011, consumption of renewable sources in the United States totaled about nine quadrillion Btu, or about nine percent of all energy used nationally. More than half of renewable energy goes to producing electricity.

The United States' Reliance on Foreign Sources of Energy

The United States is currently third in the world in crude oil production, but import about 45 percent of the crude oil and refined petroleum products that we consume each year – this was the lowest level since 1995. In the past two decades, natural gas imports have expanded rapidly as well, particularly from Canada. The reality is the United States is significantly dependent upon foreign sources of oil and petroleum products to meet its ever-growing energy needs. Interestingly, the United States imports most of its crude oil and petroleum products from the Western Hemisphere – about 52 percent during 2011 – which includes North, South and Central America and the Caribbean including U.S. territories. About 22 percent of our imports come from Persian Gulf countries. Our absolute largest sources of net crude oil and petroleum product imports were Canada and Saudi Arabia in 2011.

Promoting U.S. Energy Independence

Republicans believe that we must promote and work towards an energy independent United States that will result in lower energy costs, advanced and diverse energy solutions, economic growth, job creation and address a significant national security concern. The United States has vast resources of untapped oil, natural gas and coal. Government regulations, frivolous lawsuits and environmental elitists, however, are preventing the nation from utilizing these resources. We must expedite environmentally-friendly oil and natural gas drilling over the millions of acres of federal lands and waters where bureaucratic and legal hurdles are preventing its acquisition.

Promoting Clean Energy

The United States has the ability to significantly increase its clean energy resources through the development of wind, solar, biomass, biofuels and other alternative energy sources. The government can speed up the development of these resources by leading the way in research and development.

The United States' use of nuclear energy must expand. There are currently 104 operable commercial nuclear reactors at 65 nuclear power plants in the United States. Since 1990, the share of the nation's total electricity supply provided by nuclear power generation has averaged about 20 percent, with increases in nuclear generation that have roughly tracked the growth total electricity output. No new reactors have been built in the United States since the 1970s despite widespread development and use of nuclear energy in Europe. Simplifying the permitting process for and encouraging the construction of new plants could allow more new zero-emission electricity to come online quicker than any accelerated construction of other alternative technologies.

Strategic Petroleum Reserve (SPR)

In 2011, the Obama Administration announced it was considering tapping into the Strategic Petroleum Reserve (SPR) to help alleviate price pressure on consumers. President Obama even included in his FY 2012 budget request a $500 million sale of petroleum from the SPR. On June 23, 2011, the International Energy Agency (IEA) announced that its 28 member countries would release 60 million barrels of crude oil and refined products into the global market. As part of that action, President Obama directed a drawdown of the SPR to meet the U.S. response obligations for 30 million barrels.

This is not the first time this has been considered. Amid Congressional pressure in 2008, the last time the country saw a sudden spike in oil prices, then-President bush approved the Department of Energy's request

to halt shipments (basically, stop filling or contributing to the SPR temporarily) but he did not tap into the SPR itself. There have been two emergency draw downs in the SPR's history: during the first Gulf War in 1991 and after Hurricane Katrina in 2005.

Keystone and Keystone XL Pipeline Project

Upon completion, the Keystone Pipeline System will be comprised of the 2,151-mile Keystone Pipeline and the proposed 1,661-mile Keystone Gulf Coast Expansion Project (Keystone XL). The Keystone Pipeline has two phases – I and II – and originates in Hardisty, Alberta, Canada. Keystone Phase I transports crude oil to the United States' Midwest markets at Wood River and Patoka, Illinois. This leg of the Keystone Pipeline has capacity of 435,000 barrels per day. Measuring approximately 298 miles in length, Keystone Phase II is an extension of Keystone Phase I from Steele City, Nebraska to Cushing, Oklahoma. Phase I was completed in June 2010 and Phase II was completed and commenced commercial operation in February 2011 increasing the total capacity to 591,000 barrels per day.

Keystone XL – or Phases III and IV – was announced in July 2008. It would complement and connect with the original Keystone Pipeline nearly doubling the size and capacity of the Keystone Pipeline System with an expansion to the U.S. Gulf Coast ending in Nederland, Texas to serve the Port Arthur, Texas marketplace. As a facility connecting the United States with a foreign country, the pipeline requires a Presidential Permit from the State Department. This approval process was successfully completed regarding Phases I and II of the Keystone Pipeline. The permit application was filed with the State Department for Keystone XL in September 2008. By June 2011, the environmental review process was still ongoing and not looking to move any faster. The primary environmental concern dealt with the route as it went through Nebraska and the potential for contamination of the Ogallala Aquifer located in Nebraska's Sand Hills region.

On July 7, 2011, the House passed H.R. 1938, the North American-Made Energy Security Act, by a vote of 279 to 147. Introduced by Rep. Lee Terry (R-Neb.), H.R. 1938 would have directed President Obama to expedite the State Department's permit review process, requiring a final decision to grant or deny the permit no later than Nov. 1, 2011. Even after this legislation passed the House and amidst continued pressure, the State Department continued to drag out the permit review and approval process for another five months. The House passed legislation that was eventually enacted that required the President to grant the Keystone XL pipeline permit within 60 days (by Feb. 21, 2012) unless President Obama determined that the pipeline was not in the national interest. As required by the act, on Jan. 18, 2012, the State Department recommended that the permit for Keystone XL be denied. Continued legislative attempts to get Keystone XL approved have persisted, but still, the project remains at a standstill.

Energy Development and Production Legislation in the 112th Congress

Throughout the current 112th Congress, several pieces of legislation regarding domestic energy development and production have been introduced and have brought to the House Floor for a vote. Most of these bills are part of the House Republican American Energy Initiative. You can link to information about the American Energy Initiative here and here.

Cap-and-Trade

One proposal out there to deal with greenhouse gas emissions, "climate change" and "global warming" is cap-and-trade. The idea behind cap-and-trade is to lower overall production of greenhouse gases by creating a market where companies can buy and sell carbon "credits" based upon an overall "cap" that is set by the

government. Those companies that emit less carbon dioxide that permitted under the cap could sell the excess "credits" to those that produce too much through a newly established trading venue, like a stock market. This is the "trade" part of cap-and-trade. Over time, the "cap" would be ratcheted down requiring greater cuts by companies in their emissions.

In the 111th Congress, Democrats and President Obama struggled to produce their own approach to climate change and opted to go with cap-and-trade legislation. On June 26, 2009, the House passed H.R. 2454, the American Clean Energy and Security Act of 2009 (Waxman-Markey). This 1,428-page bill would have restricted greenhouse gas emissions from industry, mainly carbon dioxide from the combustion of coal, oil and natural gas. The Senate inevitably did not act on the legislation.

The cap-and-trade bill was called "a tax, and a great big one" by Democrats and Republicans alike. Many opponents of the legislation said that it was "likely to be the biggest tax in American history" and would create higher prices for consumers, create fewer jobs or higher unemployment and some companies would move their operations overseas.

Solyndra

Solyndra was a California-based solar panel manufacturing company that received a federal loan guarantee under the Department of Energy's Section 1705 loan guarantee program in the 2009 economic stimulus package. The Section 1705 program was created with enactment of the 2009 economic stimulus package and under this program, Solyndra was awarded a $535 million loan guarantee funded by stimulus money in March 2009. After drawing down $527 billion of this loan guarantee, Solyndra filed for Chapter 11 bankruptcy in September 2011. There have been full-blown investigations by the Federal Bureau of Investigation (FBI) and the U.S. Treasury Department into whether Solyndra fabricated or misrepresented its finances to the government in seeking the loan. Additionally, Congress has been investigating whether, or how, aware the Obama Administration was that Solyndra's finances were deteriorating, but approved them for the loan guarantee anyway, along with several other issues.

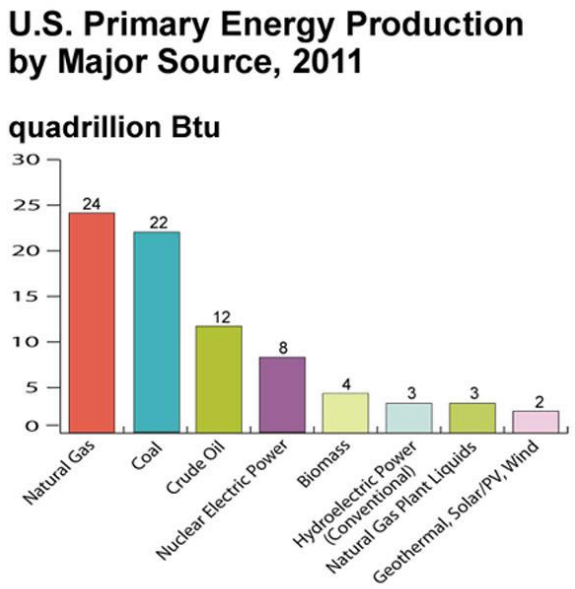
ENERGY IN AMERICA

Energy Basics

The United States uses more energy than any other country in the world, primarily consuming oil, petroleum products and gas. The cost of energy is something that affects every person in the United States and every sector of our economy. Business and family budgets include energy costs, from purchasing utilities and gasoline to budgeting for the production of goods and shipping.

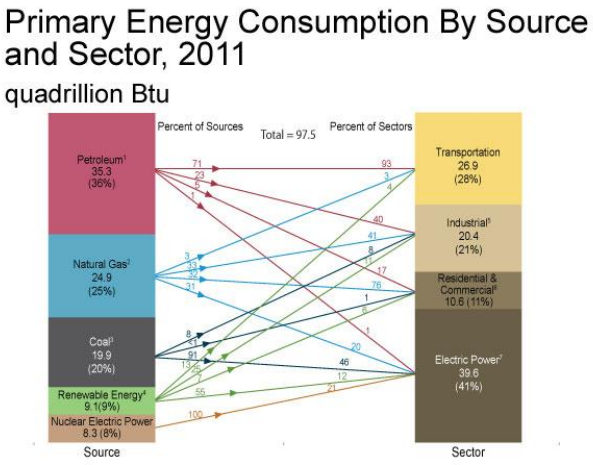
As appetites for fuel and electricity consumption have increased, domestic production of energy sources has been unable to keep up requiring the United States to import oil, petroleum products and gas from foreign sources.

Dependence on foreign sources makes United States energy prices vulnerable to the rise and fall of global markets and too reliant on unstable, and sometimes hostile, foreign sources for its energy. The debate about energy is as much a debate about national security as it is about domestic energy production, energy independence, the environment and the economy.



Source: U.S. Energy Information Administration, *Monthly Energy Review* (March 2012), Table 1.2, preliminary 2011 data.

United States Energy Statistics



Endnotes:
1 Does not include biofuels that have been blended with petroleum—biofuels are included in "Renewable Energy."
2 Excludes supplemental gaseous fuels.
3 Includes less than 0.1 quadrillion Btu of coal coke net exports.
4 Conventional hydroelectric power, geothermal, solar/PV, wind, and biomass.
5 Includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants.
6 Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
7 Electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public. Includes 0.1 quadrillion Btu of electricity net imports not shown under "Source."

Note: Primary energy in the form that it is first accounted for in a statistical energy balance, before any transformation to secondary or tertiary forms of energy (for example, coal is used to generate electricity).
• Sum of components may not equal total due to independent rounding.
Sources: U.S. Energy Information Administration, Monthly Energy Review (April 2012), Tables 1.3, 2.1-2.5, **preliminary 2011 data.**

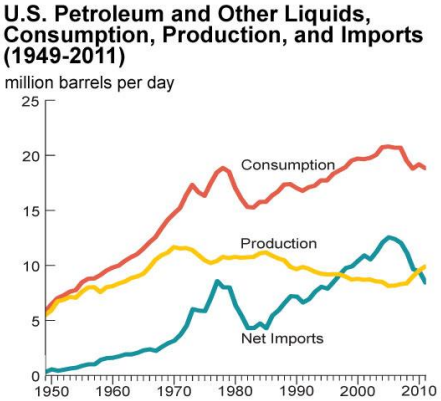
Production and Consumption: In 2011, energy produced in the United States provided about 80 percent of the nation's energy needs. Currently, most energy produced in the United States comes from fossil fuels –coal, natural gas and crude oil. Coal, the leading energy source at the middle of the 20th century, was surpassed by crude oil and then by natural gas.

By the mid-1980s, coal again became the leading energy source produced in the United States and crude oil declined sharply. In the 1970s, electricity produced from nuclear fuel began to make a significant contribution and expanded rapidly in the following decades.

According to the U.S. Energy Information Administration (EIA), which is the independent statistical agency within the U.S. Department of Energy (DOE), natural gas is currently the leading energy source produced in the United States (according to

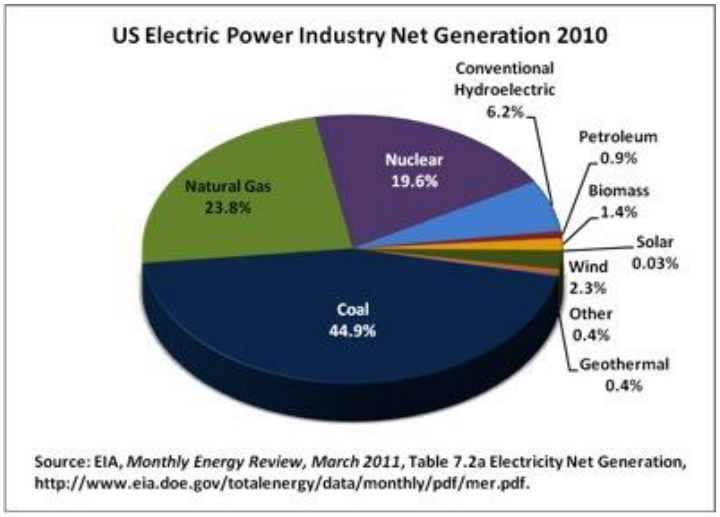
EIA's 2010 Annual Energy Review) – natural gas production exceeded coal production for the first time since 1981. This is followed by coal, crude oil, nuclear electric power, biomass and natural gas plant liquids.

Most of the energy consumed in the United States, however, comes from crude oil-based petroleum – a majority of which is imported from foreign sources – used primarily for transportation and industrial purposes. The U.S. consumed 18.8 million barrels per day of petroleum products during 2011, making us the world's largest petroleum consumer (about 20 percent of the world total). In addition to crude oil, the U.S. also imports refined petroleum products such as gasoline. Although the United States produces more than 90 percent of the petroleum products it consumes, it imported about one million barrels per day of finished petroleum products in 2011.



Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 3.1 (April 2012), preliminary data, and *Annual Energy Review*, Table 5.1a (October 2011).

Because the United States is the world's largest oil importer, it may seem surprising that it also exported about three million barrels a day of oil in 2011.



Source: EIA, *Monthly Energy Review, March 2011*, Table 7.2a Electricity Net Generation, http://www.eia.doe.gov/totalenergy/data/monthly/pdf/mer.pdf.

Renewable energy resources collectively supply a relatively small portion of production (about 10 percent) and total energy consumption (about seven percent).

Electricity: Electricity, which is a secondary energy source (meaning it is simply a conversion of other primary sources of energy – coal, nuclear, solar energy, etc.), is produced in the United States primarily through steam turbines powered by fossil fuels, such as coal, petroleum and natural gas. In this process, the fuel is burned in a furnace to heat water in a boiler to produce steam to turn the turbine, creating electricity.

Coal is the most common fuel for generating electricity in the United Sates generating nearly half (44.9 percent) of our electricity. Natural gas is the next leading fuel for generating electricity at just over 23 percent. Nuclear power accounts for just over 19 percent of U.S. electricity production, using a process called nuclear fission to heat water to produce steam that drives the turbines to create electricity.

State Ranking: Total Energy Production, 2009 (trillion Btu)

Texas	11,915
Wyoming	10,337
Louisiana	7,302
West Virginia	3,727
Kentucky	2,819
Pennsylvania	2,674
California	2,605
Oklahoma	2,571
Colorado	2,483
New Mexico	2,412

State Energy Profiles

To view a comprehensive state energy profile with detailed energy data for your state, please visit the U.S. EIA state pages and select your state.

According to EIA's 2009 data (most recently available at the time of this writing), Texas is the state with the largest total energy production producing 11,915 trillion Btu.

Department of Energy (DOE)

While several different federal departments and agencies maintain jurisdiction over energy matters in the United States, the Department of Energy (DOE) is the Cabinet-level department that implements the policies that bring energy to U.S. homes and businesses. Additionally, DOE engages in the sometimes contradictory goals of weapons development for the U.S. military and delves into research to improve our energy future and cleaning up the environment.

DOE got its beginnings during and following World War II (WW II) when the Army Corps of Engineers established the Manhattan Engineer District to design and produce the world's first atomic bomb. Following WW II, Congress engaged in a contentious debate over civilian versus military control of the atom – this debate resulted in the Atomic Energy Act of 1946 which created the Atomic Energy Commission (AEC). The AEC took over the Manhattan Project's scientific and industrial complex.

During the Cold War years, the AEC focused on designing and producing nuclear weapons and developing nuclear reactors for naval propulsion. The Atomic Energy Act of 1954 ended exclusive government use of the atom and began the growth of the commercial nuclear power industry which AEC regulated.

Until the 1970s, the federal government played a limited role in formulating national energy policy. The United States relied on the private sector to fulfill most of its energy needs. Historically, Americans expected private industry to establish production, distribution, marketing and pricing policies. When free market conditions were not available, federal regulations were established to control energy pricing.

In the wake of the 1973 oil crisis, the AEC was split into two new agencies – the Nuclear Regulatory Commission (NRC) and the Energy Research and Development Administration (ERDA). The NRC regulated the commercial nuclear power industry while the ERDA managed the energy research and development, nuclear weapons and naval reactors programs. Then, in 1977, then-President Jimmy Carter signed into law the Department of Energy Organization Act of 1977 (P.L. 95-91) which created the Department of Energy. DOE began operation on Oct. 1, 1977, and assumed the responsibilities of the Federal Energy Administration, the ERDA and the Federal Power Commission.

Since its creation, DOE has shifted its emphasis and focus as conditions have warranted. In the late 1970s, its emphasis was placed on energy development and regulation. In the 1980s, nuclear weapons research, development and production took priority. In the 2000s, DOE's priority has been addressing our energy, environmental and nuclear challenges through science and technology solutions.

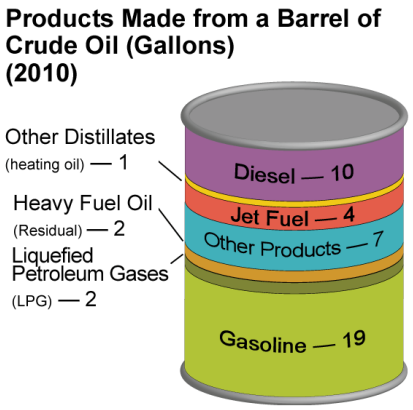
ENERGY SOURCES

Energy sources are of two types – nonrenewable and renewable. Nonrenewable energy sources are considered as such if they cannot be replenished (made again) in a short period of time. On the other hand, renewable energy sources such as solar and wind can be replenished naturally in a short period of time.

Nonrenewable Energy Sources

The four nonrenewable energy sources used most often are: oil and petroleum products (including gasoline, diesel fuel, heating oil and propane), natural gas, coal and uranium (nuclear energy). Nonrenewable energy sources come out of the ground as liquids, gases and solids. Crude oil (petroleum) is the only commercial nonrenewable fuel that is naturally in liquid form. Natural gas and propane are normally gases and coal is a solid.

Fossil fuels are nonrenewable, but not all nonrenewable energy sources are fossil fuels. Coal, petroleum, natural gas and propane are all considered fossil fuels because they were formed from the buried remains of plants and animals that lived millions of years ago. Uranium ore, a solid, is mined and converted to a fuel used at nuclear power plants. Uranium is not a fossil fuel, but is a nonrenewable fuel.



Oil was formed from the remains of animals and plants that lived millions of years ago in a water environment before the dinosaurs. Over millions of years, the remains of these animals and plants were covered by layers of sand and silt. Heat and pressure from these layers helped the remains turn into what we today call crude oil. The word "petroleum" means "rock oil" or "oil from the earth."

After crude oil is removed from the ground, it is sent to a refinery by pipeline, ship or barge. At a refinery, different parts of the crude oil are separated into useable petroleum products. Crude oil is measured in barrels (or, bbls). A 42-U.S. gallon barrel of crude oil provides about 45 gallons of petroleum products. This gain from processing crude oil is similar to what happens to popcorn which gets bigger after it is popped.

Once refined, one barrel of crude oil produces about 19 gallons of finished motor gasoline and 10 gallons of diesel (as well as other petroleum products including ink, crayons, eyeglasses, tires, heart valves, etc.

In 2011, about 22 percent of our crude oil and petroleum product net imports came from the Persian Gulf countries of Bahrain, Iraq, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates. U.S. petroleum imports rose sharply in the 1970s and reliance on petroleum from the Organization of the Petroleum Exporting Countries (OPEC) grew. In 2011, about 52 percent of U.S. net petroleum imports came from OPEC countries, down from 70 percent in 1977. Since 1992, more petroleum has come into the United States from non-OPEC countries than from OPEC countries.

Gasoline

Gasoline is a nonrenewable fuel made from petroleum. Refineries in the United States produce about 19 gallons of gasoline from every 42-gallon barrel of crude oil that is refined. After crude oil is refined into gasoline and other petroleum products, the products must be distributed to consumers. The majority of

gasoline is shipped first by pipeline to storage terminals near consuming areas and then loaded into trucks for delivery into individual gas stations.

While gasoline is sold at about 162,000 retail outlets across the nation, about one-third of these stations are "unbranded" dealers that can sell gasoline of any brand. The rest of the outlets are "branded" stations, but may not necessarily be selling gasoline produced at that company's refineries. This mixing of brands occurs because gasoline from different refineries is often combined for shipment by pipeline and companies owning service stations in the same area may be purchasing gasoline at the same bulk terminal. The only difference between the gasoline at one station to another may be the small amount of additives that those companies add to the gasoline before it gets to the pump.

Use of Gasoline: Americans used about 360 million gallons of gasoline per day in 2011. The U.S. does not produce enough crude oil to make all of the gasoline used by U.S. motorists – only about 40 percent o the crude oil used by U.S. refineries is produced in the United States with the rest being imported from other countries. Gasoline is one of the major fuels consumed in the United States and the main product refined from crude oil. It accounts for slightly more than 64 percent of all the energy used for transportation, 46 percent of all petroleum consumption and 18 percent of total U.S. energy consumption.

Gas Prices and Outlook: There are two ways to compare recent gas prices with historical prices. One is to compare the price actually paid at the pump, or the "nominal" price. The other is to compare the "real" price, which is the price adjusted for inflation, so that prices in the past are in today's current dollar value. You can find the latest gas price information at the following sources:

- **Gasoline and Diesel Fuel Update** (weekly U.S. and regional gasoline and diesel fuel price data) – http://www.eia.gov/petroleum/gasdiesel/

- **Short-Term Energy Outlook** (projected average annual gasoline prices for this year and the next, updated monthly) – http://www.eia.gov/forecasts/steo/

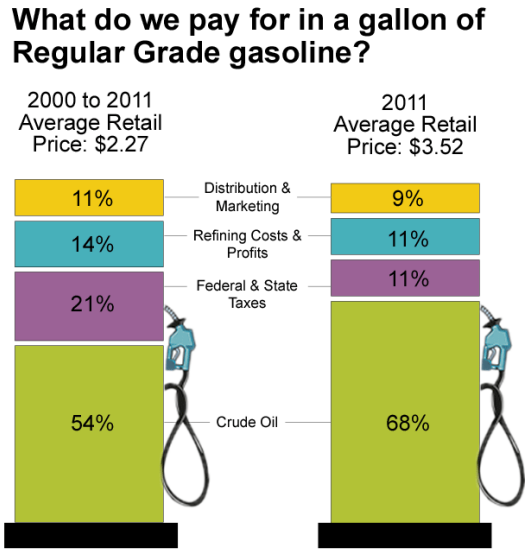
While gasoline is produced year-round, extra volumes are made and imported to meet higher demand in the summer. Each gasoline station usually sells three grades of gasoline: regular, midgrade and premium. These grades have different "octane ratings" that reflect anti-knock properties. The octane level of a fuel refers to its resistance to combustion – a fuel with a higher octane level will be less prone to pre-ignition and detonation, which is also known as engine knocking. Premium grade is the most expensive – the price difference between grades is typically about 10 cents per gallon. In addition to these different grades of fuel, gasoline sold by a single company may differ depending on location or season. Some areas of the country are required to use special gasoline that reduce the amount of pollution coming from cars.

The cost to produce, transport and sell gasoline to consumers includes: the cost of crude oil, refining costs and profits, distribution and marketing costs and profits and taxes. Retail pump prices reflect these costs as well as the profits (and sometimes losses) of refiners, marketers, distributors and retail station owners. The cost of crude oil from which gasoline is made is the single biggest factor in the price of gasoline and it varies as a share of the retail gas price over time and among regions of the country. Crude oil prices are determined by both supply and demand factors. On the demand side of the equation, world economic growth is the biggest factor.

One of the major factors on the supply side is the Organization of the Petroleum Exporting Countries (OPEC), which can sometimes exert significant influence on prices by setting an upper production limit on its members, which produced about 43 percent of the world's crude oil in 2011. OPEC countries have essentially all of the world's spare oil production capacity and possess about two-thirds of the world's estimated crude oil reserves. Oil prices often spike in response to disruptions in the international and domestic supply of crude oil.

Federal, state and local government taxes are the next largest part of the retail price of gasoline. Federal excise taxes are currently 18.4 cents per gallon and have been since 1993.

Editor's Note: *For more information regarding the federal excise tax on gasoline, please refer to the Transportation chapter of the 2012 NRCC Issues Book.*



Source: U.S. Energy Information Administration, averages based on Gasoline and Diesel Fuel Update.

As of July 1, 2011, state excise taxes averaged 22.7 cents per gallon, and 12 states levied additional state sales and other taxes on gasoline. Additional county and city taxes can have a significant impact on the price of gasoline in some locations. For more information regarding state gasoline tax rates, the Tax Foundation has an easy-to-navigate map showing each state's gas tax rates as of Jan. 1, 2011.

Refining costs and profits vary from region to region in the United States partly due to different gasoline formulations required in different parts of the country. The characteristic of the gasoline produced depend on the type of crude oil that is used and the type of processing technology available at the refinery where it is produced. Gas prices are also affected by the cost of other ingredients that may be blended into it, such as ethanol.

Distribution, marketing and retail dealer costs and profits make up the rest of the retail price of gasoline. Most gasoline is shipped from the refinery first by pipeline to terminals near consuming areas where it may be blended with other products – like ethanol – to meet local government and market specifications. Then it is delivered by tanker truck to individual gas stations.

Some retail outlets are owned and operated by refiners while others are independent businesses that buy gasoline from refiners and marketers for resale to the public. The price on the pump includes the retailer's cost to purchase the finished gasoline and the costs of operating the service station. It also reflects local market conditions and factors like the desirability of the location and the marketing strategy of the owner. The cost of doing business by individual dealers can vary greatly depending on where the dealer is located – costs such as wages, salaries, benefits, equipment, lease/rent, insurance, overhead and state and local fees. Even retail stations next to each other can have different traffic patterns, rents and sources of supply that affect their prices. The number and location of local competitors can also affect prices.

Regional Price Differences: As previously mentioned, while gas prices vary over time, average retail gas prices are often highest in certain states or regions. Besides taxes, there are other factors that contribute to regional and even local differences in gas prices – some of these listed below have already been touched on in this section, but these factors include:

- **Distance from supply usually means higher gas prices:** About 62 percent of the crude oil processed by U.S. refineries in 2010 was imported – most by ocean tankers. The U.S. Gulf Coast was the source of about 26 percent of gasoline produced in the U.S. in 2010 and the starting point for most major gasoline pipelines, so those states farther from the refineries will most likely have higher prices.

- **Supply disruptions:** Anything that slows or stops production of gasoline for even a short time, such as refinery maintenance or shutdowns (like what occurred during Hurricanes Katrina and Rita in 2005, or the political events in the Middle East and North Africa in 2010, 2011 and 2012), can prompt bidding for available supplies. If the transportation system cannot support the flow of surplus supplies from one region to another, prices will remain relatively high.

- **Retail competition and operating costs:** Pump prices are often highest in locations with few gas stations. Even stations located close together can have different traffic patterns, rents and sources of supply that influence pricing.

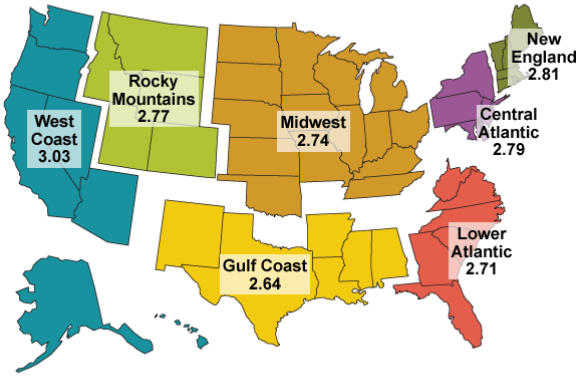
- **Environmental programs add to cost of production, storage and distribution:** Some parts of the country are required to use special "reformulated" gasoline with additives to help reduce carbon monoxide, smog and toxic air pollutants that result when gasoline is burned or when gasoline evaporates during fueling. Other environmental programs put restrictions on fuel transportation and storage. These tend to add to the cost of producing, storing and distributing gasoline. About one-third of the gasoline sold in the U.S. is reformulated – each oil company prepares its own formulation to meet federal emission standards.

Tying in with the last factor in the list above, California gas prices are higher and more variable than prices in other states because there are relatively few supply sources of its unique blend of gasoline outside the state. The state of California's reformulated gasoline program is more stringent than the federal government's. In addition to the higher cost of this cleaner fuel, there is a state sales tax of 2.25 percent on top of an 18.4 cent-per-gallon federal excise tax and a 35.30 cent-per-gallon state excise tax.

Also, California refineries need to be running near full capacity to meet the state's gasoline demand. If more than one of its refineries experiences operating problems at the same time, California's gasoline supply can become very tight and prices can soar. Even when supplies can be obtained from some Gulf Coast and foreign refineries, they can take a relatively long time to arrive due to California's substantial distance from those sources.

Regular Grade Gasoline Prices at Retail Outlets by Region, 2010

(dollars per gallon, including taxes)



Source: U.S. Energy Information Administration, *EIA-878, Motor Gasoline Price Survey*.

Brief History of Environmental Laws That Affect Gasoline: Burning gasoline produces carbon dioxide, a major greenhouse has. Gasoline is also highly flammable and is a toxic liquid. The vapors it gives off when it evaporates and the substances produced when it is burned (carbon monoxide, nitrogen oxides, particulate matter and unburned hydrocarbons) contribute to air pollution.

The Clean Air Act, first enacted in 1970, is the major law aimed at reducing air pollution. It, and its various amendments over the years, have aimed to reduce pollution from gasoline use by requiring less polluting engines and fuels and reducing leaks from storage and fueling equipment. These goals are enforced primarily by the Environmental Protection Agency (EPA). The EPA requires the following:

- **Emissions control devices and cleaner burning engines:** Emissions control devices on passenger vehicles were required starting in 1976 and in the 1990s the EPA began establishing emissions standards for other types of vehicles and for engines used in nonroad equipment that burn gasoline.

- **Removal of leaded gasoline:** In 1986, leaded gasoline was completely phased out. The move away from leaded gasoline began in 1976 when catalytic convertors were installed in new vehicles to reduce the emission of toxic air pollutants – vehicles equipped with a catalytic convertor cannot operate on leaded gasoline.

- **Reformulated gasoline:** The Clean Air act amendments of 1990 required the sale of a cleaner reformulated gasoline beginning in 1995 to reduce air pollution in certain metropolitan areas with the worst ground-level ozone pollution.

- **Low sulfur gasoline:** Since 2006, refiners have been required to supply gasoline with 90 percent less sulfur content than they made in 2004. Lower sulfur gasoline reduces emissions from both old and new vehicles and is necessary for advanced vehicle emission control devices to work properly.

- **Reduced risk of gas leaks:** Gas leaks happen at gas stations every day. As we fill up our gas tank, gas drips from the nozzle onto the ground and vapors leak from the open gas tank into the air. Gas leaks can also happen where we cannot see them in pipelines or underground storage tanks. Beginning in 1990, all underground storage tanks had to be replaced by tanks with a double lining as an additional safeguard for preventing leaks. One of the chemicals added to gasoline to help it burn cleaner called methyl tertiary butyl ether (MTBE) leaked from storage tanks and polluted water supplies. Because MTBE is toxic, a number of states started banning the use of MTBE in gasoline in the late 1990s. By 2007, the U.S. refining industry had voluntarily stopped using it when making all reformulated gasoline for sale in the U.S. MTBE was replaced with ethanol, which is not toxic.

Diesel Fuel

Diesel fuel is used in the diesel engines found in most freight trucks, trains, buses, boats and farm and construction vehicles. It is also used in diesel engine-generators to generate electricity. Heating oil and diesel fuel are closely related products called distillates. The main difference between the two is that diesel fuel contains less sulfur than heating oil. In the past, diesel fuel contained high quantities of sulfur. Because diesel fuel requires additional processing to remove sulfur, it is more costly to produce than heating oil.

In the United States, stringent emissions standards have been adopted with the transition to ultra-low sulfur diesel (ULSD). In June 2006, the EPA reduced the allowable level of sulfur in highway diesel fuel by 97 percent as part of a program to reduce emissions from trucks and buses. The same standard is now phasing in for diesel fuel used by non-road engines, trains and marine vessels with complete phase-in scheduled for 2014.

Most diesel fuel consumed in the U.S. is produced in U.S. refineries. Similar to gasoline, most diesel fuel is transported by pipeline from refineries and ports to terminals near major consuming areas where it is loaded into tanker trucks for delivery to retail service stations.

Rudolf Diesel originally designed the diesel engine to use coal dust as fuel and then experimented with vegetable oil (biodiesel) before the petroleum industry came out with the product now known as diesel fuel. The first diesel-engine automobile trip was completed on Jan. 6, 1930, from Indianapolis to New York City.

Diesel fuel from the transportation sector accounted for about six percent of all energy used in the U.S. in 2010, and 17 percent of all petroleum products – the second largest petroleum product after gasoline. Diesel fuel is important to America's economy, quality of life and national security. It contains between 18 percent and 30 percent more energy per gallon than gasoline and offers a greater power density than other fuels (so it packs more power per volume).

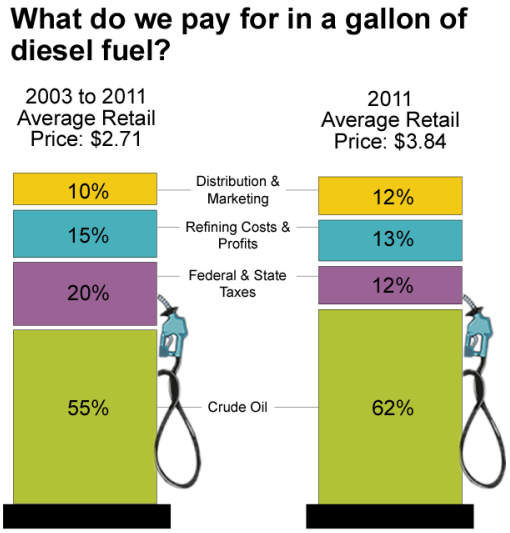
In agriculture, diesel fuels more than two-thirds of all farm equipment in the U.S. because diesel engines can perform demanding work. It is also the most widely used fuel for public buses and school buses throughout the United States. America's construction industry depends on diesel's power because diesel engines are able to do demanding construction work safely and efficiently. Diesel also powers the movement of America's freight in trucks, trains, boats and barges – 94 percent of our goods are shipped using diesel-powered vehicles.

The military also uses diesel for fighting vehicles like tanks and trucks because it is less flammable and explosive and less likely to stall than gasoline.

Diesel Fuel Price: The cost to produce and deliver fuel to customers includes the costs of crude oil, refinery processing, marketing and distribution and retail station operation. The retail pump price reflects these costs and the profits (and sometimes losses) of the refiners, marketers, distributors and retail station owners.

Like gas prices, the price at the pump also includes federal, state and local taxes. In 2011, federal excise taxes were 24.4 cents per gallon and state excise taxes averaged about 23.8 cents per gallon. Some states and county and city governments levy additional taxes. The retail prices also reflects local market conditions and factors such as the location and the marketing strategy of the owner.

Historically, the average price of diesel fuel has been lower than the average price of gasoline. This is not always the case, however. In some winters where the demand for distillate heating oil is high, the price of diesel has risen above the gas price. Since September 2004, the diesel price has been generally higher than the price of regular gasoline all year round for several reasons one being that worldwide demand for diesel fuel and other distillate fuel oils has been increasing steadily with strong demand in China, Europe and the U.S. This puts more pressure on the tight global refining capacity. In the U.S., the transition to ultra-low sulfur diesel (USDL) fuel has affected diesel fuel production and distribution costs. Also, the federal excise tax on diesel fuel is six cents higher per gallon than the tax on gas.



Source: U.S. Energy Information Administration, averages based on Gasoline and Diesel Fuel Update.

Most of the reasons and factors for variations in gas prices coincide for variations in diesel prices, too. But something that does differ from gasoline is what is known as the diesel fuel surcharge. Many transportation companies and freight carriers include a fuel-cost surcharge in their rates and invoices to cover increases in the cost of diesel fuel. Fuel surcharge are negotiated privately between shippers and trucking companies. Every company has its own method for calculating surcharges.

You can find the latest diesel fuel price information at the following source:

- **Gasoline and Diesel Fuel Update** (weekly U.S. and regional gasoline and diesel fuel price data) – http://www.eia.gov/petroleum/gasdiesel/

Diesel and the Environment: Diesel fuel produces several harmful emissions when it is burned and diesel-fueled vehicles are major sources of harmful pollutants such as ground-level ozone and particulate matter. EPA standards require a major reduction in the sulfur content of diesel fuels, as previously mentioned. By Dec. 1, 2010, all highway diesel fuel had to be ULSD fuel and in 2014, all diesel fuel sold for all uses must be ULSD.

The EPA also established emissions control standards for diesel-powered highway vehicles for model year 2007 and later. These engines are designed to operate only with ULSD fuel – using ULSD sulfur diesel fuel and advanced exhaust control systems can reduce vehicle particulate emissions by up to 90 percent.

About 22.4 pounds of carbon dioxide are produced when a gallon of diesel fuel is burned. Diesel engines get better fuel economy than gasoline powered engines, so the amount of carbon dioxide produced for each mile traveled may be lower in a vehicle with a diesel engine.

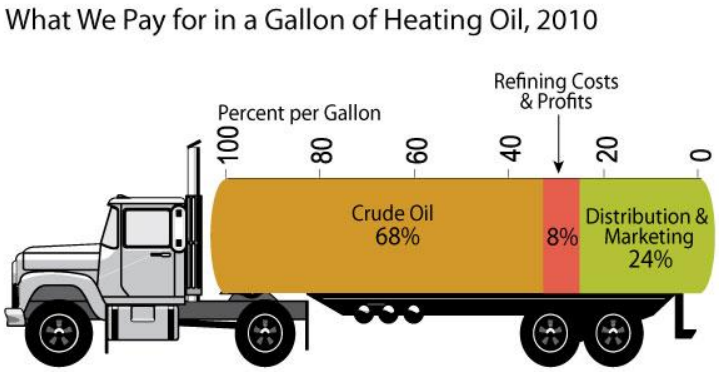
Heating Oil

Heating oil is a petroleum product used by many Americans, especially in the Northeast, to heat their homes. At refineries, crude oil is separated into different fuels including gasoline, jet fuel/kerosene, lubricating oil, heating oil and diesel. As previously mentioned, heating oil and diesel fuel are closely related products called distillates.

Approximately 11 gallons of distillate are produced from each 42-gallon barrel of crude oil. Of these 11 gallons of distillate, less than two gallons are heating oil and the other nine are diesel fuel. Because diesel fuel requires additional processing to remove sulfur, it is more costly to produce than heating oil.

Historically, heating oil prices have fluctuated from year to year and month to month. They are generally higher during the winter months when demand for heating oil is higher.

The United States has two sources of heating oil: domestic refineries and imports from foreign countries. Refiners are limited in the amount of heating oil they can make to meet the demands of the winter heating season. Some winter heating oil is produced by refineries in the summer and fall months and stored for winter use. During the coldest winter months, the inventories that are built in summer and fall are used to help meet the high demand. If consumer demand is high for a seasonal product, such as gasoline, however, refiners may delay producing heating oil for the winter, which may lower inventories at the start of the heating season. This was the case in September and October 2005 after Hurricanes Katrina and Rita shut down Gulf Coast production capacity. As gas prices shot up over $3.00 per gallon, refiners had incentive to produce more gasoline at a time when they would normally concentrate on heating oil production.



Note: Sum of the components may not equal 100% due to independent rounding.
Source: U.S. Energy Information Administration, *Petroleum Marketing Monthly*, Table 15 (July 2011)

Of the 111 million households in the United States in 2005, approximately eight million used heating oil as their main heating fuel. Heating homes is the primary use for hearing oil making the demand highly seasonal. Most of the heating oil use occurs during October through March. The area of the country most reliant on heating oil is the Northeast – of the eight million households in the U.S. that use heating oil to heat their homes, 6.4 million households, or roughly 80 percent, are located in the Northeast. In other regions, older homes have been converted from oil heat to gas heat and oil no longer has a noticeable share of the new home construction market. In 2009, about 3.7 million gallons of heating oil were sold to residential customers in the Northeast – this is 84 percent of total U.S. residential fuel oil sales.

Some customers try to beat rising winter prices by filling their storage tanks in the summer or early fall when the prices are likely to be lower. Most homeowners, however, do not have large enough storage tanks to store the full amount needed to meet winter demands. Homeowners may have to refill their tanks as many as four or five times during the heating season making them vulnerable if prices rise or spike.

Heating Oil Prices: Heating oil prices paid by consumers are determined by the cost of crude oil, the cost to produce the product, the cost to market and distribute the product, as well as the profits (and sometimes losses) of refiners, wholesalers and dealers. In 2010, crude oil accounted for 68 percent of the cost of a gallon of heating oil. The next largest component was distribution and marketing costs and profits which accounted for 25 percent of the cost of a gallon of heating oil. Refinery processing costs and profits accounted for another eight percent.

There are several ways that people can reduce their heating oil bill:

- **Purchasing Options:** Arrange to have the heating oil tank filled in late summer or early fall when prices are generally lower.

- **Efficiency and Conservation Measures:** Heating oil users can obtain a home energy audit to ensure that their furnace and appliances are running efficiently before the season begins. Weatherizing one's home, including such projects as installing proper insulation in the house and around the hot water heater, can help achieve conservation gains. Also, quick and easy fixes such as caulking and weather stripping windows and doors to seal out cold air also helps save energy.

- **Assistance Programs:** Both federal and state energy assistance programs are available to heating oil customers who have a limited budget. For example, the Low Income Home Energy Assistance Program (LIHEAP) is a federal program that distributes funds to states to help low-income households pay heating bills. Additional state energy assistance and fuel fund programs may be available to help households during a winter emergency.

The reasons and factors for fluctuating heating oil prices nearly mirror the reasons and factors for fluctuating gasoline and diesel fuel prices.

Propane

Propane is an energy-rich gas and is one of the liquefied petroleum gases (LP-gases or LPGs) that are found mixed with natural gas and oil. Propane and other liquefied gases, including ethane and butane, are separated from natural gas at natural gas processing plants, or from crude oil at refineries. The amount of propane produced from natural gas and from oil is roughly equal. Propane naturally occurs as a gas, however, at higher pressure or lower temperatures, it becomes a liquid. Because propane is 270 times more compact as a liquid than as a gas, it is transported and stored in its liquid state. Propane becomes a gas again when a valve is opened to release it from its pressurized container. When returned to normal pressure, propane becomes a gas so that we can use it.

LPGs are mixtures of propane, ethane, butane and other gases that are produced at natural gas processing plants and refineries. Fractionation plants then separate the liquids from each other. LPGs were discovered in 1912 and the LPG industry got its start shortly before World War I.

To get to those that use it, propane usually goes by underground pipeline to terminals across the country. Railroads, barges, trucks and supertankers also ship propane to bulk distributors. Local propane dealers come to the distributor's bulk plant to fill up their small tank trucks – these trucks deliver propane to large storage tanks that are outside homes. The average residential propane tank holds between 500 and 1,000 gallons of liquid fuel and is refilled several times a year. People who use just a little propane, for a backyard cookout, for example, bring their tanks to convenience and hardware stores to be filled or to be exchanged for full ones.

Although propane accounts for less than two percent of all energy used in the U.S., it has some very important uses. Propane is the most common source of energy in rural areas that do not have natural gas service. Propane is used for:

- Heating homes

- Heating water
- Cooking and refrigerating food
- Drying clothes
- Fueling gas fireplaces and barbecue grills
- Dry corn on farms
- Power farm equipment and irrigation pumps
- Businesses and industry use propane to run forklifts and other equipment

With only a small fraction of propane is used for transportation, it is the second largest alternative transportation fuel in use today. Instead of gasoline, propane often fuels fleets of vehicles used by school districts, government agencies and taxicab companies.

Propane Prices: As with all of the previous energy sources, propane prices are subject to a number of factors common to all petroleum products, but they are also subject to some unique just to propane. Because propane is easily transported, it can serve many different markets from fueling grills to producing petrochemicals. The price of propane in these markets is influenced by many factors including the prices of competing fuels in each market, the distance propane has to travel to customers and the volumes used by a customer.

Although propane is produced from both crude oil and natural gas, its price is mostly influenced by the cost of crude oil. This is because propane competes mostly with crude oil-based fuels. While propane production is not seasonal, residential demand for it is highly seasonal. This imbalance causes inventories to be built up during the summer months when consumption is low and for inventories to be drawn down during the winter months when consumption is much higher. Colder-than-normal weather can put extra pressure on propane prices during the high-demand winter because there are no readily available sources of increased supply except for imports. And imports can take several weeks to arrive.

Propane and the Environment: Propane is a nonrenewable fossil fuel, like the natural gas and oil it is produced from. Like natural gas (methane), propane is colorless and odorless. Although propane is nontoxic and odorless, foul-smelling mercaptan is added to it to make gas leaks easy to detect. Propane is a clean-burning fossil fuel which is why it is often used to fuel indoor equipment such as forklifts. Its clean burning properties and its portability also make it popular as an alternative transportation fuel.

Propane-fueled engines produce much fewer emissions of carbon monoxide and hydrocarbons compared to gas engines. Like all fossil fuels, propane emits water vapor and carbon dioxide.

Natural Gas

The main ingredient in natural gas is the gas (or compound) methane. Millions of years ago the remains of plants and animals decayed and built up in thick layers. This decayed matter is called organic material

because it was once alive. Over time, the sand and silt changed to rock, covered the organic material and trapped it beneath the rock. Pressure and heat changed some of this organic material into coal, some into oil (petroleum) and some into natural gas. To find natural gas today, first geologists study and locate the types of rock that are likely to contain gas and oil deposits by using tools including seismic surveys that are used to find the right places to drill wells. Seismic surveys use echoes from a vibration source at the earth's surface to collect information about the rocks beneath.

If a certain site seems promising, drilling begins. Some of these areas are on land, but many are offshore, deep in the ocean. Once the gas is found, it flows up through the well to the surface of the ground and into large pipelines. Some of the gases produced along with methane, like butane and propane, are separated and cleaned at a gas processing plant. Natural gas withdrawn from a well may contain liquid hydrocarbons and nonhydrocarbon gases – this is called "wet" natural gas. The natural gas is separated from these components near the site of the well or at a natural gas processing plant – the gas is then considered "dry" and is sent through pipelines to a local distribution company and, ultimately, to the consumer. Dry natural gas is also known as consumer-grade natural gas.

Most of the natural gas consumed in the United States is produced in the United States. Some is imported from Canada and shipped to the U.S. in pipelines.

Transport of Natural Gas: Transporting natural gas from the production field to the consumer involves a series of steps generally carried out in order. Made up of about 1.5 million miles of mainline and other pipelines, the U.S. natural gas transportation network delivered more than 24 trillion cubic feet of natural gas during 2010 to about 71 million customers:

- Gathering systems, primarily made up of small-diameter, low-pressure pipelines, move raw natural gas from the wellhead to a natural gas processing plant or to an interconnection with a larger mainline pipeline.

- Processing plants separate natural gas liquids and impurities from the natural gas stream before the natural gas is delivered into a mainline transmission system.

- About 306,000 miles of wide-diameter, high-pressure interstate and intrastate transmission pipelines transport natural gas from the producing area to market areas. Compressor stations (or pumping stations), located strategically along the length of the pipeline network, keep the natural gas flowing forward along the pipeline system. More than 200 companies operate mainline transmission pipelines.

- Underground storage facilities, fashioned from depleted oil, natural gas, or aquifer reservoirs or salt caverns, are used to store natural gas as a seasonal backup supply. In 2007, about 125 natural gas storage operators managed roughly 400 active storage fields. When needed, this reserve is withdrawn to meet additional customer demand during peak usage periods. Aboveground liquefied natural gas storage facilities are also used for this purpose. More than 200 companies operate

- More than 1,300 local distribution companies deliver natural gas to end users through hundreds of thousands of miles of small-diameter service lines. Local distribution companies reduce the pressure of the natural gas received from the high-pressure mainline transmission system to a level that is acceptable for use in residences and commercial establishments.

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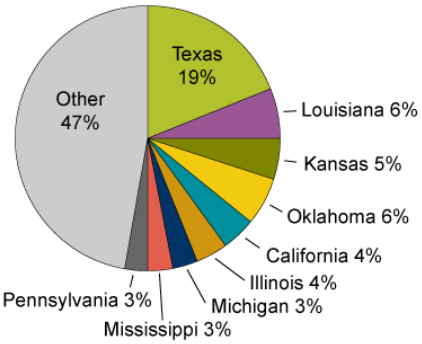
Percent of U.S. Natural Gas Transmission Pipeline Mileage in Each State (2008)



Source: Energy Information Administration, Natural Gas Transportation Information System, Natural Gas Pipeline Maps Database (December 2008).

Where Our Natural Gas Comes From: U.S. natural gas production and consumption were nearly in balance through 1986, but after that, consumption began to outpace production and imports of natural gas rose to met U.S. demand. Production increased from 2006 through 2010 when it reached the highest recorded annual total since 1973. The increases in production were the result of more efficient, cost-effective drilling techniques, notably in the production of natural gas from shale formations. The top five natural gas producing states (and area) in the U.S. in 2010 were:

- Texas (30%)
- Wyoming (10%)
- Federal Offshore Gulf of Mexico (10%)
- Louisiana (10%)
- Oklahoma (8%)

The following source provides updated information on natural gas withdrawals and productions:

- Natural Gas Gross Withdrawals and Production, EIA - http://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGM_mmcf_m.htm

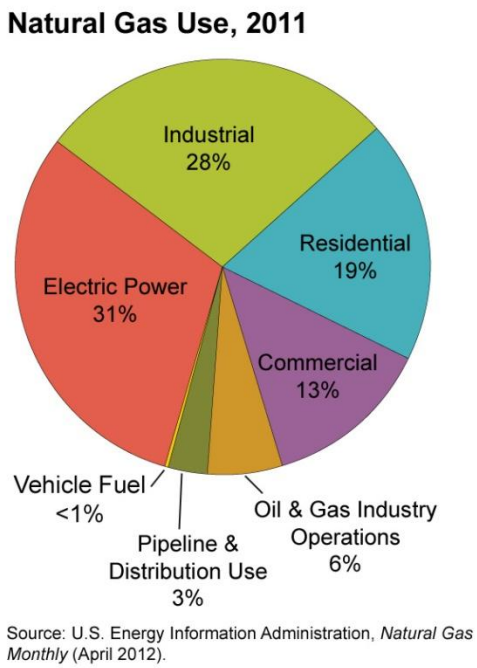
States have jurisdiction over any natural resources within three nautical miles of their coastline, except for Texas and the west coast of Florida where state jurisdiction extends to nine nautical miles. The federal government retains ownership to resources past those limits. There are around 3,400 oil and gas production platforms in federal waters up to roughly 7,500 feet deep and up to 200 miles from shore – most of the mare in the Gulf of Mexico.

Gas shale is one of a number of "unconventional" sources of natural gas – other unconventional sources of natural gas include natural gas produced from coal beds and from "tight" (impermeable) sandstone or chalk formations. Shale is a very fine-grained sedimentary rock that is easily broken into thin, parallel layers. Shales can contain a large amount of natural gas, but it is not necessarily mobile. Extensive efforts such as horizontal drilling and creating artificial fractures in the rock are often needed to achieve satisfactory production rates.

How Much Gas is Left: A "reservoir" is a place where large volumes of methane can be trapped in the subsurface of the earth at places where the right geological conditions occurred at the right times. Reservoirs are made up of porous and permeable rocks that can hold significant amounts of oil and gas within their pore spaces. Proved reservoirs of natural gas are estimated quantities that have demonstrated to be

economically recoverable in future years. Proved reserves are added each year with successful exploratory wells and as more is learned about fields where current wells are producing. For this reason, those reserves constantly change and should not be considered a finite amount of resources available.

U.S. proved reserves of natural gas have increase in every year since 1999, a trend accelerated by shale gas drilling. In 2009, they increased by 11 percent to 284 trillion cubic feet – the highest level since 1971. In addition to proved natural gas reserves, there are large volumes of natural gas classified as undiscovered technically recoverable resources. These are expected to exist because the geologic settings are favorable despite the relative uncertainty of their specific location. According to the EIA, the United States possess 2,543 trillion cubic feet of potential natural gas resources (as of 2011). Natural gas from shale resources, considered to be uneconomical just a few years ago, accounts for 862 trillion cubic feet of this resource estimate. At the 2010 rate of U.S. consumption (about 24.1 trillion cubic feet per year), 2,543 trillion cubic feet of natural gas is enough to supply more than 100 years of use.



Source: U.S. Energy Information Administration, *Natural Gas Monthly* (April 2012).

How Natural Gas Is Used: About 25 percent of energy used in the U.S. came from natural gas in 2011. It is used to produce steel, glass, paper, clothing, brick, electricity. Natural gas is also used as an essential raw material for many common products: paints, fertilizer, plastics, antifreeze, dyes, photographic film, medicines and explosives. Slightly more than half of the homes in the United States use natural gas as their main heating fuel. It is also used in homes to fuel stoves, water heaters, clothes dryers and other household appliances.

The major consumers of natural gas in the United States in 2011 included:

- Electric power sector (7.6 trillion cubic feet)
- Industrial sector (6.8 trillion cubic feet)
- Residential sector (4.7 trillion cubic feet)
- Commercial sector (3.2 trillion cubic feet)

Cost of Natural Gas: The price that consumers pay for natural gas has two main parts (all cost components include a number of taxes):

- **Commodity costs** – the cost of the natural gas itself known as the wellhead cost
- **Transmission and distribution costs** – the cost to move the natural gas by pipeline from where it is produced to the customer's local gas company and to bring the natural gas from the local gas company to your house – this includes service or demand charges added on by the local distribution company

The share of these two cost components varies according to natural gas market conditions. In 2010, the natural gas commodity cost (the cost at the wellhead) constituted about 39 percent of the cost of natural gas for residential consumers – this was low relative to recent years, but high relative to earlier decades.

In 2009 and 2010, national annual average residential natural gas prices were at their lowest since 2004 at about $12.90 per thousand cubic feet.

Natural Gas and the Environment: Natural gas has many qualities that make it an efficient, relatively clean and economical energy source. There are, however, environmental and safety issues with its production and use. Burning natural gas for energy results in much fewer emissions of nearly all types of air pollutants and carbon dioxide per unit of heat produced than coal or refined petroleum products. Natural gas is made up mostly of methane, which is a greenhouse gas. The oil and natural gas industry tries to prevent gas leaks and where natural gas is produced, but cannot be transported economically, it is "flared" or burned at well sites. This is considered to be safer and better than releasing methane into the atmosphere because carbon dioxide is not as potent a greenhouse gas as methane.

New drilling and gas recovery technologies have greatly reduced the amount of area that has to be disturbed to produce each cubic foot of natural gas. Horizontal and directional drilling techniques make it possible to produce more gas from a single well than in the past so fewer wells are needed to develop a gas field. Hydraulic fracturing (commonly called "fracking") of shale rock formations is opening up large reserves of gas that were previously too expensive to develop. Fracking involves pumping liquids under high pressure into a well to fracture the rock and allow gas to escape from tiny pockets in the rock. There are some potential environmental concerns, however, associated with the production of shale gas (more on fracking later in this chapter).

Coal

Coal is a combustible black or brownish-black sedimentary rock composed mostly of carbon and hydrocarbons. It is the most abundant fossil fuel produced in the United States. The energy in coal comes from the energy stored by plants that lived millions of years ago. For millions of years, a layer of dead plants at the bottom of the swampy forests that used to cover the earth was covered by layers of water and dirt trapping the energy of the dead plants. The heat and pressure from the top layers helped the plan remains turn into what we today call coal.

Types of Coal: Coal is classified into four main types, or ranks: anthracite, bituminous, subbituminous and lignite. These classifications are formed depending on the amounts and types of carbon it contains and on the amount of heat energy it can produce. The rank of a deposit of coal depends on the pressure and heat acting on the plant debris as it sank deeper over millions of years. For the most part, the higher ranks of coal contain more heat-producing energy.

- **Anthracite:**
  - contains 86 to 97 percent carbon;
  - generally has a heating value slightly higher than bituminous coal;
  - accounts for less than 0.5 percent of the coal mined in the United States;
  - all of the anthracite mines in the U.S. are located in northeastern Pennsylvania

- **Bituminous:**
  - contains 45 to 86 percent carbon;
  - was formed under high heat and pressure;
  - bituminous coal in the U.S. is between 100 to 300 million years old
  - is the most abundant rank of coal found in the U.S. accounting for about half of U.S. coal production
  - used to generate electricity
  - is an important fuel and raw material for the steel and iron industries
  - West Virginia, Kentucky and Pennsylvania are the largest producers of bituminous coal

- **Subbituminous:**
  - lower heating value than bituminous coal
  - typically contains 35 to 45 percent carbon
  - most U.S. subbituminous coal is at least 100 million years old
  - about 47 percent of coal produced in the U.S. is subbituminous
  - Wyoming is the leading source of subbituminous coal

- **Lignite:**
  - lowest rank of coal with the lowest energy content
  - lignite coal deposits tend to be relatively young coal deposits that were not subjected to extreme heat or pressure
  - contain 25 to 25 percent carbon
  - is crumbly and has high moisture content
  - 20 lignite mines in the U.S. producing about seven percent of U.S. coal
  - most lignite is mined in Texas and North Dakota
  - mainly burned at power plants to generate electricity

Mining and Processing: Coal miners use giant machines to remove coal from the ground through two methods: surface or underground mining. Many U.S. coal beds are very near the ground's surface and about two-thirds of coal production comes from surface mines. Due to growth in surface mining and improved mine technology, the amount of coal produced by one miner in one hour has more than tripled since 1978.

- **Surface mining:**
  - used to produce most of the coal in the U.S. because it is less expensive than underground mining;
  - can be used when the coal is buried less than 200 feet underground;
  - includes mountain top removal;
  - giant machines remove the top soil and layers of rock known as "overburden" to expose the coal seam;
  - once mining is finished, the dirt and rock are returned to the pit, the topsoil is replaced and the area is replanted

- **Underground mining:**
  - sometimes called deep mining;
  - used when coal is buried several hundred feet below the surface (some underground mines are 1,000 feet deep);

- to remove coal, miners ride elevators down deep mine shafts where they run machines that dig out the coal

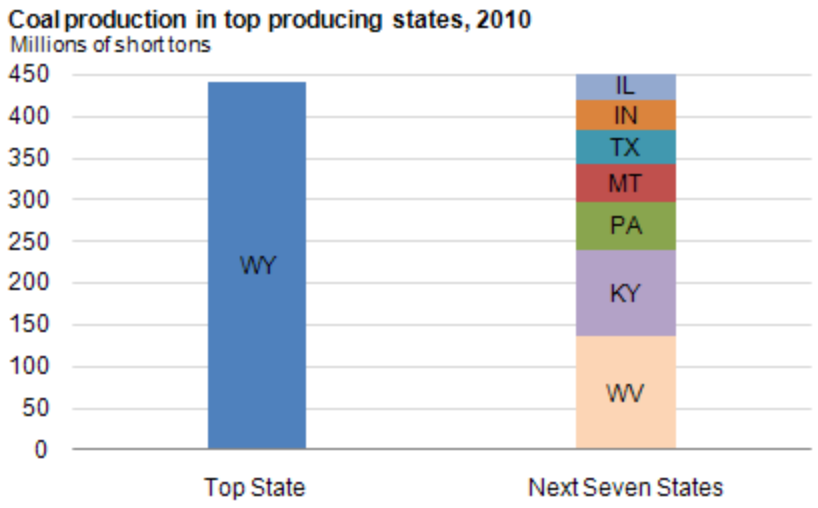
After coal comes out of the ground it usually goes on a conveyor belt to a preparation plant that is located at the mining site. The plant cleans and processes coal to remove other rocks and dirt, ash, sulfur and unwanted materials increasing the heating value of the coal. After coal is mined and processed, it is ready to be shipped to market. The cost of shipping coal can cost more than the cost of mining it. About 71 percent of coal in the U.S. is transported by train. It is often cheaper to transport coal on river barges, but barges cannot take coal everywhere that it needs to go. Coal can also be crushed, mixed with water and sent through a "slurry" pipeline.

In 2010, the amount of coal produced at U.S. coal mines was 1,085.3 million short tons. Coal is mined in 26 states – Wyoming mines the most coal followed by West Virginia, Kentucky, Pennsylvania and Montana. Coal is mostly found in three large regions:

- **Appalachian Coal Region:**
  - more than one-third of coal produced in the U.S. comes from here;
  - West Virginia is the largest coal-producing state in the region and the second largest coal-producing state in the U.S.;
  - coal mined here primarily used for steam generation for electricity, metal production and for export

- **Interior Coal Region:**
  - Texas is largest coal producer here accounting for almost one-third of the region's total coal production;
  - region has mid-sized surface mines

- **Western Coal Region:**
  - more than half of coal produced in U.S. is produced here;
  - Wyoming is largest regional coal producer and the largest coal-producing state in the country – eight of the top 10 producing coal mines in the U.S. are located in Wyoming;
  - region has many large surface mines;
  - some of the largest coal mines in the world are in this region



Exports and Imports: Coal has not historically been shipped great distances because it is heavy, bulky and relatively cheap. Some of the coal produced in the U.S., however, is sold

abroad – in 2010 about 7.5 percent of the 1,085.3 million short tons of coal produced in the U.S. was exported. The top five destination countries for exported U.S. coal in 2010 were: Canada (14%), Brazil (10%), Netherlands (9%), China (7%) and South Korea (7%).

Although the U.S. produces a large amount of coal, those along the Gulf Coast or the Atlantic Ocean sometimes find it cheaper to import coal by sea than to have it sent by rail or barge from the coal-producing regions of the U.S. Of the 1,048.3 million short tons of coal consumed in the United States in 2010, about 19 million short tons were imported from abroad (two percent of total consumption). U.S. coal exports were significantly higher in 2010 than 2009 while imports decreased. The top five source countries for coal imported to the United States in 2010 were: Colombia (75%), Indonesia (10%), Canada (9%), Venezuela (3%) and Australia (2%).

Use of Coal: About 93 percent of coal used in the United States is used for generating electricity. In addition to this, a variety of industries use coal's heat and by-products. Separated ingredients of coal (like methanol and ethylene) are used in making plastics, tar, synthetic fibers, fertilizers and medicines. It is used to make steel and the concrete and paper industries also use large amounts of coal.

Price of Coal: Surface-mined coal is generally lower-priced than underground-mined coal. The price of coal varies by coal rank, as previously mentioned, mining method, geographic region and coal quality. In 2010, the average sales price of coal at mines producing each of the four major ranks of coal:

- Lignite: $18.76 per ton
- Subbituminous: $14.11 per ton
- Bituminous: $60.88 per ton
- Anthracite: $59.51 per ton

Coal and the Environment: Surface, or strip mines, are the source of about 70 percent of the coal mined in the U.S. One surface mining technique that has affected large areas of the Appalachian Mountains in West Virginia and Kentucky is mountain top removal and valley fill mining where the tops of mountains have been removed using a combination of explosives and mining equipment and deposited into nearby valleys. As a result, the landscape is changed and streams may be covered with a mixture of rock and dirt. The water draining from these filled valleys may contain pollutants that can harm aquatic wildlife downstream. While mountain-top mining has been around since the 1970s, its use became more widespread and controversial beginning in the 1990s.

U.S. laws require that dust and water runoff from the affected area has to be controlled and that the area has to be "reclaimed" close to its original condition. Many surface mines have been reclaimed so well that it can be hard to tell that there was a surface mine in the area to begin with.

Underground mines have less overall environmental impact than surface mines. The most serious impact of underground mining is the methane gas that must be vented out of mines to make them safe to work in. In 2009, methane emissions from underground mines accounted for about 10 percent of total U.S. methane emissions and one percent of total U.S. greenhouse gas emissions. Surface mines contributed about two percent of U.S. methane emissions.

The ground above mine tunnels can collapse and acidic water can drain from abandoned underground mines. Underground mining is a dangerous profession and coal miners can be injured or killed in mining accidents. Miners can also get black lung disease from the coal dust in the mines.

Most coal in the U.S. is used as a fuel to generate electricity. Burning coal produces numerous emissions that can adversely affect the environment and human health. The primary emissions from coal combustion are:

- Sulfur dioxide (SO2) - contributes to acid rain and respiratory illnesses
- Nitrogen oxides (NOx) - contributes to smog and respiratory illnesses
- Particulates - contribute to smog, haze, and respiratory illnesses and lung disease
- Carbon dioxide (CO2) - primary greenhouse gas emission from the burning of fossil fuels
- Mercury and other heavy metals – have been linked with both neurological and developmental damage in humans and other animals. Mercury concentrations in the air usually are low and of little direct concern, but when mercury enters water — either directly or through deposition from the air — biological processes transform it into methylmercury, a highly toxic chemical that accumulates in fish and the animals (including humans) that eat fish.
- Fly ash and bottom ash - residues created when coal is burned at power plants. In the past, fly ash was released into the air through the smokestack, but by law much of it now must be captured by pollution control devices, like scrubbers. In the United States, fly ash is generally stored at coal power plants or placed in landfills. Pollution leaching from ash storage and landfills into groundwater has emerged as a new environmental concern.

Both the Clean Air Act and the Clean Water Act require industries to reduce pollutants released into the air and the water. Industry has found several ways to reduce sulfur, nitrogen oxides and other impurities from coal. They have found more effective ways of cleaning coal after it is mined and coal consumers have shifted towards greater use of low sulfur coal. Power plants use flue gas desulfurization equipment, or "scrubbers," to clean sulfur from the smoke before it leaves the smokestacks.

Nuclear

Nuclear energy can be used to make electricity, but first the energy must be released. Nuclear energy is found in the nucleus of an atom. There is enormous energy in the bonds that hold the nucleus together – breaking those bonds releases that energy. This can be done in one of two ways: nuclear fusion and nuclear fission. In nuclear fission, atoms are split apart to form smaller atoms releasing energy – nuclear power plants use this energy to produce electricity. In nuclear fusion, energy is released when atoms are combined or fused together to form a larger atom. This is how the sun produces energy and fusion is the subject of ongoing research, but it is not yet clear that it will ever be a commercially-viable technology for electricity generation.

The fuel most widely used by nuclear plants for nuclear fission is uranium. Uranium is nonrenewable but is a common metal found in rocks all over the world. Although uranium is quite common (about 100 times

more common than silver), the kind of uranium that nuclear plants use – U-235 – is relatively rare. U-235 is used as fuel because its atoms are easily split apart.

Most U.S. uranium is mined in the western United States. Once uranium is mined, the U-235 must be extracted and process before it can be used as a fuel.

Nuclear power accounted for slightly more than 19 percent of the total net electricity generated in the United States in 2011 – about as much as the electricity used in California, Texas and New York. In 2010, there were 65 nuclear power plants composed of 104 licensed nuclear reactors throughout the U.S. These reactors are spread out across 31 states. Illinois has the most commercial nuclear plants (six) and Pennsylvania the second most (five) out of all the states. The top five states for nuclear generation of electricity in 2011 were:

- Illinois
- Pennsylvania
- South Carolina
- New York
- North Carolina

The last new reactor to enter commercial service in the United States was the Tennessee Valley Authority's (TVA) Watts Bar 1 in Tennessee in 1996. In 2008, TVA resumed construction on Watts Bar 2 which was partially complete when its construction was stopped in 1988. It is now expected to be completed in 2013. By early 2011, the Nuclear Regulatory Commission (NRC) had received applications for a total of 28 newly designed reactors. It is uncertain at the time of this writing how many of these reactors will eventually be built, but the NRC estimates 42 months to complete the review of all the applications.

Where Our Uranium Comes From: Economically recoverable uranium deposits have been discovered primarily in the western United States, Australia, Canada, Central Asia, Africa and South America. Most of our uranium is imported. In 2010, eight percent of delivered uranium came from the United States – 92 percent of it was of foreign-origin: 41 percent originated in Kazakhstan, Russia and Uzbekistan; 37 percent was from Australia and Canada; 14 percent from Namibia, Niger and other countries.

The U.S. Commercial Nuclear Industry: In 1951, an experimental reactor used uranium to generate electricity, but more than five years passed before uranium contributed significantly to commercial electricity generation. In 1957, the first large-scale U.S. commercial nuclear power plant opened at Shippingport, Pennsylvania. Nuclear power as a percentage of total U.S. electricity generation increased quickly from nearly five percent in 1973 to nine percent in 1975 and then to the current level of about 20 percent by 1988.

In 2011, the United States had more nuclear capacity than any other nation with 101 gigawatts followed in rank order by France, Japan and Germany. Although these other countries generate less electricity than the U.S., they are more dependent on nuclear power.

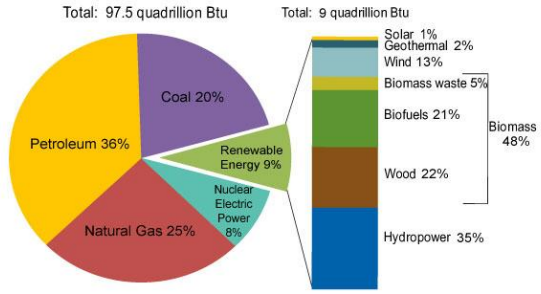
Nuclear Power and the Environment: Unlike fossil fuel-fired power plants, nuclear reactors do not produce air pollution or carbon dioxide while operating. The processes for mining and refining uranium ore and making reactor fuel, however, require large amounts of energy. The main environmental concerns for nuclear power are radioactive wastes such as uranium mill tailings, spent (used) reactor fuel and other

radioactive wastes. These materials can remain radioactive and dangerous to human health for thousands of years and are subject to special regulations that govern their handling, transportation, storage and disposal to protect human health and the environment.

Radioactive wastes are classified as low-level and high-level because the radioactivity in these wastes can range from just above natural background levels (as in mill tailings) to much higher levels as in spent reactor fuel or the parts inside a nuclear reactor. The radioactivity of nuclear waste decreases over time through a process called radioactive decay. The amount of time necessary to decrease the radioactivity of radioactive material to one-half the original level is called the radioactive half-life of the material. Waste with a short half-life is often stored temporarily before disposal in order to reduce potential radiation doses to workers who handle and transport the waste as well as to reduce the radiation levels at disposal sites.

Spent reactor fuel assemblies are highly radioactive and must initially be stored in specially designed pools resembling large swimming pools where water cools the fuel and acts as a radiation shield, or in specially designed dry storage containers. There is currently no permanent disposal facility in the United States for high-level nuclear waste – it is being stored at nuclear plants.

U.S. Energy Consumption by Energy Source, 2011



Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 10.1 (March 2012), preliminary 2011 data.

Renewable Energy Sources

Unlike fossil fuels, renewable energy sources regenerate and can be sustained indefinitely. The five renewable sources used most often are:

- Biomass, including: wood and wood waste; municipal solid waste; landfill gas and biogas; ethanol; biodiesel
- Water (hydropower)
- Geothermal
- Wind
- Solar

The use of renewable energy is not new. More than 150 years ago, wood, which is one form of biomass, supplied up to 90 percent of our energy needs. As the use of coal, petroleum and natural gas expanded, the U.S. became less reliant on wood as an energy source. In 2011, consumption of renewable sources in the United States totaled about nine quadrillion Btu, or about nine percent of all energy used nationally. About 13 percent of U.S. electricity was generated from renewable sources in 2011. More than half of renewable energy goes to producing electricity.

<u>Hydropower</u>

Among renewable energy sources, hydropower is the one that produces the most electricity in the United States. It accounted for six percent of total U.S. electricity generation and 63 percent of generation from renewable in 2011. The first U.S. hydroelectric power plant opened on the Fox River near Appleton,

Wisconsin, on Sept. 30, 1882. The amount of available energy in moving water is determined by its flow or fall. Swiftly flowing water in a big river like the Columbia River carries a great deal of energy. Water falling rapidly from a very high point, like Niagara Falls, also has lots of energy in its flow. In both instances, the water flows through a pipe, or penstock, then pushes against a turns blades in a turbine to spin a generator to produce electricity. In a run-of-the-river system, the force of the current applies the needed pressure, while in a storage system, water is accumulated in reservoirs created by dams then released as needed to generate electricity.

More than half of U.S. hydroelectric capacity for electricity generation is concentrated in three states: Washington, Oregon and California. In 2011, approximately 29 percent of the total U.S. hydropower was generated in Washington – the location of our largest hydroelectric facility, the Grand Coulee Dam. Most hydropower is produced at large facilities built by the federal government. The West has most of the largest dams, but there are numerous smaller facilities operating around the country.

Editor's Note: *There are several new ways to harness hydropower being developed that are not commonly found at this time. For more information regarding hydropower and these developing methods, please refer to the Energy Information Administration's (EIA'S) website regarding hydropower by clicking here.*

Hydropower and the Environment: Only a small percentage of all dams in the U.S. produce electricity – most were constructed solely to provide irrigation and flood control. While hydropower generators do not directly produce emissions of air pollutants, hydropower dams, reservoirs and the operation of generators can have environmental impacts. A dam to create a reservoir can obstruct migration of fish to their upstream spawning areas, or can also change the natural water temperatures, chemistry, flow characteristics and silt loads – all of which can lead to significant changes in the ecology of the river upstream and downstream.

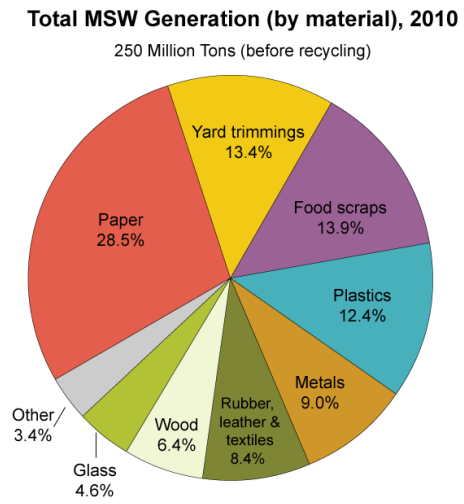
Biomass

Biomass is organic material made from plants and animals. It contains stored energy from the sun – plants absorb the sun's energy in a process called photosynthesis, while the chemical energy in plants gets passed on to animals and people eat them. Biomass is a renewable energy source because we can always grow more trees and crops and waste will always exist. Some examples of biomass fuels are wood, crops, manure and some garbage. When burned, the chemical energy in biomass is released as heat. Burning biomass is not the only way to release its energy – it can be converted to other useable forms of energy like methane gas or transportation fuels like ethanol and biodiesel.

Biomass fuels provided about four percent of the energy used in the United States in 2011. Of this, about 45 percent was from wood and wood-derived biomass, 44 percent from biofuels (mainly ethanol) and about 11 percent from municipal waste.

The most common form of biomass is wood. In the United States, wood and wood waste (bark, sawdust, wood chips, etc.) provide about two percent of the energy we use today. About 80 percent of the wood and wood waste fuel used in the U.S. is consumed by industry, electric power producers and commercial businesses. The rest, mainly wood, is used in homes for heating and cooking.

Municipal Solid Waste (MSW): Garbage, often called municipal solid waste (MSW), is the source of about six percent of the total biomass energy consumed in the United States. MSW contains biomass (or biogenic) materials like paper, cardboard, food scraps, grass clippings, leaves, wood and leather products and other non-biomass combustible materials, mainly plastics and other synthetic materials made from petroleum. About 85 percent of our household trash is material that will burn and most of that is biogenic, or material that is made from biomass (plant or animal products).



Source: U.S. Environmental Protection Agency, *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2010* (November 2010).

There are about 87 waste-to-energy plants in the United States that generate electricity or produce steam. In 2010, these plants burned about 12 percent of MSW and generated 14 million kilowatt hours of electricity – about the same amount used by 1.2 million U.S. households. Providing electricity is not the major advantage of waste-to-energy plants – it actually costs more to generate electricity at a waste-to-energy plant than it does at a coal, nuclear or hydropower plant. The major advantage of burning waste is that it reduces the amount of material that we bury in landfills – burning MSW reduces the volume of waste by about 87 percent.

Landfill Gas and Biogas: Landfills can be a source of energy. Anaerobic bacteria that live in landfills decompose organic waste to produce a gas called biogas that contains methane. Landfill biogas can also be dangerous to people or the environment. New rules require landfills to collect methane gas for safety and pollution control. Some landfills simply burn the methane gas in a controlled way to get rid of it, but the methane can also be used as an energy source. They can collect the methane gas, treat it and then sell it as a commercial fuel. As of October 2011, 526 landfills have 563 operating gas to energy projects in the United States. California has the most landfill gas energy projects in operation (76), followed by Pennsylvania (39) and Michigan (36).

Some farmers produce biogas in large tanks ("digesters") where they put manure and bedding material from their barns. Some cover their manure ponds to capture biogas. Biogas digesters and manure ponds contain the same anaerobic bacteria in landfills.

<u>Biofuels: Ethanol and Biodiesel</u>

Biofuels are transportation fuels like ethanol and biodiesel that are made from biomass materials. These fuels are usually blended with the petroleum fuels, but can also be used on their own. Using ethanol or biodiesel means we do not burn quite as much fossil fuel. They are usually more expensive than the fossil fuels that they replace, but they are also cleaner-burning fuels producing fewer air pollutants.

Ethanol is an alcohol fuel made from the sugars found in grains such as corn, sorghum and barley. Other sources of sugars to produce ethanol include: potato skins, rice, sugar cane, sugar beets, yard clippings, bark and switchgrass. Most of the ethanol used in the United States today is distilled from corn.

Nearly all gasoline sold now in the U.S. contains some ethanol. About 99 percent of the fuel ethanol consumed in the U.S. is added to gasoline in mixtures of up to 10 percent ethanol and 90 percent gasoline. Any gasoline-powered engine in the U.S. can use E10 (gasoline mixed with 10 percent ethanol), but only

specific types of vehicles can use mixtures with greater than 10 percent ethanol. The EPA ruled in October 2010, that cars and light trucks of model year 2007 and newer can use E15. A flex-fuel vehicle is necessary to mixtures with higher amounts of ethanol. E85, a fuel that is 85 percent ethanol and 15 percent gasoline, is mainly sold in the Midwest.

Biodiesel is a fuel made from vegetable oils, fats or greases. It can be used in diesel engines without changing them and it is the fastest growing alternative fuel in the United States.

Wind

In 2011, wind turbines in the United States generated about three percent of total U.S. electricity generation. Although this is a small fraction of the nation's total electricity production, it was equal to the annual electricity use of about 10 million households. The amount of electricity generated from wind has grown significantly in recent years – from about six billion kilowatt hours in 2000 to about 120 billion kilowatt hours in 2011.

Wind speed varies throughout the United States and varies from season to season. In Tehachapi, California, the wind blows more from April through October than it does in the winter. This is because of the extreme heating of the Mojave Desert during the summer months. The hot air over the desert rises and the cooler, denser air above the Pacific Ocean rushes through the Tehachapi mountain pass to take its place. In a state like Montana, however, the wind blows more during the winter.

Large wind turbines generated electricity in 36 different states in 2011. The top five states with the largest generation of electricity from wind were Texas, Iowa, California, Minnesota and Illinois. In 2009, most of the wind power plants in the world were located in Europe and in the United States where government programs have helped support wind power development. The U.S. ranked first in the world in wind power generation, followed by Germany, Spain, China and India. Denmark ranked ninth in the world in wind power generation, but generated about 19 percent of its electricity from wind, the largest share of any country. The world's largest wind farm, the Horse Hollow Wind Energy Center in Texas has 421 wind turbines that generate enough electricity to power 220,000 homes per year.

Geothermal

Geothermal energy is generated in the Earth's core that can be recovered as steam or hot water and used to heat buildings or generate electricity. Naturally occurring large areas of hydrothermal resources are called geothermal reservoirs. Most are deep underground with no visible clues showing above ground. But geothermal energy sometimes finds its way to the surface in the form of volcanoes and fumaroles (holes where volcanic gases are released), hot springs and geysers. The most active geothermal resources are usually found along major plate boundaries where earthquakes and volcanoes are concentrated. Most of the geothermal activity in the world occurs in an area called the Ring of Fire which encircles the Pacific Ocean. When magma comes close to the surface, it heats ground water found trapped in porous rock or water running along fractured rock surfaces and faults. These features are called hydrothermal and have two common ingredients: water and heat.

Most of the geothermal power plants in the United States are located in the Western states and Hawaii. California generates the most electricity from geothermal energy – "The Geysers" dry steam reservoir in northern California is the largest known dry steam field in the world and has been producing electricity since 1960.

The United States leads the world in electricity generation with geothermal power. In 2011, U.S. geothermal power plants produced about 17 billion kilowatt hours, or 0.4 percent of total U.S. electricity generation. In 2011, five states had geothermal power plants:

- California had 35 geothermal power plants, which produced 80 percent of U.S. geothermal electricity;
- Nevada had 20 geothermal power plants, which produced 16 percent of U.S. geothermal electricity;
- Utah had two plants, and Hawaii and Idaho each had one geothermal plant.

Twenty-four countries including the United States had geothermal power plants in 2010 generating a total of about 63.9 billion kilowatt hours. The Philippines was the second largest geothermal power producer after the U.S. at 9.4 billion kilowatt hours, which equaled about 16 percent of its total power generation. Iceland, the seventh largest producer at 4.3 billion kilowatt hours produced 26 percent of its total electricity using geothermal energy.

Solar

When converted to thermal (or heat) energy, solar energy can be used to heat water, heat spaces and heat fluids. Solar energy is by far the Earth's most available energy source. It is capable of providing many times the total current energy demand, but it is an intermittent energy source meaning that it is not available at all times. Solar energy can be converted to electricity in one of two ways:

- Photovoltaic (PV devices) or "solar cells"; or
- Solar thermal/electric power plants

Photovoltaics: A photovoltaic cell, or PV cell, is the technology used to convert solar energy directly into electrical power. It is a nonmechanical device usually made from silicon alloys. Sunlight is composed of photons, or particles of solar energy. When photons strike a photovoltaic cell, they can be reflected, pass right through or be absorbed. Only the absorbed photons provide energy to generate electricity. When enough sunlight (energy) is absorbed by the material (a semiconductor), electrons are dislodged from the material's atoms. Special treatment of the material surface during manufacturing makes the front surface of the cell more receptive to free electrons, so the electrons naturally migrate to the surface. When the electrons leave their position, holes are formed. When many electrons, each carrying a negative charge, travel toward the front surface of the cell, the resulting imbalance of charge between the cell's front and back surfaces creates a voltage potential like the negative and positive terminals of a battery. When the two surfaces are connected through an external load, like an appliance, electricity flows.

The performance of a photovoltaic array is dependent upon sunlight. Climate conditions like clouds or fog have a significant effect on the amount of solar energy received by a photovoltaic array and, in turn, its performance. The efficiency of most commercially available photovoltaic modules in converting sunlight to electricity ranges from five percent to 15 percent.

Solar Thermal Power Plants: California has the world's biggest solar thermal power plants. Nine solar power plants in three locations in California's Mojave Desert comprise the Solar Energy Generating Systems (SEGS). SEGS VIII and IX (each 80 megawatts), located in Harper Lake, are individually and collectively the largest solar thermal power generating plants in the world. Solar thermal power plants use the sun's rays to heat a fluid to very high temperatures. The fluid is then circulated through pipes so it can transfer its heat to water to produce steam. The steam, in turn, is converted into mechanical energy in a turbine and into electricity by a conventional generator coupled to the turbine. The three main types of solar thermal power systems are: parabolic trough (the most common type of plant), solar dish and solar power tower.

THE UNITED STATES' RELIANCE ON FOREIGN SOURCES OF ENERGY

Our nation's overall energy history is one of significant change as new forms of energy have been and are being developed. The three major fossil fuels – petroleum, natural gas and coal – have dominated the U.S. energy mix for more than 100 years. But, there have been some recent changes in U.S. energy production that are helpful to highlight:

- The share of coal produced from surface mines increased significantly from 25 percent in 1949 to 51 percent in 1971 to 69 percent in 2010. The remaining share as produced from underground mines.

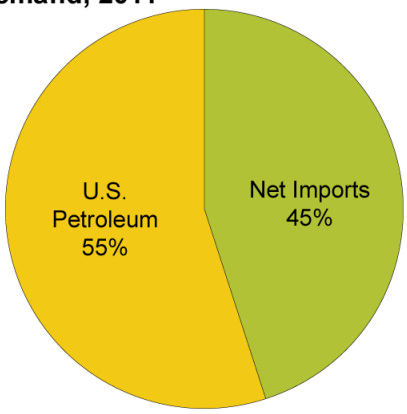
- In 2011, natural gas production exceeded coal production for the first time since 1981. More efficient, cost-effective drilling techniques, notably in the production of natural gas from shale formations, led to increased natural gas production in recent years.

- Although total U.S. crude oil production has generally decreased each year since it peaked in 1970, it increased by three percent in 2010 from 2009, and about four percent in 2011 from 2010. These increases were led by escalating horizontal drilling and hydraulic fracturing, notably in the North Dakota section of the Bakken formation.

- Natural gas plant liquids (NGPL) are hydrocarbons that are separated as liquids from natural gas at processing plants and used in petroleum refineries. Production of NGPL fluctuates with natural gas production, but their share of total U.S. petroleum field production increased from eight percent in 1950 to 28 percent in 2011.

- In 2011, total renewable energy consumption and production reached all-time highs of nine quadrillion Btu each due mainly to relatively high hydroelectric power generations and continuing increases in biofuels used and wind power generation. In 2011, biofuels production was about nine times greater than in 2000, and wind generation was about 20 times greater than in 2000.

Net Imports and Domestic Petroleum as Shares of U.S. Demand, 2011



Note: U.S. Petroleum includes balancing item.

Source: U.S. Energy Information Administration, *Monthly Energy Review,* Table 3.3a (March 2012), preliminary data.

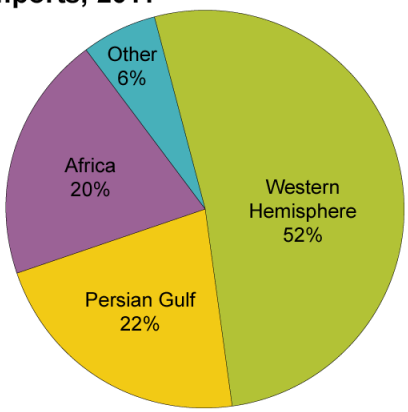
The United States was self-sufficient in energy until the late 1950s when energy consumption began to outpace domestic production causing the United States to import more energy to fill the resulting gap. In 2011, energy produced in the United States provided about 80 percent of the nation's energy needs. The remainder of our energy was supplied mainly by imports of petroleum. Over the years, domestic consumption has continued to grow while production has tapered off. The result being that the United States imports and consumes more petroleum and natural gas than any other country in the world.

During 2011, the United States consumed 18.8 million barrels per day (MMbd) of petroleum products making us the world's largest petroleum consumer. According to the EIA, we are currently third in the world in crude oil production, but import about 45 percent of the crude oil and refined petroleum products that we consume each year - this was the lowest level since 1995.

In the past two decades, natural gas imports have expanded rapidly as well, particularly from Canada. The reality is the United States is significantly dependent upon foreign sources of oil and petroleum products to meet its ever-growing energy needs.

Interestingly, according to the EIA, the United States imports most of its crude oil and petroleum products from the Western Hemisphere – about 52 percent during 2011 – which includes North, South and Central America and the Caribbean including U.S. territories. About 22 percent of our imports of crude oil and petroleum products came from the Persian Gulf countries of Bahrain, Iraq, Kuwait, Qatar, Saudi Arabia and United Arab Emirates. Our absolute largest sources of net crude oil and petroleum product imports were Canada and Saudi Arabia.

Sources of U.S. Net Petroleum Imports, 2011



Source: U.S. Energy Information Administration, *Petroleum Supply Monthly* (February 2012), preliminary data.

U.S. petroleum imports rose sharply in the 1970s and reliance on petroleum from OPEC grew. In 2011, about 52 percent of U.S. net petroleum imports came from OPEC countries, down from 70 percent in 1977. Since 1992, more petroleum has come into the United States from non-OPEC countries than from OPEC countries.

It is important to note that OPEC and "Persian Gulf" countries are not the same. OPEC was organized in 1960 for the purpose of negotiating with oil companies on matters of oil production, prices and future concession rights. Of the 12 countries currently in OPEC, only six of them are in the Persian Gulf.

OPEC	Persian Gulf
Iran	
Iraq	
Kuwait	
Saudi Arabia	**Iran**
Qatar	**Iraq**
United Arab Emirates	**Kuwait**
Algeria	**Saudi Arabia**
Angola	**Qatar**
Ecuador	**United Arab Emirates**
Libya	Bahrain
Nigeria	
Venezuela	

The top 15 countries from which the United States imported the most crude oil, as of September 2011, are (in thousand barrels per day):

1) Canada (2,324)

2) Saudi Arabia (1,465)

3) Mexico (1,099)

4) Venezuela (759)

5) Nigeria (529)

6) Colombia (510)

7) Iraq (403)

8) Ecuador (299)

9) Angola (283)

10) Russia (275)

11) Brazil (163)

12) Kuwait (145)

13) Algeria (139)

14) Chad (74)

15) Oman (72)

As the data shows, the top five exporting countries accounted for 69 percent of United States crude oil imports in September 2011, while the top ten sources accounted for approximately 88 percent of all U.S. crude oil imports.

Although it is usually impossible to tell whether the petroleum products you use came from domestic or imported sources of oil once they are refined, having so much of our supplies come from such potentially unstable regions is still a cause for great concern. Furthermore, during 2011 (as in, the year as a whole – the above list is from September 2011 – the most recently available monthly data), the United States' five largest single suppliers of crude oil and petroleum products were Canada (29 percent), Saudi Arabia (14 percent), Venezuela (11 percent), Nigeria (10 percent) and Mexico (eight percent).

In addition to crude oil, the U.S. also imports refined petroleum products such as gasoline. Although the United States produces more than 90 percent of the petroleum products it consumes, it imported about one million barrels per day of finished petroleum products in 2011.

Promoting U.S. Energy Independence

Energy consumption is increasing at a rapid pace not only in the United States, but also in other parts of the world. The level of global demand on commodities such as oil and petroleum products can leave countries like the United States, which imports a majority of its energy from foreign sources, vulnerable to volatile price fluctuations. Further, without a secure and diverse energy supply, the United States many times can find the cost and availability of our imported energy resources subject to events largely beyond our control. For example, higher demand from rapidly developing nations such as China and India, foreign conflicts, the threat of terrorism, piracy and even natural disasters can all contribute to the price and availability of energy resources.

American families and businesses cannot afford an energy policy that potentially enables foreign oil cartels and dictators to hold our nation hostage. Most would agree that we can no longer send billions of dollars overseas each year to countries that help fund our enemies or that do not share the interest of the United States. The United States should no longer tolerate a reliance on the potentially crippling "Achilles' heel" of foreign energy supplies.

Republicans believe that we must promote and work towards an energy independent United States that will result in lower energy costs, advanced and diverse energy solutions, economic growth, job creation and address a significant national security concern. The United States must implement a

comprehensive energy policy that emphasizes domestic solutions through the environmentally-friendly acquisition and use of traditional fuels, the proliferation of alternative energy and significant efforts towards energy efficiency and conservation.

The United States has vast resources of untapped oil, natural gas and coal. Government regulations, frivolous lawsuits and environmental elitists, however, are preventing the nation from utilizing these resources. Republicans believe that we must expedite environmentally-friendly oil and natural gas drilling over the millions of acres of federal lands and waters where bureaucratic and legal hurdles are preventing its acquisition.

Efficiency and conservation must be a part of any effective energy plan and the government can play a critical role in improving energy efficiency. First, the federal government should lead by example and work to increase the efficiency of government buildings, transportation systems and auto fleets. Second, the government can provide meaningful incentives to help families and small businesses cover the costs of making energy efficient improvements to their homes and places of work.

In addition to difficulties producing enough fuel to meet our needs, the capacity to refine oil and turn it into usable product is limited. Thus, the ability of refineries in the United States to produce enough useable fuel to meet demand plays an integral role in the price of gasoline. Increasing crude oil production will not alleviate gasoline prices unless refining capacity can be increased. But in the past, the number of refineries in the United States has not been increased because of stringent environmental regulations and opposition from local residents and officials when potential sites are proposed. Environmentally-friendly refining capacity in the United States must be increased to help decrease energy costs and alleviate "bottlenecks" in the energy supply line.

For too long, the United States has "outsourced" what amounts to the very basis of our economy and our way of life, our energy production and development. The United States must move forward on a decades old promise of energy independence, which is environmentally conscious and that will strengthen our economy, our national security and improve the everyday lives of the American people in tangible ways.

Promoting Clean Energy

The United States has the ability to significantly increase its clean energy resources through the development of wind, solar, biomass, biofuels and other alternative energy sources. The government can speed up the development of these resources by leading the way in research and development. Once developed, regulatory and legal barriers often complicate the deployment of these resources, especially in areas under federal control. The regulatory and legal process for deploying renewable energy production should be streamlined.

The United States' use of nuclear energy must expand. Nuclear energy is firmly established and developed (this is not a power source requiring billions of taxpayer dollars in research and development or unsustainable subsidies) and does not produce any emissions. But, largely due to largely unwarranted fear, this very clean and safe technology has not been widely utilized to help satisfy America's growing demand for electricity. There are currently 104 operable commercial nuclear reactors at 65 nuclear power plants in the United States. Since 1990, the share of the nation's total electricity supply provided by nuclear power generation has averaged about 20 percent, with increases in nuclear generation that have roughly tracked the growth total electricity output. No new reactors have been built in the United States since the 1970s, despite widespread development and use of nuclear energy in Europe. Simplifying the permitting process for and

encouraging the construction of new plants could allow more new zero-emission electricity to come online quicker than any accelerated construction of other alternative technologies.

Promotion of renewable energy sources is needed, but the fact remains that fossil fuels will continue to serve as the dominant energy source for the foreseeable future. The development of new technologies in coal, natural gas and nuclear power, along with renewable fuels and "green" energy sources such as wind, solar, biomass and hydrogen will pave the way for our nation's future energy independence. But most of those solutions are not yet technologically available to feasibly meet our ever-growing energy needs. In the meantime, a balanced approach is necessary to resolve U.S. energy needs, including increased domestic oil and gas production, while also conserving our domestic energy resources as we develop new environmentally friendly technologies and renewable energy sources for our nations' future needs.

STRATEGIC PETROLEUM RESERVE (SPR)

What is the Strategic Petroleum Reserve?

Congress authorized the Strategic Petroleum Reserve (SPR) in the Energy Policy and Conservation Act (EPCA, P.L. 94-163) to help prevent a repetition of the economic dislocation caused by the 1973-74 Arab oil embargo. The program is managed by the Department of Energy (DOE). Physically, the SPR comprises five underground storage facilities, hollowed out from naturally occurring salt domes in Texas and Louisiana. The SPR has a capacity of 727 million barrels.

It was generally believed that the mere existence of a large, operational reserve of crude oil would deter future oil cutoffs and would discourage the use of oil as a weapon. In the event of an interruption, introduction into the market of oil from the Reserve was expected to help calm markets, mitigate sharp price spikes, and reduce the economic dislocation that had accompanied the 1973 disruption. In so doing, the Reserve would also buy time for the crisis to sort itself out or for diplomacy to seek some resolution before a potentially severe oil shortage escalated the crisis beyond diplomacy. The SPR was to contain enough crude oil to replace imports for 90 days.

Originally, the EPCA authorized a drawdown of the Reserve if the President said there is a "severe energy supply interruption," which is defined in the law as: If "(a) an emergency situation exists and there is a significant reduction in supply which is of significant scope and duration; (b) a severe increase in the price of petroleum products has resulted from such emergency situation; and (c) such price increase is likely to cause a major adverse impact on the national economy."

In 1990, after the Exxon *Valdez* oil spill, which interrupted the shipment of Alaskan oil, triggering spot shortages and price increases, Congress amended to law to allow the President to use the SPR for a short period without having to declare the existence of a "severe energy supply interruption" or the need to meet obligations of the United States under the international energy program.

Under this provision, a drawdown may be initiated in the event of a circumstance that "constitutes, or is likely to become, a domestic or international energy supply shortage of significant scope or duration" and where "action taken ... would assist directly and significantly in preventing or reducing the adverse impact of such shortage." This authority allows for a limited use of the SPR. No more than 30 million barrels may be sold over a maximum period of 60 days, and this limited authority may not be exercised at all if the level of the SPR is below 500 million barrels.

Have we ever "tapped" the SPR before?

In 2011, the Obama Administration announced it was considering tapping into the reserve to help alleviate price pressure on consumers. President Obama even included in his FY 2012 budget request a $500 million sale of petroleum from the SPR, proposed for completion by March 1, 2012, for deposit in the General Fund of the Treasury. But, the unrest in the Middle East in early 2011 led to a surge in oil prices. By early March 2011, the price of West Texas Intermediate exceed $100 per barrel. On June 23, 2011, the International Energy Agency (IEA) announced that its 28 member countries would release 60 million barrels of crude oil and refined products into the global market. As part of that action, President Obama directed a drawdown of the SPR to meet the U.S. response obligations for 30 million barrels. The oil was sold from the Bryan Mound and Big Hill sites in Texas and the West Hackberry, Louisiana site.

This is not the first time this has been considered. Amid Congressional pressure in 2008, the last time the country saw a sudden spike in oil prices, then-President Bush approved the Department of Energy's request to halt shipments (basically, stop filling or contributing to the reserve temporarily) but he did not tap into the reserve itself.

There have been two emergency draw downs in the SPR's history: during the first Gulf War in 1991, and after Hurricane Katrina in 2005.

More information on draw downs and transfers from the SPR can be found in the Quick Facts section at the bottom of this section.

Is tapping the SPR sound policy today?

At present, tapping the SPR would be reactionary at best. The pressure on presidents to open the SPR in lieu of higher gas prices is not new. While it may help psychologically and may alleviate prices in the very short term, it is not a long-term fix. The main idea behind keeping crude oil in the SPR is that it can be tapped in the case of a direct disruption to the U.S. oil supply, not to bring down prices. Instead of opening up SPR, which was created for national security emergencies, we need an "all-of-the-above" American energy strategy immediately that would cut energy costs, reduce our dependence on foreign oil and create jobs here in the United States.

Strategic Petroleum Reserve - Quick Facts and Frequently Asked Questions

Editor's Note: *The following information provided by the U.S. Department of Energy*

The Strategic Petroleum Reserve is a U.S. Government complex of four sites with deep underground storage caverns created in salt domes along the Texas and Louisiana Gulf Coasts. The caverns have a capacity of 727 million barrels and store emergency supplies of crude oil owned by the U.S. Government.

Inventory

Current inventory: Click to open inventory update window

Highest inventory: The SPR completed its fill program on Dec. 27, 2009. The SPR's inventory prior to the 2011 sale and drawdown (mentioned above) of 726.6 million barrels was the highest ever held in the SPR. Actual physical capacity is 727 million barrels. Its current inventory at the time of this writing was 695.9 million barrels (again, as a result of the 2011 sale and drawdown).

Previous inventory milestones:
2008. Prior to Hurricane Gustav coming ashore on Sept. 1, 2008, the SPR had reached 707.21 million barrels, the highest level ever held up until that date. A series of emergency exchanges conducted after Hurricane Gustav, followed shortly thereafter by Hurricane Ike, reduced the level by 5.4 million barrels.

2005. Prior to the 2008 hurricane releases, the former record had been reached in late August 2005, just days before Hurricane Katrina hit the Gulf Coast. Hurricane Katrina emergency releases of both crude oil sales and exchanges (loans) totaled 20.8 million barrels.

Crude oil inventory distribution:
Bryan Mound - holds 254 MMB in 20 caverns - 78 MMB sweet and 176 MMB sour.
Big Hill - holds 170.1 MMB in 14 caverns - 73 MMB sweet and 98 MMB sour.
West Hackberry - holds 228.2 MMB in 22 caverns - 120 MMB sweet and 108 MMB sour.
Bayou Choctaw - holds 73.2 MMB in 6 caverns - 22 MMB sweet and 52 MMB sour.

Current storage capacity: 727 million barrels

Fill status: The SPR completed fill on Dec. 27, 2009, with a cargo that arrived and began to unload on Christmas Day. The cargo was 493,000 barrels of Saharan Blend, a light sweet crude that was delivered to the Bryan Mound site.

Current days of import protection in SPR: 75 days (based on EIA data of 9.70 million barrels/day for 2009 net petroleum imports 2009). Note: the maximum days of import protection ever held in the SPR was 118 days in 1985.

International Energy Agency requirement: 90 days of import protection (both public and private stocks). The United States fulfills its commitment with a combination of SPR stocks and industry stocks.

Average price paid for oil in the Reserve: $29.76 per barrel

Drawdown Capability

Maximum drawdown capability: 4.4 million barrels per day

Time for oil to enter U.S. market: 13 days from Presidential decision

Summary List of Historical Releases: click here

Past Sales [click on link for more details]:
2005 Hurricane Katrina Sale - 11 million barrels
1996-97 total non-emergency sales - 28 million barrels
1990/91 Desert Shield/Storm Sale - 21 million barrels
(4 million in August 1990 test sale; 17 million in January 1991 Presidentially-ordered drawdown)
1985 - Test Sale - 1.0 million barrels

Past Exchanges [click on link for more details]
Sep/Oct 2008 - two test exchanges were conducted following Hurricanes Gustav and Ike totaling 5,389,000 barrels. Deliveries were made to Marathon, Placid, ConocoPhillips, Citgo and Alon USA.
June 2006 - exchanged 750 thousand barrels of sour crude with ConocoPhillips and Citgo due to the closure for several days of the Calcasieu Ship Channel to maritime traffic. The closure resulted from the release of a mixture of storm water and oil. Action was taken to avert temporary shutdown of both refineries.
January 2006 - exchanged 767 thousand barrels of sour crude with Total Petrochemicals USA due to closure of the Sabine Neches ship channel to deep-draft vessels after a barge accident in the channel. Action was taken to avert temporary shutdown of the refinery.
Sep/Oct 2005- exchanged 9.8 million barrels of sweet and sour crude due to disruptions in Gulf of Mexico production and damage to terminals, pipelines and refineries caused by Hurricane Katrina.

Sep/Nov 2004 - exchanged 5.4 million barrels of sweet crude due to disruptions in the Gulf of Mexico caused by Hurricane Ivan.
Sep/Oct 2004 - exchanged 5.4 million barrels in response to physical shortages of crude oil supplies in the Gulf of Mexico following Hurricane Ivan.
Oct 2002 - exchanged 98,000 barrels with Shell Pipeline Co. to secure Capline storage tanks in advance of Hurricane Lili.
Sep/Oct 2000 - exchanged 30 million barrels in response to concern over low distillate levels in Northeast.
July/August 2000 - exchanged 2.8 million barrels of crude oil for 1st-year tank storage and stocks for 2 million barrel Northeast Home Heating Oil Reserve.
June 2000 - exchanged 500,000 barrels each with CITGO and Conoco, due to blockage of the ship channel that allowed incoming crude oil shipments to those refineries. Action taken in order to avert temporary shutdown of both refineries.
August 1998 - exchanged 11 million barrels of lower quality Maya crude in SPR with PEMEX for 8.5 million of higher quality crude (more suitable for U.S. refineries)
April/May 1996 - exchanged 900,000 barrels of SPR crude with ARCO to resolve company's pipeline blockage problem.

Financial Investment to date: About $22 billion ($5 billion for facilities; $17 billion for crude oil).

Frequently Asked Questions

Question: What are exchanges of oil? How does an exchange differ from a sale?
Answer: Crude oil exchanges are authorized as a means of acquiring oil for the SPR at no cost to the SPR. "Loans" are a form of time exchange generally used after a disruption to commercial oil supplies has occurred that resulted from an event outside the control of the company, such as a hurricane in the Gulf or a ship channel closing. The event must be of sufficient scope and duration that DOE determines it would be in the public interest to make the loan. Loans are initiated at the request of the company.

Exchange authority requires that oil of a similar quality be repaid to the SPR, along with premium barrels (similar to interest), within a specified time. The amount of the premium barrels and the repayment date are determined through contract negotiations. Additionally, the costs to the SPR for drawdown and transportation of the crude oil are included in the value of the premium to be paid.

Broad authority for exchange contracts is found in Section 159 of the Energy Policy and Conservation Act, P.L. 94-163. EPCA provides that the Secretary may acquire oil for the SPR by "purchase, exchange or otherwise." There also exists special authority for the Secretary to conduct a test sale or exchange.

Question: How long does an exchange agreement take? What about a sale?
Answer: It is possible for exchange agreements to be completed within a few days of the receipt of a request from a company. Movement of the oil can occur when the contractor has made arrangements for the transportation of the oil -- usually within 24 hours of contract award.

A sale and drawdown from the SPR is conducted online competitively. Deliveries of the crude oil can begin as early as 13 days after announcement of the sale, depending upon the scheduling and transportation arrangements made by the contractor for receipt of the oil.

Broad authority for exchange contracts is found in Section 159 of the Energy Policy and Conservation Act, P.L. 94-163. EPCA provides that the Secretary may acquire oil for the SPR by "purchase, exchange or otherwise." There also exists special authority for the Secretary to conduct a test sale or exchange.

Question: Has President Bush's 2001 fill initiative been completed?
Answer: Yes, President Bush's November 2001 directive to fill the SPR to 700 million barrels at a moderate rate using royalty-in-kind crude oil from U.S. Outer Continental Shelf leases was completed on Aug. 27, 2005. However, Hurricane Katrina hit the region on Aug. 29, 2005 and the resulting emergency loans of 9.8 million barrels and sale of 11 million barrels reduced the inventory to about 680 million barrels.

The SPR's 700-million barrel milestone was again reached on April 2, 2008, using a combination of repayments of the Katrina loaned volumes plus accompanying premium barrels and resumption of the royalty-in-kind transfer program in 2007.

Of the Katrina loans and associated premium barrels, 4.2 million barrels were repaid during October and November 2005, an additional 4.4 million barrels were repaid between February and May 2006, and the remaining 1.7 million barrels owed were repaid in April and May 2007. The 11 million barrels of oil sold were replaced through royalty-in-kind transfers.

Question: What are royalty-in-kind transfers?
Answer: A royalty-in-kind (RIK) transfer refers to crude oil that is produced from federal leases in the Gulf of Mexico and paid to the U.S. Government in lieu of cash royalty payments. The program provided that "in kind" payment of a percentage of the lease's production be paid to the Department of the Interior; ownership was then transferred at the market center to the Department of Energy for SPR fill. The SPR frequently solicited to exchange the royalty oil in place (at the market center) for crude oil that would meet the quality specifications of the SPR. The exchange contracts included adjustments to the volume to be delivered to the SPR due to quality differences in the crude oil and to cover the transportation costs.
The RIK program is authorized by the Outer Continental Shelf Lands Act and the Energy Policy and Conservation Act. However, on Sept. 16, 2009, the Department of the Interior announced the termination of its royalty-in-kind program (existing contracts would be honored).

Question: What are deferrals and premium barrels?
Answer: The Department of Energy has occasionally agreed to delays in scheduled deliveries to the SPR due to tight markets or disruptions in the marketplace that lead to, or contribute to, a backwardated market, i.e., prices in the future are lower than current prices. Deferrals are a means of acquiring oil for the SPR at no cost to the taxpayer.

Deferrals are requested by the contractor and, if agreed to by the Department of Energy, are negotiated to provide premium barrels (similar to interest) to the SPR, along with the contracted volumes, at a later date. Both the contractor and the Government benefit from the arrangement.

Question: Has the oil that was released after Hurricane Katrina in 2005 been replaced?
Answer: The volume of crude oil that was released after Hurricane Katrina was restored to the SPR at moderate rates over time. Repayments of loaned oil began during late Fall 2005 and concluded in the final repayment delivery in May 2007. Replacement of the sold oil was managed through the royalty-in-kind program. The pre-Katrina inventory level was reached in April 2008.

Replacement of the sold crude oil was attempted in 2007 using both direct purchase and the royalty-in-kind program. Solicitations for crude oil acquisition by direct purchases were issued in April and May 2007; funds for the purchases were to be from the Fall 2005 emergency sale receipts. However, neither solicitation resulted in award because the Department determined that the prices proposed were too high, and not a reasonable value for the taxpayer. Had the purchase offers been successful, it would have been the first direct purchases of crude oil for the SPR since 1994.

Prior to releasing the solicitations for both the direct purchase exchange contracts, an economic analysis was prepared in accordance with the Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve.

Question: What actions are being taken in response to the Energy Policy Act of 2005 that requires fill of the SPR to its authorized size of one billion barrels?
Answer: The August 2005 EPACT directs fill as expeditiously as practicable, without incurring excessive cost or appreciably affecting the market price of petroleum products to consumers. It also requires that procedures for acquisition of crude oil be promulgated, an action that was completed with publication of the final rule on Nov. 8, 2006.

Further, in order to fill to one billion barrels, the capacity of the SPR must be increased from its current size of 727 million barrels. The expansion will require increasing the size of two current SPR sites (identified as Bayou Choctaw in Louisiana, and Big Hill in Texas), a process that may take 3-5 years, and constructing a new site (near Richton, Mississippi) that will store 160 million barrels, a process that is expected to take 10-12 years. At this time, no construction has begun for expansion of the existing sites or development of the Richton site.

The selection of the sites for expansion followed a 16-month long proceeding that included extensive public involvement. It resulted in release of the *Final Environmental Impact Statement for Selection of Sites for Expansion of the Strategic Petroleum Reserve* on Dec. 8, 2006. The Secretary of Energy signed the Record of Decision on Feb. 14, 2007, and the Department published a Plan for Expansion of the SPR to One Billion Barrels in June 2007.

In January 2008, DOE issued a Notice of Intent to prepare a Supplemental Environmental Impact Statement and to solicit additional public comments. For more information, visit the SPR Expansion Web Page.

Question: How will the acquisition procedures ensure that oil is acquired "without incurring excessive cost or appreciably affecting the market price of petroleum products to consumers"?
Answer: Should DOE need to acquire oil in the future (due to either replacement of current stock or expansion), DOE will strive to avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers by analyzing market activity for crude oil and related commodities and prices of oil for delivery in future months, as well as the perceived availability of near term and forward supplies.

In doing so, DOE will consider the current level of the SPR and private inventories; national and regional import dependency; the outlook for international and domestic production levels; oil acquisition by other stockpiling entities; the extent to which the SPR fill rate and prices paid will impact supply availability and prices in the marketplace; incipient disruptions of supply or refining capability; the level of market volatility; the demand and supply elasticity to price changes; logistics and economics of petroleum movement; and any other considerations that may be pertinent to the balance of petroleum supply and demand.

The timing of DOE entry into the market, its sustained presence, and the quantities sought will all be sensitive to these factors.

Question: When can the Reserve be used?
Answer: The circumstances that might require the use of the Strategic Petroleum Reserve are defined in the Energy Policy and Conservation Act (EPCA). Generally, there are three possible types of draw downs envisioned in the Act:

Full drawdown: The President can order a full drawdown of the Reserve to counter a "severe energy supply interruption." EPCA defines this as "a national energy supply shortage which the President determines –

(A) is, or is likely to be, of significant scope and duration, and of an emergency nature
(B) may cause major adverse impact on national safety or the national economy; and
(C) results, or is likely to result, from (i) an interruption in the supply of imported petroleum products, (ii) an interruption in the supply of domestic petroleum products, or (iii) sabotage or an act of God.

EPCA also states that a severe energy supply interruption "shall be deemed to exist if the President determines that -
(A) an emergency situation exists and there is a significant reduction in supply which is of significant scope and duration;
(B) a severe increase in the price of petroleum products has resulted from such emergency situation; and
(C) such price increase is likely to cause a major adverse impact on the national economy."

Limited drawdown: If the President finds that –

(A) a circumstance, other than those described [above] exists that constitutes, or is likely to become, a domestic or international energy supply shortages of significant scope or duration; and
(B) action taken....would assist directly and significantly in preventing or reducing the adverse impact of such shortage"
then the Secretary may draw down and distribute the Strategic Petroleum Reserve, although in no case:

"(A) in excess of an aggregate of 30,000,000 barrels....
(B) for more than 60 days....
(C) if there are fewer than 500,000,000 barrels....stored in the Reserve."

Test Sale or Exchange: The Secretary of Energy is authorized to carry out test draw downs and distribution of crude oil from the Reserve. If any such test drawdown includes the sale or exchange of crude oil, "then the aggregate quantity of crude oil withdrawn from the Reserve may not exceed 5,000,000 barrels during any such test drawdown or distribution."

Question: Can oil be withdrawn from the Reserve for other reasons?
Answer: Yes. The Department of Energy has the authority to exchange crude from the Reserve. Exchanges have been used in the past to replace less suitable grades of crude oil with higher-quality crudes and for limited, short-duration actions to assist petroleum companies in resolving oil delivery problems. In 2000, crude oil from the Reserve was exchanged for storage capacity and stocks to create the Northeast Heating Oil Reserve. During fall 2005, an exchange was conducted at the request of refineries in

the Gulf Region when Hurricane Katrina caused disruptions to scheduled deliveries. During 2006, small exchanges occurred in January and June when accidents in shipping channels disrupted marine deliveries to refiners. In 2008, test exchange authority was used to provide crude oil to industry after Hurricanes Gustav and Ike shut down Gulf production and marine deliveries along the Gulf Coast. Short-term, discrete time exchanges are sometimes referred to as loans.

Question: How fast can oil be released from the Reserve?
Answer: Should the President order an emergency sale of Strategic Petroleum Reserve oil, DOE can conduct a competition, select offers, award contracts, and be prepared to begin deliveries of oil into the marketplace within 13 days. Oil can be pumped from the Reserve at a maximum rate of 4.4 million barrels per day for up to 90 days, then the drawdown rate begins to decline as storage caverns are emptied. At 1 million barrels per day, the Reserve can release oil into the market continuously for nearly a year-and-a-half.

Question: What type of crude oil is stored in the Reserve?
Answer: During the 34 years that the Strategic Petroleum Reserve has existed, crude oil has been acquired from 25 countries. The oil is categorized as either "sweet" (with a sulfur content not exceeding 0.5 percent by weight) or "sour" (with a sulfur content greater than 0.5 percent but less than 2.0 percent). The SPR accepts only crude oil that meets its quality specifications and it is co-mingled in caverns designated as either sweet or sour.

Question: During times of emergency releases, what type of oil is most frequently requested by industry?
Answer: Sweet crude is most frequently requested. Sweet crude will always have the highest demand in a supply emergency because of its value to refiners to produce transportation fuels. Sweet crudes can be refined by all refineries from the simplest to most complex. To illustrate, the Hurricane Katrina emergency sale resulted in 10.8 million barrels of sweet crude sold versus 200 thousand barrels of sour.

Question: Why is only crude oil stored in the Reserve?
Answer: The SPR is authorized by law to store both refined products and crude oil. However, in preparing the 1977 SPR Plan for development of the Reserve, an analysis of the U.S. refining industry indicated that the industry was robust and had the refining capacity to satisfy the major portion of the nation's demand for petroleum products. This continues to be true today--30 years later. The U.S. petroleum import dependency is overwhelmingly crude oil, not refined products. In addition, crude oil, is cheaper to acquire, store and transport than refined products. Crude oil quality does not degrade over time as do refined products and crude oil provides flexibility in responding to fluctuations in refined product market needs; whereas, refined products are expensive to maintain and are subject to changes in specifications mandated by environmental legislation.

Question: What is the ratio of sweet and sour crudes in the SPR? How was the ratio determined?
Answer: Crude oil stored in the SPR is currently about 40% sweet and 60% sour. The ratio was established to meet the needs of the U.S. refining industry, particularly those in the districts most likely to take SPR crude in the event of a drawdown. Sweet crude oil can be processed by nearly all refiners; the same is not true for sour crude.

Question: Why is the crude oil stored in salt domes?
Answer: Salt dome storage has advantages in cost, security, environmental risk, and maintenance. Salt formations offer the lowest cost, most environmentally secure way to store crude oil for long periods of time. Stockpiling oil in artificially-created caverns deep within the rock-hard salt costs historically about

$3.50 per barrel in capital costs. Storing oil in above-ground tanks, by comparison, can cost $15 to $18 per barrel - or at least five times the expense. Also, because the salt caverns are 2,000-4,000 feet below the surface, geologic pressures will seal any crack that develops in the salt formation, assuring that no crude oil leaks from the cavern. An added benefit is the natural temperature difference between the top of the caverns and the bottom - a distance of around 2,000 feet; the temperature differential keeps the crude oil continuously circulating in the caverns, giving the oil a consistent quality.

Question: How were the caverns created?
Answer: Salt caverns are carved out of underground salt domes by a process called "solution mining." Essentially, the process involves drilling a well into a salt formation, then injecting massive amounts of fresh water. The water dissolves the salt. In creating the SPR caverns, the dissolved salt was removed as brine and either reinjected into disposal wells or more commonly, piped several miles offshore into the Gulf of Mexico. By carefully controlling the pressure and direction of the freshwater injection process, salt caverns of very precise dimensions can be created.

Question: How is the salt able to contain the oil? Doesn't it dissolve or allow the oil to seep?
Answer: Rock salt has a combination of characteristics that makes it highly attractive for cavern construction and petroleum storage. If relatively pure and not interbedded with significant quantities of other types of rock, it is generally impervious to liquid and gas and inert to petroleum, has a compression strength comparable to concrete under the weight of the overlying and surrounding rock, moves like plastic to seal incipient fractures, and can be mined easily by dissolving (leaching) with water.

Question: How was the authorized one billion barrel size of the Reserve determined?
Answer: Prior to Congress authorizing a crude oil national security storage system, studies were conducted to determine the optimum amount of crude oil that should be stored. Based upon the level of imports at that time (1974-1975), a reserve of 500 million barrels was recommended. Congress, however, foresaw that consumption of petroleum in the United States would increase over time and that import levels would also increase. Therefore, when the Energy Policy and Conservation Act passed in late 1975, the SPR size was authorized *up to* one billion barrels, with an initial size target of 500 million barrels.

Question: How is days of import protection determined?
Answer: The number of days of import protection are based on the SPR's current inventory level and the EIA's reported net petroleum imports.

Question: How many people work at the Strategic Reserve?
Answer: The Project Management Office (in New Orleans) and the SPR storage sites operate with a federal workforce of about 96 full-time equivalents. The Program Office in Washington, DC has about 20 employees. Major contractors and subcontractors provide services that support the SPR's program, as it relates to overall management and operations, security, design, construction management, and technical and business management activities. Contractor employees total approximately 813 full-time equivalents.

KEYSTONE AND KEYSTONE XL PIPELINE PROJECT

Pipeline Background

Upon completion, the Keystone Pipeline System will be comprised of the 2,151-mile Keystone Pipeline and the proposed 1,661-mile Keystone Gulf Coast Expansion Project (Keystone XL). It has been and will be built in four phases.

Keystone Pipeline (Phases I and II): On Feb. 9, 2005, TransCanada, a Canadian company, proposed the Keystone Pipeline – a multi-billion dollar project to connect reliable oil supply regions in Canada with key U.S. refining and distribution centers.

Editor's Note: *The Keystone Pipeline System Project started out being owned 50/50 by TransCanada and ConocoPhillips. On June 16, 2009, TransCanada announced it had reached an agreement to become the sole owner of Keystone Pipeline System through the acquisition of ConocoPhillips' remaining interest in the project for approximately $550 million plus the assumption of approximately $200 million of short-term debt.*

Originating in Hardisty, Alberta, Canada, Keystone Phase I transports crude oil to the United States' Midwest markets at Wood River and Patoka, Illinois. The Canadian portion of Keystone Phase I involved the conversion of approximately 537 miles of existing TransCanada pipeline in Saskatchewan and Manitoba from natural gas to crude oil transmission service. Along with the construction of 16 pump stations and approximately 232 miles of new pipeline in Canada, new facilities were also required at the Keystone Hardisty Terminal. The U.S. portion of the Keystone Phase I included the construction of 1,084 miles of new, 30-inch diameter pipeline and 23 pump stations throughout North Dakota, South Dakota, Kansas, Missouri and Illinois. This leg of the Keystone Pipeline has capacity of 435,000 barrels per day.

Measuring approximately 298 miles in length, Keystone Phase II is an extension of Keystone Phase I from Steele City, Nebraska, to Cushing, Oklahoma.

In 2007, TransCanada received approval from Canada's National Energy Board (NEB) for two major regulatory applications to construct and operate the Canadian portion of Phases I and II of the Keystone Pipeline Project. On January 11, 2008, State Department released its Final Environmental Impact Statement (EIS) stating Keystone Phases I and II would result in limited adverse environmental impacts. On March 17, 2008, the U.S. Department of State issued its Record of Decision and National Interest Determination regarding Phases I and II of the Keystone Pipeline approving its construction.

Phase I of the Keystone Pipeline was completed on June 30, 2010, and commercial deliveries of crude oil to U.S. Midwest markets at Wood River and Patoka, Illinois, began. Construction of the 36-inch diameter pipeline of Keystone Phase II was also completed in 2010, connecting Keystone Phase I to storage and distribution facilities at Cushing, a major crude oil marketing/refining and pipeline hub.

In addition, Keystone Phase II included the construction of four new pump stations as well as an expansion of additional pumping units for 22 of the 23 pump stations built as part of Phase I in the United States. In Canada, Phase II also included the construction of seven new pump stations and additional pumping units for seven of the 16 initial pump stations built to support Phase I. Keystone Phase II commenced commercial operation in February 2011 and will increase capacity to 591,000 barrels per day.

Keystone XL (Phases III and IV): In July 2008, TransCanada announced the Keystone Gulf Coast Expansion Project (otherwise known as Keystone XL or Keystone Pipeline Phases III and IV). Keystone

XL would complement and connect with the original Keystone Pipeline, nearly doubling the size and capacity of the Keystone Pipeline System with an expansion to the U.S. Gulf Coast. The proposed Keystone XL Project is a 1,661-mile, 36-inch crude oil pipeline that would begin at Hardisty, Alberta, Canada and extend southeast through Saskatchewan, Montana, South Dakota and Nebraska. It will incorporate the 298-mile portion of Keystone Phase II through Nebraska and Kansas to serve markets at Cushing, Oklahoma. Keystone Phase III will continue south from Cushing to a delivery point near terminals in Nederland, Texas to serve the Port Arthur, Texas marketplace.

Construction of Keystone Phase III would be built first and would include 435 miles of new pipeline in Oklahoma and Texas. Construction of Keystone Phase IV would follow with approximately 327 miles of new pipeline through Canada. The pipeline would then extend south approximately 852 miles through Montana and South Dakota to Steele City, Nebraska.

Also proposed is an approximate 47-mile pipeline to transport crude oil from Liberty County, Texas to the Houston, Texas area. Keystone XL would add an additional 500,000 barrels per day increasing the daily commercial capacity of the Keystone Pipeline Project from 591,000 barrels per day to approximately 1.1 million barrels per day.

Editor's Note: *The remainder of this memo is a chronological explanation of what has transpired surrounding the proposed Keystone XL pipeline, as opposed to a topical explanation. It is important to note the timeline of how things developed as the issues and topics surrounding Keystone XL are obvious and rather widely known. There is a lot of information to digest, but this is due to the fact that the processes, both legislative and regulatory, surrounding Keystone XL and the Keystone Pipeline, have been enormously complicated and tedious.*

As a facility connecting the United States with a foreign country, the pipeline requires a Presidential Permit from the State Department (per Executive Orders 13337 and 11423). In granting or denying a permit application, the State Department must determine whether a proposal is in the "national interest." Such a determination must be arrived at in consultation with other relevant federal agencies and after public input.

In September 2008, TransCanada filed an application with the State Department for a permit to cross the U.S.-Canada international border with the Keystone XL. Identifying and considering potential environmental impacts of a proposed project is done within the context of the State Department's preparation of an Environmental Impact Statement (EIS), as required by the National Environmental Policy Act (NEPA). Broadly, NEPA requires federal agencies to consider the environmental impacts of their

actions before proceeding with them and to inform the public of those potential impacts. To ensure that environmental impacts are considered, an EIS must be prepared for major federal actions "significantly affecting the environment.

On Jan. 28, 2009, the State Department, in accordance with the NEPA, issued a Notice of Intent that issuance of a Presidential Permit for the proposed construction, connection, operation and maintenance of Keystone XL and its associated facilities at the U.S. border would constitute major federal action that may have a significant impact upon the environment. Therefore, State Department would prepare an EIS to review and consider possible environmental impacts of the ***entire*** pipeline and address reasonably foreseeable impacts from the proposed action and alternatives.

On Feb. 27, 2009, TransCanada filed an application with Canada's NEB to construct and operate the Canadian portion of Keystone XL. TransCanada received approval from NEB on March 11, 2010. Keystone XL also received approval in March 2010 from the South Dakota Public Utility Commission.

Keystone XL Delay and Controversy, House Legislative Action and Legal Developments

Drawn Out Permit Approval Process & Legislative Responses

State Department Draft EIS: State Department's Draft EIS was prepared along with the input and collaboration of the following "cooperative agencies": Environmental Protection Agency (EPA); Department of Interior-Bureau of Land Management (BLM), National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS); U.S. Department of Agriculture (USDA)-Natural Resources Conservation Service (NRCS), Farm Service Agency (FSA), Rural Utilities Service (RUS); U.S. Army Corps of Engineers (Army Corps); U.S. Department of Energy (DOE), Western Area Power Administration (WAPA); U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety; Montana Department of Environmental Quality (MDEQ).

In addition to its role as a "cooperating agency," the EPA is also required to review and comment publicly on the EIS and rate both its adequacy and the level of environmental impact of the proposed project. These ratings take place after the draft is issued. The EPA could rate the EIS as either "adequate," "insufficient information," or "inadequate." EPA's rating of a project's environmental impacts may range from "Lack of Objections" to "Environmentally Unsatisfactory."

The State Department released its Draft EIS on April 16, 2010, for public comment. On July 16, 2010, the EPA rated the Draft EIS "Inadequate." The EPA said they found that potentially significant impacts had not been evaluated and that the additional information and analysis needed was of such importance that the Draft EIS would need to be formally revised and again made available for public review.

In addition to EPA's rating and its request for additional information and review of the Keystone XL project, Nebraska Governor Dave Heineman (R-NE) sent a letter to U.S. Secretary of State Hillary Clinton on Oct. 12, 2010, expressing his concerns about the proposed route of Keystone XL through Nebraska and cited the potential for contamination of the Ogallala Aquifer and the harm that could do to the state. The Ogallala Aquifer is located in the Sand Hills region of Nebraska, an extensive sand dune formation with highly porous soil and shallow groundwater. The Sand Hills region and the Ogallala Aquifer will continue to be a persistent sticking point of this project. Governor Heineman specifically cited irrigators who depend on the aquifer for water and $17 billion in agricultural marketings in the nation's leading irrigating state.

Additional criticism of the State Department's implementation of the NEPA process followed an Oct. 15, 2010, statement by Secretary Clinton that, while analysis of the project was not complete and a final decision had not been made, the State Department was "inclined to" approve the Keystone XL project. She went on to say she wanted the United States to move toward "clean, renewable energy," but that she also has "energy security" to keep in mind which is why she looks "at all of the factors that we have to consider while we try to expedite as much as we can American's move toward clean, renewable energy."

Editor's Note: *Secretary Clinton made these comments in a speech to the Commonwealth Club in San Francisco, California. She was asked, during the question and answer portion of her speech, about her thoughts on the Alberta Clipper pipeline. But, she answered the question thinking and assuming they were asking about the Keystone XL pipeline. This was later confirmed by the State Department – that she thought she was being asked about Keystone and answered as such.*

Following Secretary Clinton's statements, several senators, led by Senator Mike Johanns, sent a letter to Secretary Clinton on Oct. 21, 2010, expressing concern that her statement gave the appearance that approval of the pipeline was a foregone conclusion.

State Department's Supplemental Draft EIS: The State Department issued a Supplemental Draft EIS on April 15, 2011. In addition to addressing issues associated with EPA's July 2010 inadequacy rating, the Supplemental Draft EIS addressed comments received from other agencies and the public. On June 6, 2011, the EPA rated this Supplemental Draft EIS as having "Environmental Objections – Insufficient Information." EPA acknowledged that the State Department had "worked diligently" to develop additional information in response to EPA's comments and the large number of other comments on the Draft EIS. However, EPA believed that additional analysis needed to be included in the Final EIS. Among other things, EPA recommended that the State Department should do the following: improve the analysis of the potential oil spill risks (including additional analysis of other reasonable alternatives to the proposed pipeline route); provide additional analysis of potential oil spill impacts, health impacts and environmental justice concerns to communities along the pipeline route and adjacent refineries; improve its characterization of lifecycle greenhouse gas emissions associated with Canadian oil sands crude.

H.R. 1938, the North American-Made Energy Security Act: Motivated by the perception among some in Congress that the State Department was taking too long to review this energy infrastructure project critical to national security and economic growth, the House passed H.R. 1938, the North American-Made Energy Security Act, by a vote of 279-147 (R: 232-3; D: 47-144) on July 7, 2011. Introduced by Rep. Lee Terry (R-Neb.), H.R. 1938 would have directed the President to expedite the State Department's permit review process, requiring a final decision to grant or deny the permit no later than Nov. 1, 2011. Opponents of the bill argued that the project's unique and potentially unacceptable safety and environmental risks, as well as its uncertain impacts on fuel prices, required more time for analysis and evaluation. H.R. 1938 was not voted upon in the Senate and its proposed Nov. 1, 2011, deadline came and went with no action.

LARIS KARKLIS/THE WASHINGTON POST

Below are selected vote hits on Democrats who voted against H.R. 1938:

- **Voted against a bill that requires the administration to expedite the federal permitting process for the construction of the Keystone XL oil pipeline**
  - Voted against passage of a bill that would require the administration to make a permitting decision on the Keystone XL oil pipeline within 30 days after the final environmental impact statement is issued or by Nov. 1, whichever is earlier. It would direct the president, working through the Energy secretary, to coordinate with federal agencies to make sure necessary review stages are expedited. (Passed 279-147; D: 47-144; R: 232-3)[1]

- **The Keystone XL oil pipeline would be constructed by TransCanada and would connect oil supply hubs in Alberta, Canada to destinations in the south central United States**
  - According to the U.S. Department of State's project information webpage for the Keystone XL Pipeline Project, "TransCanada Keystone Pipeline, L.P. (Keystone) proposes to construct and operate a crude oil pipeline and related facilities to transport Western Canadian Sedimentary Basin (WCSB) crude oil from an oil supply hub near Hardisty, Alberta, Canada to destinations in the south central United States, including a new tank farm in Cushing, Oklahoma and delivery points in Nederland (near Port Arthur) and Moore Junction (in Harris County), Texas."[2]
  - In a July 7, 2011, editorial, *The Wall Street Journal* wrote, "In September 2008 TransCanada applied to build a new pipeline—the Keystone XL—to bring diluted bitumen from the oil-rich tar sands of Alberta to thirsty American refineries on the Gulf Coast. It is hardly a radical proposal. Canadian crude has been flowing to the U.S. for decades. Another Canadian company—Enbridge—operates the Clipper pipeline across the Canadian border to Chicago. In July 2010 TransCanada began operating its Keystone pipeline from Alberta to Cushing, Oklahoma, which is a major storage and pricing depot."[3]

- **The Keystone XL oil pipeline is expected to deliver 700,000 barrel of oil per day**
  - In a July 26, 2011, article, *The Washington Times* reported, "Canadian oil company TransCanada is looking to build a $7 billion pipeline to transport oil across 1,700 miles through Montana, South Dakota, Nebraska, Kansas, Oklahoma and Texas to refineries along the Texas coast. It is expected to deliver 700,000 barrels a day."[4]

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[1] H.R. 1938, CQ Vote #650, July 26, 2011
[2] "Keystone XL Pipeline Project," U.S. Department of State webpage, http://keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open, Accessed July 29, 2011
[3] Editorial, "Jobs in the Pipeline, The EPA tries to scuttle oil transport from Canada's tar sands," *The Wall Street Journal*, July 7, 2011, http://online.wsj.com/article/SB10001424052702304760604576426050150189280.html
[4] Tim Devaney, "Keystone Oil Pipeline Gets Boost in House," *The Washington Times*, July 26, 2011, http://www.washingtontimes.com/news/2011/jul/26/keystone-oil-pipeline-gets-boost-in-house/

- **TransCanada estimates that building the Keystone XL oil pipeline will mean more than $20 billion in investment and 13,000 new American jobs in construction and related manufacturing**

    - In a July 7, 2011, editorial, *The Wall Street Journal* wrote, "TransCanada estimates that building the pipeline will mean more than $20 billion—$13 billion from TransCanada itself—in investment and 13,000 new American jobs in construction and related manufacturing. The company also expects more than 118,000 'spin-off' jobs during the two years of construction."[5]

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    - In a July 7, 2011, editorial, *The Wall Street Journal* wrote, "TransCanada estimates that building the pipeline will mean more than $20 billion—$13 billion from TransCanada itself—in investment and 13,000 new American jobs in construction and related manufacturing. The company also expects more than 118,000 'spin-off' jobs during the two years of construction."[6]

State Department's Final EIS: On Aug. 26, 2011, State Department issued the Final EIS for the proposed Keystone XL Pipeline. The nine-volume, more than 1,000-page-long Final EIS has not yet been rated by the EPA. In the Final EIS, seven alternative routes were studied. They included one potential alternative route in Nebraska that would have avoided the entire Sand Hills region and Ogallala Aquifer and six alternatives that would have reduced pipeline mileage crossing the Sand Hills or the aquifer. Regarding these seven alternative routes, the Final EIS stated that "these alternatives would be longer than the proposed route and would disturb more land and cross more water bodies than the proposed route." The Final EIS concluded that, "The analyses of potential impacts associated with construction and normal operation of the proposed Project suggest that there would be no significant impacts to most resources along the proposed Project corridor."

Publication of this Final EIS was followed by a 90-day review period during which the State Department scheduled and held public meetings in each of the six states through which the proposed pipeline would pass and in Washington, D.C. A wide range of public comments both for and against the Keystone XL pipeline were received during the subsequent 90-day review period. Several labor unions and business groups backed the project, saying it will create thousands of construction jobs. Members of Congress on both sides of the aisle also weighed in on Keystone XL during this time period with most, if not all, Republicans supporting the project. But Democratic lawmakers are ultimately split. Senate Majority Leader Harry Reid (D-NV) has voiced his concern several times for the pipeline. On Oct. 19, 2011, a group of Democrat Members, led by Representative Gene Green (D-TX), wrote to President Obama asking him to approve the pipeline.

State Department's Further Delay of Keystone XL: On Nov. 10, 2011, the State Department announced that it would require additional information about alternative pipeline routes avoiding the environmentally

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[5] Editorial, "Jobs in the Pipeline, The EPA tries to scuttle oil transport from Canada's tar sands," *The Wall Street Journal*, July 7, 2011, http://online.wsj.com/article/SB10001424052702304760604576426050150189280.html

[6] Editorial, "Jobs in the Pipeline, The EPA tries to scuttle oil transport from Canada's tar sands," *The Wall Street Journal*, July 7, 2011, http://online.wsj.com/article/SB10001424052702304760604576426050150189280.html

sensitive Sand Hills region in Nebraska, which contains the Ogallala Aquifer. Instead of issuing a final project decision, State Department said it would pursue a new route to avoid the Ogallala Aquifer in the Sand Hills region of Nebraska altogether. Although the State Department did not decide that environmental issues led to a determination that the proposed project was not in the national interest, environmental issues identified in the Final EIS, and further stressed public comments, led to its decision to delay that determination until it gathered this information.

Following the announcement of this delay, on Nov. 14, 2011, TransCanada announced an agreement with the Nebraska Department of Environmental Equality to identify a pipeline route that would avoid the Sand Hills. The State Department then estimated at the time that the preparation of supplemental environmental analysis necessary for a new route alternative could be complete in early 2013.

H.R. 3630, the Middle Class Tax Relief and Job Creation Act: On Dec. 13, 2011, the House passed H.R. 3630, the Middle Class Tax Relief and Job Creation Act of 2011, by a vote of 234-193 (R: 224-14; D: 10-179). The main focus of this bill was to extend for one-year the Social Security payroll tax holiday and unemployment insurance for long-term unemployed Americans, but it also included a provision dealing with Keystone XL. H.R. 3630, if enacted, would have required that the President to grant a permit under Executive Order 13337 for the Keystone XL pipeline project within 60 days of enactment. If the President took no action during that timeframe, then the permit would automatically be approved. Following the Senate refusing to take action beyond procedural votes on this House-passed version of H.R. 3630, the bill was amended to extend the major provisions just through Feb. 29, 2012.

H.R. 3630, the Temporary Payroll Tax Cut Continuation Act: On Dec. 20, 2011, Congress passed (by voice vote) and the President signed into law, on Dec. 23, 2011, the revised version of H.R. 3630, now the Temporary Payroll Tax Cut Continuation Act of 2011. Title V of this act addressed the Keystone XL presidential permitting process. Under Title V of H.R. 3630, the President was required to grant the Keystone XL pipeline permit within 60 days (by Feb. 21, 2012) of the law's enactment, unless the President determined that the pipeline was not in the national interest. It also allowed for future changes to the Nebraska route if approved by the Governor of Nebraska. If the President did not make a national interest determination and took no action to grant the permit, then the law provided that the permit "shall be in effect by operation of law."

State's Denial of Keystone XL: As required by the act, on Jan. 18, 2012, the State Department recommended that "the presidential permit for the proposed Keystone XL pipeline be denied and, that at this time, the TransCanada Keystone XL Pipeline be determined not to serve the national interest." The State Department asserted that its recommendation "was predicated on the fact that the Department does not have sufficient time to obtain the information necessary to assess whether the project, in its current state, is in the national interest.

The same day, the President stated his determination that the Keystone XL pipeline project "would not serve the national interest." President Obama denounced this legislative attempt in H.R. 3630 as a "rushed and arbitrary deadline." But, stated that, "This announcement is not a judgment on the merits of the pipeline, but the arbitrary nature of a deadline that prevented the State Department from gathering the information necessary to approve the project and protect the American people." In addition, President Obama also said that his administration would explore ways to relieve the pipeline bottleneck that is slowing oil shipments between a major terminal in Cushing, Okla., and Gulf Coast refineries.

TransCanada immediately announced that it will reapply for a Presidential Permit after a new proposed route through Nebraska is determined. Albeit possible legislative action by Congress, the company expects to establish the new route by October 2012.

Additional Proposed Legislative "Fixes" and Legal Developments

Since this rejection of the Keystone permit was "expected," several legislative "fixes" have been discussed and proposed. Over the holidays, Senator John Hoeven (R-ND) and several other Senate Republicans began drafting legislation to shift the final decision from the executive branch to Congress, which would green-light the plan legislatively.

H.R. 3548, the North American Energy Access Act: On Dec. 2, 2011, Representative Lee Terry (R-NE) introduced H.R. 3548, the North American Energy Access Act. H.R. 3548 would transfer permitting authority over the Keystone XL pipeline project from the State Department to the Federal Energy Regulatory Commission (FERC). It would also require the commission to issue a permit for the project within 30 days of enactment. The House Energy and Commerce Subcommittee on Energy and Power held a hearing Rep. Terry's bill on Wednesday, Jan. 25, 2012.

Recent Legal and Constitutional Authority Developments: Because the president's power to issue such permits is derived from the Constitution and not statute, questions have arisen about whether congressional efforts to amend the decision process represents an intrusion into executive branch authority to conduct foreign policy. A December 2011 Congressional Research Service (CRS) report questioned whether legislative efforts to force a presidential decision on the Keystone pipeline were binding or enforceable, citing a handful of cases where federal courts have acknowledged the constitutional authority of the president to issue cross-border permits. But, some of the decisions found that the presidential power exists, in part, because of the absence of congressional action.

On Jan. 20, 2012, at the request of Senator Hoeven, CRS updated its prior December 2011 report entitled, "Proposed Keystone XL Pipeline: Legal Issues." The new analysis, by tracing a series of legal arguments dating back to the 19th century, states that Congress' powers to regulate foreign commerce – clearly spelled out in Article 1, Section 8 of the Constitution – **would likely outweigh the president's authority to conduct foreign policy.**

The report states, "**Whereas any independent presidential authority in matters affecting foreign commerce derives from the president's more general foreign affairs authority, Congress's power over foreign commerce is plainly enumerated by the Constitution, suggesting that its authority in this field is preeminent**."

The new analysis cites examples from all three branches of government to suggest congressional efforts to intervene in the permit dispute are legally sound:

"As the discussion above demonstrates, **all three branches of the federal government have historically taken an expansive view of the nature of Congress's authority to regulate foreign commerce, even in the absence of existing legislation in the area.** Although the Temporary Payroll Tax Cut Continuation Act of 2011 appears to be the first legislation enacted on the subject of cross border pipeline permitting, **the absence of previous legislation related to the permitting of cross border facilities does not mean that Congress lacks the constitutional authority to take action on these matters.**

The executive branch also possesses some ability to act in the area of border crossing permitting, derived from the power to conduct foreign affairs under Article II of the Constitution. The executive's ability to act in his area, however, is informed by the previous lack of federal legislation in this area. **The absence of legislation up to this point may have 'enable[d], if not invite[d], measures on independent presidential responsibility' in which the President has acted in the 'absence of either a congressional grant or denial of authority.' However, if Congress chose to assert its authority in the area of border crossing facilities, this would likely be considered within its constitutionally enumerated authority to regulate foreign commerce. Congress may consider legislation to overturn the domestic legal effect of legal action denying a permit for a border crossing facility for the Keystone XL pipeline. It could also potentially establish criteria for the issuance of any cross border permits, and potentially require the issuance of permits to entities which fulfill such criteria.**"

In short, the report states that lawmakers would have a strong legal basis for overturning Obama's denial of the project, establishing criteria for issuance of cross-border permits, or simply mandating approval legislatively. It additionally points out that the Supreme Court has repeatedly sided with Congress on matters involving the foreign commerce clause of the Constitution, which justices described in 1933 as "exclusive and plenary." As of 2006, CRS noted, the Supreme Court had "never struck down an act of Congress as exceeding its powers to regulate foreign commerce."

Efforts to force approval of the Keystone XL permit were boosted by the determination of this report that Congress likely has broad Constitutional authority to intervene in the pipeline dispute. Congressional Republicans are currently working to get behind a legislative strategy for approving the Keystone XL pipeline.

H.R. 3408, the Protecting Investment in Oil Shale the Next Generation of Environmental, Energy and Resource Security (PIONEERS) Act: On Feb. 16, 2012, the House passed H.R. 3408, that contained several provisions regarding further domestic energy exploration, production and development. This bill was meant to partially offset the intended highway bill.

Editor's Note: *At the time of this writing, the highway bill has yet to come before the House for a vote.*

Included in the bill was the language from Rep. Lee Terry's bill, H.R. 3548, that would expedite approval of the Keystone XL pipeline project by shifting permitting authority from the State Department to the Federal Energy Regulatory Commission (FERC). If FERC took no action, the permit would be deemed approved after a 30-day period.

Cushing to Port Arthur: On Feb. 26, 2012, TransCanada announced that it would push ahead with plans to construct the segment of Keystone XL running from Cushing, Okla., to Port Arthur, Texas. Following this announcement, the White House reiterated its support for this segment of the Keystone XL pipeline. Specifically, the White House said that the administration would "take every step possible to expedite the necessary federal permits" for the segment.

On March 21, 2012, President Obama announced that he will be issuing an executive order on federal permitting of infrastructure projects, "which will require agencies to make faster permitting and review decisions for vital infrastructure projects while protecting the health and vitality of local communities and the environment." In addition to this, the President also stated that he would "issue a specific memorandum in Cushing directing federal agencies to expedite the Cushing Pipeline."

ENERGY DEVELOPMENT AND PRODUCTION LEGISLATION IN THE 112th CONGRESS

Throughout the current 112th Congress, several pieces of legislation regarding domestic energy development and production have been introduced and have been brought up on the House Floor for a vote. Most of these bills are part of the House Republican American Energy Initiative. You can link to information about the American Energy Initiative here and here. This section will highlight several of those bills.

Editor's Note: *These are bills taken up by the House as of the time of this writing. It is expected that House Republicans will continue to bring up and consider legislation geared toward increasing domestic energy production and development. Please contact the NRCC for any additions to this list.*

H.R. 1230, Restarting American Offshore Leasing Now Act

H.R. 1230 would require the Secretary of the Interior to complete four specific offshore oil and gas lease sales located in the Gulf of Mexico and off the short of Virginia by various specific deadlines. All four leases have completed environmental impact studies (EIS) and satisfied requirements preceding the 2010 oil spill in the Gulf of Mexico. Following the spill, the Obama Administration halted pending lease sales and retroactively subjected them to additional environmental requirements that would require an additional study. H.R. 1230 would deem that the previously completed EIS satisfy the requirements for the lease. It would also prevent the lease sale off the shore of Virginia from going forward if it could conflict with military operations.

H.R. 1230 passed the House on May 5, 2011, by a vote of 266 to 149 (R: 233-2; D: 33-147). You can see how they voted here.

Below are selected vote hits on Democrats who voted against H.R. 1230:

- **Voted against a bill that would allow drilling for oil and natural gas in the most productive regions of the Outer Continental Shelf (OCS)**
    - Voted against passage of a bill that would require the Interior Department to conduct certain oil and natural gas lease sales in the Gulf of Mexico and off the coast of Virginia. The bill would deem that the existing environmental impact statement issued for the current department five-year plan for 2007-2011 is sufficient to satisfy environmental requirements for the sales. (Passed 266-149; D: 33-147; R: 233-2)[7]
- **An inter-agency report by the U.S. Department of Commerce estimated that 8,000 to 12,000 jobs had been lost in the Gulf Region as a result of the moratorium**
    - According to a Sept. 16, 2010, interagency report by the U.S. Department of Commerce estimating the economic effects of the deepwater drilling moratorium on the gulf coast economy, "We estimate that the six-month moratorium may temporarily result in up to 8,000 to 12,000 fewer jobs in the Gulf Coast. These jobs would not be permanently lost as a

[7] H.R. 1230, CQ Vote #298, May 5, 2011

result of the moratorium; most would return following the resumption of deepwater drilling in the Gulf of Mexico."[8]

- **The report said that the U.S. Dept of Commerce expected "this impact to be more heavily concentrated in smaller businesses than in the larger companies operating in the Gulf Coast"**

  - According to a Sept. 16, 2010, interagency report by the U.S. Department of Commerce estimating the economic effects of the deepwater drilling moratorium on the gulf coast economy, "We estimate that the six-month moratorium may temporarily result in up to 8,000 to 12,000 fewer jobs in the Gulf Coast. These jobs would not be permanently lost as a result of the moratorium; most would return following the resumption of deepwater drilling in the Gulf of Mexico.

    "For reasons described in the report, we expect this impact to be more heavily concentrated in smaller businesses than in the larger companies operating in the Gulf Coast. These estimates are lower than estimates from earlier studies. There are several reasons for the difference, but a primary reason is that many deepwater drilling operators and contractors have retained most of their employees. Earlier studies assumed that all employees would be let go."[9]

- **However, a separate study examined the U.S. Department of Commerce's report and concluded that it had "decreased industry spending derived from the survey by $141 million for no methodologically justifiable reason, and cuts the output, estimated job losses, by an ad hoc factor of 40-60 percent"**

  - According to an American Energy Alliance study by Dr. Joseph Mason, Hermann Moyse/LBA Chair of Banking at the Ourso School of Business at Louisiana State University, critiquing the Inter-Agency Economic report, "The Inter-Agency Report of September 16, 2010, Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf Coast Economy produces estimates of job losses in the Gulf of Mexico region that, at first glance, appear close to those established in my July 19, 2010 study. However, the estimates are very different – both in terms of methodology and scope.

    "The Inter-Agency Report uses undisclosed survey methods to estimate the decrease in industry spending resulting from the drilling moratorium, reduces the input effect of decreased industry spending derived from the survey by $141 million for no methodologically justifiable reason, and cuts the output, estimated job losses, by an ad hoc factor of 40-60 percent."[10]

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[8] "Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf Coast Economy," U.S. Department of Commerce, Sept. 16, 2010, http://www.esa.doc.gov/Reports/estimating-economic-effects-deepwater-drilling-moratorium-gulf-coast-economy

[9] "Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf Coast Economy," U.S. Department of Commerce, Sept. 16, 2010, http://www.esa.doc.gov/Reports/estimating-economic-effects-deepwater-drilling-moratorium-gulf-coast-economy

[10] Joseph Mason, "Critique of the Inter-Agency Economic Report 'Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf Coast Economy'" American Energy Alliance, http://www.saveusenergyjobs.com/wp-content/uploads/2010/09/Dr.-Mason-Critique-of-Administrations-Report.pdf

- **The study critiquing the U.S. Department of Commerce's report found that "the Gulf States stand to lose 19,536 jobs, $5 billion in economic output, $1.1 billion in wages, and $239 million in state and local tax revenues during the 6-month moratorium"**
    - According to an American Energy Alliance study by Dr. Joseph Mason, Hermann Moyse/LBA Chair of Banking at the Ourso School of Business at Louisiana State University, critiquing the Inter-Agency Economic report, "I find that that the Gulf States stand to lose 19,536 jobs, $5 billion in economic output, $1.1 billion in wages, and $239 million in state and local tax revenues during the 6-month moratorium, based on the Inter-Agency Report calculations without the ad hoc multiplier adjustment. Those effects differ significantly from the 8,000-12,000 jobs estimated in my own work."[11]
- **The U.S Chamber of Commerce wrote a letter in support of the bill and two other drilling bills saying "they would help ease the nation's dependence on foreign oil, and - most importantly - put Americans back to work"**
    - In a May 3, 2011, letter to members of the U.S. House of Representatives, R. Bruce Josten, executive vice president of governmental affairs for the U.S. Chamber of Commerce wrote, "H.R. 1229, H.R. 1230, and H.R. 1231 are a major step in the right direction for the nation's energy policy. These bills would ensure that offshore exploration permit decisions are more transparent and made in a reasonable time, legal challenges are heard fairly and expeditiously, and the Department would no longer be allowed to slow-walk the offshore leasing process. They would help ease the nation's dependence on foreign oil, and - most importantly - put Americans back to work. In testimony before the Committee, Dr. Mason estimated that the bills could have "substantial job benefits," creating up to 250,000 short-term jobs during the exploration and development phase and 1.2 million long-term jobs during the production phase."[12]

H.R. 1229, Putting the Gulf of Mexico Back to Work Act

Following the Deepwater Horizon explosion, the Obama Administration placed a moratorium on all shallow-water and deepwater drilling in the Gulf of Mexico in May 2010. H.R. 1229 would end the Obama Administration's de facto moratorium in a safe, responsible, transparent manner putting Americans back to work and increasing American energy production to help address rising gas prices. Specifically, H.R. 1229 would establish a deadline for the Secretary of the Interior to consider certain pending oil and gas exploration permits in the Gulf of Mexico and would require that future applications be accepted or denied within 30 days (or 60 days at the latest if an extension is granted). This legislation would also extend certain pre-existing leases set to expire on or before Dec. 31, 2011, by one year.

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[11] Joseph Mason, "Critique of the Inter-Agency Economic Report 'Estimating the Economic Effects of the Deepwater Drilling Moratorium on the Gulf Coast Economy'" American Energy Alliance, http://www.saveusenergyjobs.com/wp-content/uploads/2010/09/Dr.-Mason-Critique-of-Administrations-Report.pdf

[12] R. Bruce Josten, letter to Members of the U.S. House of Representatives, U.S. Chamber of Commerce, May 3, 2011, http://www.uschamber.com/sites/default/files/hill-letters/110503_HR1229_HR1230_HR1231_OffshoreOilandGasExploration_House.pdf

The House passed H.R. 1229 on May 11, 2011, by a vote of 263 to 163 (R: 235-0; D: 28-163). You can see how they voted here.

Below are selected vote hits on Democrats who voted against H.R. 1229:

- **Voted against a bill that would expedite the permitting process for exploratory drilling lessees in the Gulf of Mexico by providing the Department of the Interior a maximum of 60 days to review and issue a ruling on an application**
    - Voted against passage of a bill that would modify the permitting process for lessees in the Gulf of Mexico seeking to initiate exploratory drilling. It would provide the Interior Department 30 days to approve such permits, with the option of extending reviews by two 15-day periods. If the department does not issue a ruling on an application within 60 days, it would be deemed approved. The measure also would limit and expedite the process for filing a civil action in response to an approved drilling permit. (Passed 263-163; D: 28-163; R: 235-0)[13]

- **Economist Dr. Joseph Mason testified before the House Natural Resources Committee that the bill, along with two other drilling bills, could create 1.19 million jobs across the entire economy and increase economic output by $8.2 trillion**
    - According to testimony offered by Dr. Joseph Mason, Hermann Moyse/LBA Chair of Banking at the Ourso School of Business at Louisiana State University, before the U.S. House of Representatives Subcommittee on Energy & Mineral Resources on April 6, 2011, "Increased OCS oil and gas extraction would yield approximately $5.75 trillion in new coastal state output over the lifetime of the fields. Approximating the total increase in output associated with increasing offshore resource production throughout the U.S. (including states in the interior), yields approximately $2.45 trillion in additional output.

      "The total increase in output in the United States is estimated to total approximately $8.2 trillion or about $273 billion per year, which amounts to just over two percent of GDP. Because the OCS areas are currently unavailable, the entire amount—$8.2 trillion—is completely new output created by a simple change in policy allowing resource extraction in additional OCS Planning Areas."[14]

    - According to the same testimony, "An economic expansion tied to increased OCS resource production would also create millions of new jobs both in the extraction industry and in other sectors that serve as suppliers or their employees.

      "The annual increase in coastal state employment from initial investments in previously unavailable OCS planning areas and additional refining capacity is estimated to be 185,320 full-time jobs per year. Again, this number does not consider the spill-over effects of

[13] H.R. 1229, CQ Vote #309, May 11, 2011

[14] "Hearing on HR 1229 "Putting the Gulf Back to Work Act", HR 1230 "Restarting American Offshore Leasing Now Act", and HR 1231 "Reversing President Obama's Offshore Moratorium Act," Testimony of Dr. Joseph R. Mason Hermann Moyse, Jr./LBA Professor of Finance Louisiana State University before the U.S. House of Representatives Subcommittee on Energy & Mineral Resources, April 6, 2011, http://naturalresources.house.gov/UploadedFiles/MasonTestimony04.06.11.pdf

investment in productive capacity and refining to other U.S. states. The total increase in U.S. employment from the investment phase is approximately 271,570 full-time jobs per year.

"Applying the BEA multipliers to the estimated production value results in approximately 870,000 coastal state jobs in addition to the jobs created during the initial investment phase. Again, the total increase in U.S. employment in all states (including those in the interior) resulting from increased OCS production is 340,000 greater, for a total of approximately 1,190,000 jobs be sustained for the entire OCS production period."[15]

- **The U.S Chamber of Commerce wrote a letter in support of the bill and two other drilling bills saying "they would help ease the nation's dependence on foreign oil, and - most importantly - put Americans back to work"**
  - In a May 3, 2011, letter to members of the U.S. House of Representatives, R. Bruce Josten, executive vice president of governmental affairs for the U.S. Chamber of Commerce wrote, "H.R. 1229, H.R. 1230, and H.R. 1231 are a major step in the right direction for the nation's energy policy. These bills would ensure that offshore exploration permit decisions are more transparent and made in a reasonable time, legal challenges are heard fairly and expeditiously, and the Department would no longer be allowed to slow-walk the offshore leasing process. They would help ease the nation's dependence on foreign oil, and - most importantly - put Americans back to work. In testimony before the Committee, Dr. Mason estimated that the bills could have 'substantial job benefits,' creating up to 250,000 short-term jobs during the exploration and development phase and 1.2 million long-term jobs during the production phase."[16]

H.R. 1231, Reversing President Obama's Offshore Moratorium Act

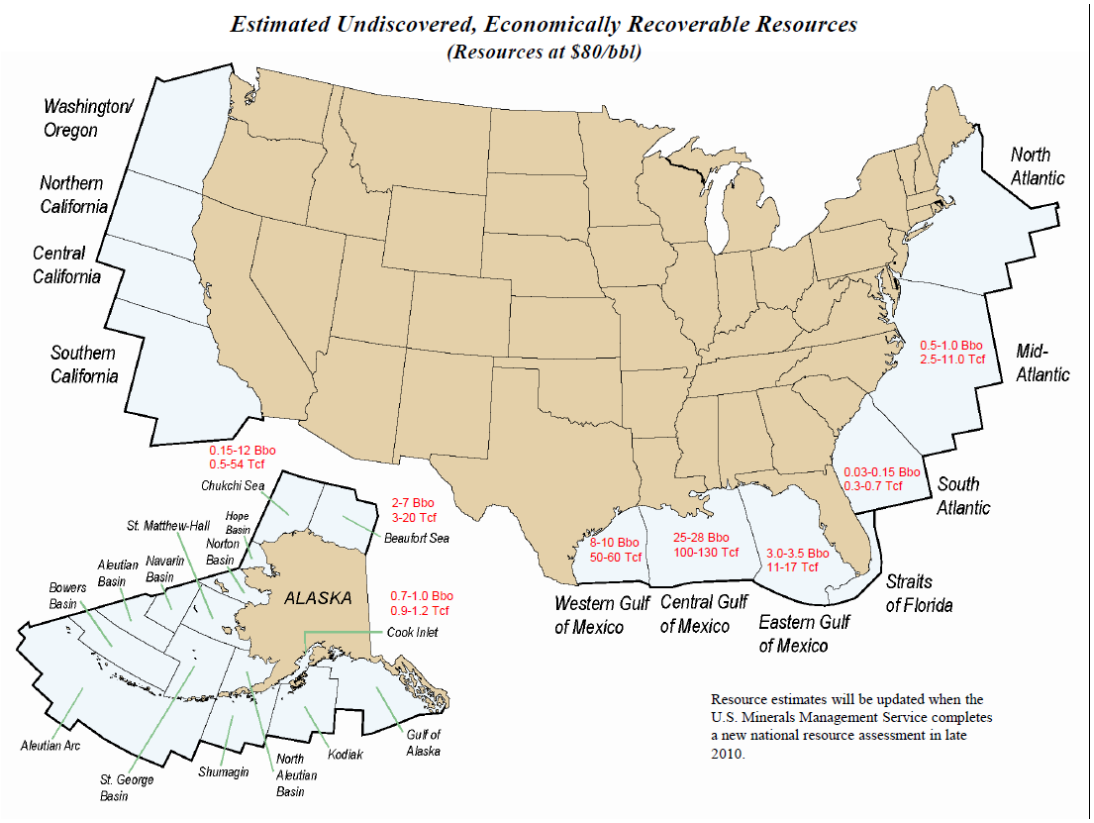
H.R. 1231 was the third bill in a series of bills (H.R. 1230, H.R. 1229) designed to increase domestic energy production in an effort to address rising gas prices and create jobs. This legislation would require the Interior Department to offer leases for offshore oil and gas development in areas that are projected to have large quantities of oil or gas. These include:

- Gulf of Mexico;
- Beuafort, Chukchi and North Aleutian areas off Alaska;
- North and Mid-Atlantic planning areas; and

[15] "Hearing on HR 1229 "Putting the Gulf Back to Work Act", HR 1230 "Restarting American Offshore Leasing Now Act", and HR 1231 "Reversing President Obama's Offshore Moratorium Act," Testimony of Dr. Joseph R. Mason Hermann Moyse, Jr./LBA Professor of Finance Louisiana State University before the U.S. House of Representatives Subcommittee on Energy & Mineral Resources, April 6, 2011, http://naturalresources.house.gov/UploadedFiles/MasonTestimony04.06.11.pdf

[16] R. Bruce Josten, letter to Members of the U.S. House of Representatives, U.S. Chamber of Commerce, May 3, 2011, http://www.uschamber.com/sites/default/files/hill-letters/110503_HR1229_HR1230_HR1231_OffshoreOilandGasExploration_House.pdf

- Southern California planning area.



H.R. 1231 would require Interior to auction leases for oil and gas development in areas that have been identified as the most geologically productive in the Outer Continental Shelf (OCS). Specifically, the bill would require leases to be offered in areas that are projected to contain more than 2.5 billion barrels of oil or 7.5 trillion cubic feet of natural gas. At the time of the vote, the Congressional Budget Office (CBO) estimated that H.R. 1231 would save the federal government $800 million over the next 10 years through increase revenue from the new lease and royalty payments.

H.R. 1231 was passed by the House on May 12, 2011, by a vote of 243 to 179 (R: 222-9; D: 21-170). You can see how they voted here.

Below are selected vote hits on Democrats who voted against H.R. 1231:

- **Voted against a bill that would allow drilling for oil and natural gas in the most productive regions of the Outer Continental Shelf (OCS)**
  - Voted against passage of the bill that would require the Interior Department to expand the area of the outer continental shelf that is available for oil and natural gas drilling, and set a national goal for domestic oil and gas production in its five-year leasing plan. (Passed 243-179; D: 21-170; R: 222-9)[17]
  - According to the Congressional Research Service (CRS) Summary of H.R. 1231, "Reversing President Obama's Offshore Moratorium Act - Amends the Outer Continental Shelf Lands Act to direct the Secretary of the Interior to make available for leasing and to conduct lease sales including: (1) at least 50% of the available unleased acreage within each outer Continental Shelf (OCS) planning area considered to have the largest undiscovered, technically recoverable oil and gas resources (on a total Btu basis) based upon the most

[17] H.R. 1231, CQ Vote #320, May 12, 2011

recent national geologic assessment of the OCS, with an emphasis on offering the most geologically prospective parts of the planning area; and (2) any state subdivision of an OCS planning area that the Governor of such state requests be made available for leasing."[18]

- According to the Congressional Budget Office's (CBO's) cost estimate for H.R. 1231, "The estimated budgetary impact of H.R. 1231 primarily reflects an assumption that leasing activity in areas in the Atlantic and California OCS would increase. CBO estimates that enacting the bill would have no effect on offsetting receipts from areas already included in the administration's leasing plans, such as the Central and Western Gulf of Mexico and the Beaufort and Chukchi Seas. Similarly, while the geologic criteria in this bill would apply to the Eastern Gulf of Mexico, CBO does not expect any leasing to occur in that area over the 2011-2021 period because of the statutory prohibition on such leasing under the Gulf of Mexico Energy Security Act."[19]

➢ **Economist Dr. Joseph Mason testified before the House Natural Resources Committee that the bill, along with two other drilling bills, could create 1.19 million jobs across the entire economy and increase economic output by $8.2 trillion**

- According to testimony offered by Dr. Joseph Mason, Hermann Moyse/LBA Chair of Banking at the Ourso School of Business at Louisiana State University, before the U.S. House of Representatives Subcommittee on Energy & Mineral Resources on April 6, 2011, "Increased OCS oil and gas extraction would yield approximately $5.75 trillion in new coastal state output over the lifetime of the fields. Approximating the total increase in output associated with increasing offshore resource production throughout the U.S. (including states in the interior), yields approximately $2.45 trillion in additional output.

  "The total increase in output in the United States is estimated to total approximately $8.2 trillion or about $273 billion per year, which amounts to just over two percent of GDP. Because the OCS areas are currently unavailable, the entire amount—$8.2 trillion—is completely new output created by a simple change in policy allowing resource extraction in additional OCS Planning Areas."[20]

- According to the same, "An economic expansion tied to increased OCS resource production would also create millions of new jobs both in the extraction industry and in other sectors that serve as suppliers or their employees.

  "The annual increase in coastal state employment from initial investments in previously unavailable OCS planning areas and additional refining capacity is estimated to be 185,320 full-time jobs per year. Again, this number does not consider the spill-over effects of

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[18] "Bill Summary & Status 112th Congress (2011 - 2012) H.R.1231 Congressional Research Service (CRS) Summary," Library of Congress, Thomas, May 2, 2011, http://www.thomas.gov/cgi-bin/bdquery/D?d112:1:./temp/~bdL7Z3:@@@D&summ2=m&|/home/LegislativeData.php|

[19] "H.R. 1231 Reversing President Obama's Offshore Moratorium Act," Congressional Budget Office (CBO), May 2, 2011, http://www.cbo.gov/ftpdocs/121xx/doc12175/hr1231.pdf

[20] "Hearing on HR 1229 "Putting the Gulf Back to Work Act", HR 1230 "Restarting American Offshore Leasing Now Act", and HR 1231 "Reversing President Obama's Offshore Moratorium Act," Testimony of Dr. Joseph R. Mason Hermann Moyse, Jr./LBA Professor of Finance Louisiana State University before the U.S. House of Representatives Subcommittee on Energy & Mineral Resources, April 6, 2011, http://naturalresources.house.gov/UploadedFiles/MasonTestimony04.06.11.pdf

investment in productive capacity and refining to other U.S. states. The total increase in U.S. employment from the investment phase is approximately 271,570 full-time jobs per year.

"Applying the BEA multipliers to the estimated production value results in approximately 870,000 coastal state jobs in addition to the jobs created during the initial investment phase. Again, the total increase in U.S. employment in all states (including those in the interior) resulting from increased OCS production is 340,000 greater, for a total of approximately 1,190,000 jobs be sustained for the entire OCS production period."[21]

- **The U.S Chamber of Commerce wrote a letter in support of the bill and two other drilling bills saying "they would help ease the nation's dependence on foreign oil, and - most importantly - put Americans back to work"**
  - In a May 3, 2011, letter to members of the U.S. House of Representatives, R. Bruce Josten, executive vice president of governmental affairs for the U.S. Chamber of Commerce wrote, "H.R. 1229, H.R. 1230, and H.R. 1231 are a major step in the right direction for the nation's energy policy. These bills would ensure that offshore exploration permit decisions are more transparent and made in a reasonable time, legal challenges are heard fairly and expeditiously, and the Department would no longer be allowed to slow-walk the offshore leasing process. They would help ease the nation's dependence on foreign oil, and - most importantly - put Americans back to work. In testimony before the Committee, Dr. Mason estimated that the bills could have "substantial job benefits," creating up to 250,000 short-term jobs during the exploration and development phase and 1.2 million long-term jobs during the production phase."[22]

H.R. 2021, Jobs and Energy Permitting Act

H.R. 2021 was designed to increase domestic energy production and create jobs by streamlining the process for issuing offshore drilling permits and removing or amending burdensome regulations that have delayed oil exploration in the Alaskan OCS. H.R. 2021 would amend and clarify certain provisions of the Clean Air Act to require that the air quality impact of OCS sources are measured and determined only with respect to its impacts on the corresponding onshore area. Specifically, the bill would clarify that emissions from any vessel connected to an OCS source, including emissions that occur while at or in transit to or from the source within 25 miles, will be considered direct emissions from the OCS source, but will not be subject to any emission control requirement that applies to that source.

Additionally, it would clarify that an OCS source is established when drilling commences at a location and ceases to exist when drilling activity ends or is temporarily interrupted due to the platform or ship relocating. Final agency action on a drilling permit application for an OCS source would be required no later than six months after the application is filed. After such final agency action is taken, H.R. 2021 would

[21] "Hearing on HR 1229 "Putting the Gulf Back to Work Act", HR 1230 "Restarting American Offshore Leasing Now Act", and HR 1231 "Reversing President Obama's Offshore Moratorium Act," Testimony of Dr. Joseph R. Mason Hermann Moyse, Jr./LBA Professor of Finance Louisiana State University before the U.S. House of Representatives Subcommittee on Energy & Mineral Resources, April 6, 2011, http://naturalresources.house.gov/UploadedFiles/MasonTestimony04.06.11.pdf
[22] R. Bruce Josten, letter to Members of the U.S. House of Representatives, U.S. Chamber of Commerce, May 3, 2011, http://www.uschamber.com/sites/default/files/hill-letters/110503_HR1229_HR1230_HR1231_OffshoreOilandGasExploration_House.pdf

prohibit the Environmental Protection Agency (EPA) or the EPA's Environmental Appeals Board (EAB) from having authority to conduct any further consideration, issuance or denial of that permit.

H.R. 2021 passed the House on June 22, 2011, by a vote of 253 to 166 (R: 230-2; D: 23-164). You can see how they voted here.

Below are selected vote hits on Democrats who voted against H.R. 2021:

- **Voted against a bill that was designed to expedite the permitting process for offshore energy production in Alaska**
  - Voted against passage of a bill that would set a six-month deadline for the EPA to take final action on air pollution permit applications for outer continental shelf exploration. It would strip the ability of the Environmental Appeals Board (EAB) to remand or deny the issuance of such permits. It also would modify air quality standards so that impacts are determined solely with respect to the impact in the corresponding onshore area. (Passed 253-166; D: 23-164; R: 230-2)[23]
  - In a June 2, 2011, article, *Congressional Quarterly* reported, "The House Energy and Commerce Committee backed legislation Thursday aimed at spurring Alaskan offshore energy production.

    "The panel approved a bill (HR 2021), 34-14, that would speed up the EPA's process for issuing air pollution permits for offshore oil and gas exploration. The measure would set a six-month deadline for the EPA to take final action on air pollution permit applications for outer continental shelf drill ship or platform exploration and bar the EPA's Environmental Appeals Board from reviewing decisions regarding such permits."[24]
- **The bill requires the EPA to either approve or deny clean-air permits within six months of receiving an application and requires opponents to file objections in a federal court, as opposed to a less-formal appeals board that is currently available**
  - In a June 22, 2011, article, *The Wall Street Journal* reported, "The House voted Wednesday to streamline the issuance of clean-air permits for offshore oil-drilling projects, representing another attempt by Republicans to pressure the Obama administration into speeding up domestic oil production."[25]
  - According to the same article, "Specifically, the bill requires the U.S. Environmental Protection Agency to either approve or deny clean-air permits within six months of receiving an application. It also requires opponents of the permits to file objections in a federal court, as opposed to a less-formal appeals board that is currently available to them."[26]

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[23] H.R. 2021, CQ Vote #478, June 22, 2011
[24] Anne Kim, "Panel Advances Bill Designed to Spur Offshore Energy Production in Alaska," *Congressional Quarterly*, June 2, 2011
[25] Tennille Tracy, "House Votes to Streamline Clean-Air Permits for Oil-Drilling Projects," *The Wall Street Journal,* June 22, 2011, http://online.wsj.com/article/SB10001424052702304791204576402493424635416.html?mod=googlenews_wsj
[26] Tennille Tracy, "House Votes to Streamline Clean-Air Permits for Oil-Drilling Projects," *The Wall Street Journal,* June 22, 2011, http://online.wsj.com/article/SB10001424052702304791204576402493424635416.html?mod=googlenews_wsj

- **The bill was developed in response to challenges faced by Shell Oil in obtaining clean-air permits for exploratory drilling in the Beaufort and Chukchi seas in Alaska**
    - In a June 22, 2011, article, *The Wall Street Journal* reported, "The House voted Wednesday to streamline the issuance of clean-air permits for offshore oil-drilling projects, representing another attempt by Republicans to pressure the Obama administration into speeding up domestic oil production."[27]
    - According to the same article, "The bill that was passed Wednesday was developed in response to challenges faced by Shell in obtaining clean-air permits for exploratory drilling in the Beaufort and Chukchi seas. The company invested over $3 billion to prepare for the drilling, but regulatory hurdles and other challenges has prevented the company from moving forward."[28]
- **Shell Oil had invested over $3 billion in the Alaska projects but regulatory hurdles and other challenges prevented the company from moving forward which may cause it to put off plans to spend as much as an additional $150 million until 2012**
    - In a June 22, 2011 article, *The Wall Street Journal* reported, "The House voted Wednesday to streamline the issuance of clean-air permits for offshore oil-drilling projects, representing another attempt by Republicans to pressure the Obama administration into speeding up domestic oil production."[29]
    - According to the same article, "The bill that was passed Wednesday was developed in response to challenges faced by Shell in obtaining clean-air permits for exploratory drilling in the Beaufort and Chukchi seas. The company invested over $3 billion to prepare for the drilling, but regulatory hurdles and other challenges has prevented the company from moving forward."[30]
    - In an April 26, 2011, article, Bloomberg reported, "Royal Dutch Shell Plc (RDSA) is being blocked from offshore oil and gas exploration in Alaska by the 'irresponsible' delays of federal regulators, said the company's U.S. president, Marvin Odum.

      "Shell, based in The Hague, has spent more than $2 billion for hundreds of drilling leases in Alaska since 2005, and has invested $1.5 billion on an exploration program that exceeds current regulatory requirements, Odum said.

      "'Despite our most intense efforts, we have yet to drill a single well,' Odum said today at a conference in Washington.

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[27] Tennille Tracy, "House Votes to Streamline Clean-Air Permits for Oil-Drilling Projects," *The Wall Street Journal,* June 22, 2011, http://online.wsj.com/article/SB10001424052702304791204576402493424635416.html?mod=googlenews_wsj
[28] Tennille Tracy, "House Votes to Streamline Clean-Air Permits for Oil-Drilling Projects," *The Wall Street Journal,* June 22, 2011, http://online.wsj.com/article/SB10001424052702304791204576402493424635416.html?mod=googlenews_wsj
[29] Tennille Tracy, "House Votes to Streamline Clean-Air Permits for Oil-Drilling Projects," *The Wall Street Journal,* June 22, 2011, http://online.wsj.com/article/SB10001424052702304791204576402493424635416.html?mod=googlenews_wsj
[30] Tennille Tracy, "House Votes to Streamline Clean-Air Permits for Oil-Drilling Projects," *The Wall Street Journal,* June 22, 2011, http://online.wsj.com/article/SB10001424052702304791204576402493424635416.html?mod=googlenews_wsj

"Shell's biggest impediment has been obtaining an air permit from the Environmental Protection Agency for temporary exploration operations off the Alaska coast, Odum said.

""The delay is frustrating and disappointing and it undermines confidence in the American regulatory system,' he said. 'Beyond that, you might call it irresponsible. Thousands of men and women were counting on those jobs, local businesses were counting on the revenue and communities were counting on the tax boost.'

"Shell delayed its drilling campaign in Alaska and put off plans to spend as much as $150 million in the region until 2012, citing regulatory delays, according to a Feb. 3 statement. Alaska may hold the second-biggest U.S. oil and gas reserves after the Gulf of Mexico, according to government estimates."[31]

- **The U.S. Chamber of Commerce supports the bill as a way increase domestic energy production and create American jobs**
  - According to a June 23, 2011, post on the U.S. Chamber of Commerce's Chamber Post blog, "The Chamber supports both the North American-Made Energy Security Act and the Jobs and Energy Permitting Act of 2011 as ways to increase domestic energy production and create American jobs."[32]

H.R. 1938, North American-Made Energy Security Act

As previously mentioned in this chapter, motivated by the perception among some in Congress that the State Department was taking too long to review the Keystone XL pipeline project, the House passed H.R. 1938, the North American-Made Energy Security Act, by a vote of 279 to 147 on July 7, 2011. H.R. 1938 would have directed the President to expedite the State Department's permit review process, requiring a final decision to grant or deny the permit no later than Nov. 1, 2011. Opponents of the bill argued that the project's unique and potentially unacceptable safety and environmental risks, as well as its uncertain impacts on fuel prices, required more time for analysis and evaluation. H.R. 1938 was not voted upon in the Senate and its proposed Nov. 1, 2011, deadline came and went with no action.

Below are selected vote hits on Democrats who voted against H.R. 1938:

- **Voted against a bill that requires the administration to expedite the federal permitting process for the construction of the Keystone XL oil pipeline**
  - Voted against passage of a bill that would require the administration to make a permitting decision on the Keystone XL oil pipeline within 30 days after the final environmental impact statement is issued or by Nov. 1, whichever is earlier. It would direct the president, working

[31] Kim Chipman, "Shell Says Slow U.S. Drill Permits in Alaska 'Irresponsible,'" Bloomberg, April 26, 2011, http://www.bloomberg.com/news/2011-04-26/shell-says-slow-u-s-drill-permits-in-alaska-irresponsible-1-.html
[32] Sean Hackbarth, "Increase Domestic Oil Production. Don't Tap Strategic Petroleum Reserve," U.S. Chamber of Commerce Chamber Post Blog, June 23, 2011, http://www.chamberpost.com/2011/06/increase-domestic-oil-production-dont-tap-strategic-petroleum-reserve/

through the Energy secretary, to coordinate with federal agencies to make sure necessary review stages are expedited. (Passed 279-147; D: 47-144; R: 232-3)[33]

- **The Keystone XL oil pipeline would be constructed by TransCanada and would connect oil supply hubs in Alberta, Canada to destinations in the south central United States**
  - According to the U.S. Department of State's project information webpage for the Keystone XL Pipeline Project, "TransCanada Keystone Pipeline, L.P. (Keystone) proposes to construct and operate a crude oil pipeline and related facilities to transport Western Canadian Sedimentary Basin (WCSB) crude oil from an oil supply hub near Hardisty, Alberta, Canada to destinations in the south central United States, including a new tank farm in Cushing, Oklahoma and delivery points in Nederland (near Port Arthur) and Moore Junction (in Harris County), Texas."[34]
  - In a July 7, 2011, editorial, *The Wall Street Journal* wrote, "In September 2008 TransCanada applied to build a new pipeline—the Keystone XL—to bring diluted bitumen from the oil-rich tar sands of Alberta to thirsty American refineries on the Gulf Coast. It is hardly a radical proposal. Canadian crude has been flowing to the U.S. for decades. Another Canadian company—Enbridge—operates the Clipper pipeline across the Canadian border to Chicago. In July 2010 TransCanada began operating its Keystone pipeline from Alberta to Cushing, Oklahoma, which is a major storage and pricing depot."[35]
- **The Keystone XL oil pipeline is expected to deliver 700,000 barrel of oil per day**
  - In a July 26, 2011, article, *The Washington Times* reported, "Canadian oil company TransCanada is looking to build a $7 billion pipeline to transport oil across 1,700 miles through Montana, South Dakota, Nebraska, Kansas, Oklahoma and Texas to refineries along the Texas coast. It is expected to deliver 700,000 barrels a day."[36]
- **TransCanada estimates that building the Keystone XL oil pipeline will mean more than $20 billion in investment and 13,000 new American jobs in construction and related manufacturing**
  - In a July 7, 2011, editorial, *The Wall Street Journal* wrote, "TransCanada estimates that building the pipeline will mean more than $20 billion—$13 billion from TransCanada itself—in investment and 13,000 new American jobs in construction and related manufacturing. The company also expects more than 118,000 'spin-off' jobs during the two years of construction."[37]

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[33] H.R. 1938, CQ Vote #650, July 26, 2011
[34] "Keystone XL Pipeline Project," U.S. Department of State webpage, http://keystonepipeline-xl.state.gov/clientsite/keystonexl.nsf?Open, Accessed July 29, 2011
[35] Editorial, "Jobs in the Pipeline, The EPA tries to scuttle oil transport from Canada's tar sands," *The Wall Street Journal*, July 7, 2011, http://online.wsj.com/article/SB10001424052702304760604576426050150189280.html
[36] Tim Devaney, "Keystone Oil Pipeline Gets Boost in House," *The Washington Times*, July 26, 2011, http://www.washingtontimes.com/news/2011/jul/26/keystone-oil-pipeline-gets-boost-in-house/
[37] Editorial, "Jobs in the Pipeline, The EPA tries to scuttle oil transport from Canada's tar sands," *The Wall Street Journal*, July 7, 2011, http://online.wsj.com/article/SB10001424052702304760604576426050150189280.html

- **TransCanada also expects more than 118,000 "spin off" jobs during the two years of construction**

    - In a July 7, 2011, editorial, *The Wall Street Journal* wrote, "TransCanada estimates that building the pipeline will mean more than $20 billion—$13 billion from TransCanada itself—in investment and 13,000 new American jobs in construction and related manufacturing. The company also expects more than 118,000 'spin-off' jobs during the two years of construction."[38]

H.R. 3408, Protecting Investment in Oil Shale the Next Generation of Environmental, Energy and Resources (PIONEERS) Act

H.R. 3408 was originally packaged as part of a larger federal highway bill (H.R. 7), but was separated into three parts due to concern for support of the overall bill. H.R. 3408 is one of the two bills designed to raise revenues to pay for the spending contained in the overall highway bill.

On Feb. 16, 2012, the House passed H.R. 3408 by a vote of 237 to 187 (R: 216-21; D: 21-166). You can see how they voted here.

H.R. 3408 would require the Bureau of Land Management (BLM) to begin issuing shale oil leases on federal lands in Wyoming, Colorado and Utah pursuant to several Bush-era rules issued in 2008. Interior would be required to hold a lease sale for those lands within 180 days of enactment of H.R. 3408 that would offer additional lands or research, development and demonstration of oil shale resources and to hold at least five separate commercial lease sales by 2016 for multi-lease parcels totaling at least 25,000 acres. It would also allow Interior to temporarily reduce royalty, fee, rental, bonus or other payments for leases if it is determined that such payments are hindering development of the resource.

In addition to the oil shale provisions, H.R. 3408 would also expand oil and gas drilling in the OCS by requiring Interior to conduct certain lease sales in the Gulf of Mexico, off the coast of Virginia, off the Pacific coast of southern California and in the North Aleutian Basin near Alaska. It would also require Interior to make available for least at least 50 percent of the unused acreage within each OCS planning area considered to have the largest undiscovered and technically recoverable oil and gas reserves. A portion of revenues generated from the required sales would be directed to coastal states that are within 200 miles of the leased tract.

H.R. 3408 would also repeal the current law prohibiting energy exploration or recovery activities within the Arctic National Wildlife Refuge (ANWR) in Alaska and would require BLM to conduct a lease sale program for lands within the refuge within 18 months of enactment of H.R. 3408 and lease not less than 50,000 acres within 22 months of enactment. Current law requirements direct that 50 percent of any revenue generated from ANWR energy lease sales be directed to the state of Alaska.

Finally, H.R. 3408 would expedite approval of the Keystone XL pipeline project by shifting permitting authority from the State Department to the Federal Energy Regulatory Commission (FERC), which is generally considered to be friendlier to the project. FERC would be required to issue the permit within 30

[38] Editorial, "Jobs in the Pipeline, The EPA tries to scuttle oil transport from Canada's tar sands," *The Wall Street Journal*, July 7, 2011, http://online.wsj.com/article/SB10001424052702304760604576426050150189280.html

days of receiving an application. If FERC takes no action to approve the permit, it would be deemed approved after the 30-day period.

H.R. 2842, Bureau of Reclamation Small Conduit Hydropower Development and Rural Jobs Act

H.R. 2842 passed the House on March 7, 2012, by a vote of 265 to 154 (R: 237-0; D: 28-154). You can see how they voted here.

H.R. 2842 would clarify that the Bureau of Reclamation has exclusive oversight and permitting authority over hydropower stations built on a Bureau of Reclamation water conduit (e.g. canals, tunnels, and other man-made structures built to redirect or control the flow of water). Also, the bill would exempt small conduit hydropower facilities (defined as those generating 1.5 megawatts or less) from being subject to most environmental review requirements. Finally, H.R. 2842 would create a process for the Bureau of Reclamation to offer leases to operate hydropower conduit facilities, prioritizing entities that operate the existing conduit or the conduits direct water-use beneficiaries.

CAP-AND-TRADE

Cap-and-Trade in Concept

One of the major environmental issues of the day is the concern that our climate is through greenhouse gas emissions from fossil fuels and other man-made sources. While many consider the science of what is causing "Climate Change" or "Global Warming" to be inconclusive at best if not outright wrong at worst, some in Congress consider it serious enough to present legislative proposals to address the issue. One such proposal is the cap-and-trade energy policy.

How the Cap-and-Trade Concept Works

Greenhouse gasses, mainly carbon dioxide, are the unavoidable byproduct of fossil fuel use – the combustion of coal, oil, and natural gas, etc. The idea behind cap-and-trade energy policy is to lower overall production of greenhouse gases by creating a market where companies can buy and sell carbon "credits" based upon an overall "cap" that is set by the government. Those companies that emit less carbon dioxide than permitted under the cap could sell the excess "credits" to those that produce too much through a newly established trading venue, like a stock market; this is the "trade" part of cap-and-trade. Over time, the "cap" would be ratcheted down, requiring greater cuts by companies in their emissions.

Differing Views on Cap-and-Trade

Proponents of such a system describe cap-and-trade as a flexible and market-based approach that allows the private sector to find the most cost-effective means of reducing greenhouse gas emissions. They say the program will provide incentives to carbon producers and users to reduce their carbon dioxide emissions through improvements in energy efficiency, expanded use of "green" energy sources with fewer or no carbon emissions, or new technologies that allow carbon emissions to be stored underground rather than released into the atmosphere. They say this is an incentive-based system that rewards good actors and allows companies that have not yet improved their emissions to gradually do so while paying for carbon "credits" along the way. Proponents feel there is an impending environmental crisis that must be dealt with expeditiously, and to that end, if this system causes some of the costs of buying those carbon credits to be passed along to consumers, then that is tolerable; some negative economic effects are acceptable to them in the short-term.

Opponents of cap-and-trade describe such a system as an unreasonable and unrealistic approach to addressing Climate Change/Global Warming that adversely affects consumers. They say that the cost of rapidly adopting new equipment and procedures will force corporations to spend tremendous amounts of money that will be passed on to consumers. Since some of the largest producers of carbon dioxide are public utilities, they also see cap-and-trade as a "national energy tax." They say it is unreasonable in that cap-and-trade would impose significant costs on the U.S. economy and unrealistic in that while alternative energy sources are a great idea for the future, it is not currently technologically feasible for alternative energy sources to substitute for fossil fuels. Critics of cap-and-trade fear that many of the necessary technological advances to reduce greenhouse gases are decades away from being technologically and economically viable, making this legislation a burden with little benefits. Therefore, cap-and-trade requirements would significantly drive up the cost of energy production today, which would undoubtedly be passed on to consumers – for all practical purposes, a massive energy tax.

★★★★★★★★★★

"Nobody in this country realizes that cap and trade is a tax, and it's a great big one…"

~ Rep. John Dingell (D-Mich.), Chair Emeritus of the House Energy and Commerce Committee

★★★★★★★★★★

Furthermore, critics contend that cap-and-trade disproportionately affects areas that rely on manufacturing or fossil fuels – mainly Midwest, Appalachian, Southern and Plains states. There are also some critics who do not believe that the impending crisis in Climate Change is real and therefore warrants such a measure; others who do believe that there is a problem with Climate Change – or who are willing to give the benefit of the doubt in order to have a cleaner environment – would rather see an incentive-based system that does not pass the cost on to consumers but instead transitions to an alternative energy economy gradually by first focusing on the United States becoming energy independent.

111th Congress: Related Legislative Action

The 111th Congress struggled to produce its own approach to climate change and opted to go with cap-and-trade legislation. In June 2009, the House narrowly passed H.R. 2454, a 1,428-page bill that would have addressed a number of interrelated energy and climate change issues. Among its numerous provisions, the bill would have established cap-and-trade programs for greenhouse gas emissions beginning in 2012. The Senate did not act, however.

H.R. 2454, the American Clean Energy and Security Act of 2009 (Waxman-Markey)

The House of Representatives narrowly passed cap-and-trade energy legislation on June 26, 2009, designed by Henry Waxman (D-Calif.) and Edward Markey (D-Mass.), aimed at addressing climate change. The 1,428-page bill would have restricted greenhouse gas emissions from industry, mainly carbon dioxide from the combustion of coal, oil, and natural gas. See how they voted here. (Passed 219-212; D: 211-44; R: 8-168)

Bill Summary: The bill would have established a "cap-and-trade" system in which emissions of greenhouse gasses would be capped overall and allowances for such emissions either given away to polluters or sold. Specifically, the bill would limit greenhouse gas emissions at 17 percent below current levels in 2020 and 83 percent below current levels by 2050. Polluters would have to hold government-issued emissions certificates, which could be traded in the marketplace.

Initially, more than three-quarters of the allowances would be distributed free of charge, but by 2030 most of the allowances would have to be purchased – leading Republican critics to label it the "cap-and-tax" program. Polluters could buy additional allowances from other companies, or buy "offsets" through programs that reduce greenhouse gasses by other means or by funding special projects to reduce emissions on farms and in forests.

The bill also would require utilities to supply a percentage of their electricity from renewable sources and would provide new subsidies and regulatory incentives for many energy-related industries. It would require utilities to produce 15 percent of the nation's electricity from renewable sources by 2020, with another 5 percent energy savings from efficiency. States could petition the federal government to bring the renewable mandate down to 12 percent, with eight percent from efficiency.

The bill would set new emissions standards for coal-fired power plants, and new energy efficiency and water use standards for buildings and products. It would establish programs to assist energy consumers with higher utility bills as a result of the system. It also would create programs for electrical transmission lines,

smart grid technologies, modernizing electricity infrastructure to respond to changing conditions, reduction of emissions, increased energy efficiency, and carbon capture and sequestration.

Below are selected vote hits on Democrats who voted for H.R. 2454:

- **Congressman John Dingell (D-MI), Chair Emeritus of the House Committee on Energy and Commerce, said the cap-and-trade program is a tax, and a great big one**
  - In an April 27, 2009, article, *Politico* reported, "Rep. John Dingell (D-Mich.), ousted by Henry Waxman (D-Calif.) in a race for the Energy and Commerce Committee chairmanship earlier this year, has called Waxman's cap-and-trade system 'a great big' tax. Dingell, who backs a carbon tax, didn't express opposition to the cap-and-trade proposal but says he wants to avoid missteps made in countries that implemented the system. 'Every economist says that a carbon tax is a better, more efficient, fairer way of doing it…The Europeans have had two, maybe three fine failures in their application of cap and trade. How do we avoid the mistakes that they have made?...Nobody in this country realizes that cap and trade is a tax, and it's a great big one…I want to get a bill that works – how do we choose the best way?"[39]

    Editor's Note: *The ellipses were in the original article. To see video of this comment, see: http://www.youtube.com/watch?v=GgUHol_WkDk*

- ***The Wall Street Journal* said the cap-and-trade bill "is likely to be the biggest tax in American history"**
  - In a June 26, 2009, editorial, *The Wall Street Journal* said, "Americans should know that those Members who vote for this climate bill are voting for what is likely to be the biggest tax in American history. Even Democrats can't repeal that reality."[40]

- ***The Wall Street Journal* said the cap-and-trade program will create higher prices for consumers, fewer jobs created or higher unemployment, and some companies will move their operations overseas**
  - In a June 26, 2009, editorial, *The Wall Street Journal* said, "The hit to GDP is the real threat in this bill. The whole point of cap and trade is to hike the price of electricity and gas so that Americans will use less. These higher prices will show up not just in electricity bills or at the gas station but in every manufactured good, from food to cars. Consumers will cut back on spending, which in turn will cut back on production, which results in fewer jobs created or higher unemployment. Some companies will instead move their operations overseas, with the same result."[41]

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[39] Glenn Thrush, "Dingell: cap and trade a 'great big' tax," *Politico*, April 27, 2009
[40] Editorial, "The Cap and Tax Fiction," *The Wall Street Journal*, June 26, 2009
[41] Editorial, "The Cap and Tax Fiction," *The Wall Street Journal*, June 26, 2009

- **While campaigning for the presidency, Barack Obama said that his cap-and-trade program would bankrupt coal-powered plants**

  - In a Nov. 3, 2008, article, *CongressNow* reported, "In remarks recorded by the *San Francisco Chronicle* in January, Obama said that coal-fired power plants would be forced to purchase expensive emission allocations under this proposed cap-and-trade program for global warming. Companies would have to pay for all of the pollution credits. 'So if somebody wants to build a coal-powered plant, they can; it's just that it will bankrupt them because they're going to be charged a huge sum for all that greenhouse gas that's being emitted,' he said, according to a transcript of the remarks." [42]

    To see video of the full interview, see: http://www.sfgate.com/cgi-bin/object/article?f=/c/a/2008/01/20/EDIAUHASH.DTL&o=0

    To see video of this specific comment, see: http://www.youtube.com/watch?v=SMwBbl6RoIs

- **While campaigning for the presidency, Barack Obama said electricity rates would necessarily skyrocket under his cap-and-trade program**

  - In a Nov. 3, 2008, article, the *National Review* reported, "He followed that up with an even more damning pronouncement: 'Under my plan of a cap-and-trade system, electricity rates would necessarily skyrocket.'"[43]

    To see video of the full interview, see: http://www.sfgate.com/cgi-bin/object/article?f=/c/a/2008/01/20/EDIAUHASH.DTL&o=0

    To see video of this specific comment, see: http://www.youtube.com/watch?v=HlTxGHn4sH4

- **Investor Warren Buffett, Chairman and CEO of Berkshire Hathaway, said cap-and-trade "is a huge tax" and is "fairly regressive"**

  - In a June 24, 2009, interview with Becky Quick on CNBC, Warren Buffett said, "I think if you get into the way it was written, it's a huge tax and there's no sense calling it anything else. I mean, it is a tax. And it's a fairly regressive tax. If we buy permits, essentially, at our utilities, that goes right into the bills of the utility customers and an awful lot of people in Iowa, in Oregon, and Utah, and places where we are, very poor people are going to pay a lot more money for electricity. So I think that can be improved."[44]

- **Peter Orszag, then-Director of the Congressional Budget Office (CBO), said that the higher prices that would result from a cap-and-trade program could result in job losses**

  - In a Nov. 1, 2007, hearing before the House Committee on the Budget, Peter Orszag testified that, "The higher prices that would result from a cap on CO_2 emissions would

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[42] Geof Koss, "Industry Seizes on Obama Coal Remarks," *CongressNow*, Nov. 3, 2008
[43] Max Schulz, "Coal in your stocking," *National Review*, Nov. 3, 2008
[44] "Warren Buffett's Live Lunch Interview on CNBC," CNBC Website, June 24, 2009

reduce demand for energy and energy-intensive goods and services. Thus, those price increases would create losses for some current investors and workers in the sectors that produce such good and services. Investors could see their stock values decline, and workers could face the risk of unemployment as jobs in those sectors were cut. Stock losses would tend to be widely dispersed among investors, because shareholders typically have diversified portfolios. In contrast, the costs borne by existing workers would probably be concentrated among relatively few households and, by extension, their communities."[45]

Editor's Note: *Peter Orszag was Director of CBO from January 2007 to December 2008. He has been Director of OMB since January 2009. In the above cited testimony, Orszag was referring to cap-and-trade in general – not the House bill.*

- **Chip Knappenberger, administrator of the World Climate Report, said the House cap-and-trade bill "would reduce global temperature in 2050 by a mere 0.05 degree Celsius"**
  - In a June 26, 2009, article, *Investor's Business Daily*, reported, "And what would we get for all this pain? According to an analysis by Chip Knappenberger, administrator of the World Climate Report, the reduction of U.S. CO_2 emissions to 83% below 2005 levels by 2050 – the goal of the Waxman-Markey bill – would reduce global temperature in 2050 by a mere 0.05 degree Celsius."[46]

- **H.R. 2454 will give the f**ederal government power over local building codes
  - On June 7, 2009, *The Washington Post* reported, "The bill would give the federal government power over local building codes. It requires that by 2012 codes must require that new buildings be 30 percent more efficient than they would have been under current regulations. By 2016, that figure rises to 50 percent, with increases scheduled for years after that. With those targets in mind, the bill expects organizations that develop model codes for states and localities to fill in the details, creating a national code. If they don't, the bill commands the Energy Department to draft a national code itself."[47]
  - According to Congressional Quarterly's Bill Analysis of H.R. 2454, the bill would amend the Energy Conservation and Production Act (PL 94-385) to require the Energy secretary to support consensus code-setting organizations to establish building codes achieving 30 percent and 50 percent higher energy efficiency targets in 2012 and 2016, respectively. It also would establish a program under which the EPA administrator, in consultation with the Energy secretary, supports development of standards and processes for retrofitting existing residential and nonresidential buildings. It would authorize the Energy secretary to provide funding to states to conduct cost-effective building retrofits, using local governments, other agencies or entities to carry out the work, through flexible forms of financial assistance up to 50 percent of the costs of retrofits, with funding increasing in proportion to efficiency achievement. The program also would support retrofits of historic buildings. The bill would require the Energy secretary to create a building energy performance labeling program for the residential and commercial real estate markets to "enable and encourage knowledge

[45] Testimony of Peter Orszag, Director, CBO, to House Committee on the Budget, Nov. 1, 2007
[46] "The Cap-and-Trade Bill is an Economic Disaster," *Investor's Business Daily*, June 26, 2009
[47] Editorial, "Buried Code: the unexamined federal regulation in the House energy bill," *The Washington Post*, June 7, 2009

about building energy performance by owners and occupants" and provide information on how to reduce energy consumption nationwide. However, it would limit the program to new construction only.[48]

- **H.R. 2454 also contains regulations on everything from light bulb standards to the specs on hot tubs, and it will reshape America's economy in dozens of ways that many don't realize**

  - On June 7, 2009, *The Washington Post* reported, "The running joke in Washington is that nobody has read the 900-plus-page energy bill sponsored by Reps. Henry A. Waxman (D-Calif.) and Edward J. Markey (D-Mass.), which the House will consider in coming weeks. What you hear from its backers is that its cap-and-trade provisions would create a market-based program to reduce greenhouse gas emissions -- which should mean that a simple, systemwide incentive encourages polluters to make the easiest reductions in greenhouse gases first, keeping the costs of fighting global warming to a minimum. In fact, the bill also contains regulations on everything from light bulb standards to the specs on hot tubs, and it will reshape America's economy in dozens of ways that many don't realize."[49]

  - According to Congressional Quarterly's Bill Analysis of H.R. 2454, the bill would amend the Energy Policy and Conservation Act to adopt negotiated agreements on technical standards for lighting, including outdoor lighting — street lights, parking lot lights and parking structure lights —and portable light fixtures such as typical household and commercial plug-in lamps. It also would require consensus agreements on technical standards for hot food holding cabinets, bottle-type drinking water dispensers, hot tubs and commercial-grade natural gas furnaces.[50]

- **Under H.R. 2454, workers who are expected to lose their jobs because of the provisions of the bill "**could get a weekly paycheck for up to three years, subsidies to find new work and other generous benefits -- all courtesy of Uncle Sam"

  - On July 3, 2009, *The Washington Times* reported, "Workers who lose their jobs if the pending climate change legislation becomes law could get a weekly paycheck for up to three years, subsidies to find new work and other generous benefits -- all courtesy of Uncle Sam -- under a little-noticed provision of the bill.

    "Touted by its House Democratic authors as a jobs engine, the bill offers extraordinary compensation for those who would lose their paycheck as a consequence of its passage"[51]

  - According to Congressional Quarterly's Bill Analysis of H.R. 2454, the measure would create a program for workers displaced as a result of the Title VII of the Clean Air Act to be entitled to 156 weeks of income supplement, 80 percent of their monthly health care premium, up to $1,500 for job search assistance, up to $1,500 for moving assistance, and

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[48] CQ Bill Analysis of H.R. 2454, *Congressional Quarterly*, July 1, 2009
[49] Editorial, "Buried Code: the unexamined federal regulation in the House energy bill," *The Washington Post*, June 7, 2009
[50] CQ Bill Analysis of H.R. 2454, *Congressional Quarterly*, July 1, 2009
[51] Amanda DeBard, "Energy job losers could get windfall," *The Washington Times*, July 3, 2009

additional employment services for skills assessment, job counseling, training and other services.[52]

- **H.R. 2454 contains an "Energy Refund Program," designed to provide monthly cash energy refunds to low-income individuals to compensate for any reduced purchasing power resulting from the enactment of the bill**
  - According to Congressional Quarterly's Bill Analysis of H.R. 2454, the bill would provide that in the event of any reduced purchasing power as a result of Title VII of the Clean Air Act, tax credits would be given to the lowest-income households to compensate for such losses. It also would direct the EPA administrator to create an "Energy Refund Program" to provide monthly cash energy refunds to low-income individuals to compensate for any reduced purchasing power resulting from Title VII of the bill. Those refunds would not be included as taxable income.[53]

- **The bill would create a new refundable energy tax credit and rebate program aimed at offsetting the impact of the Greenhouse Gas (GHG) cap-and-trade program on energy prices faced by low-income families**
  - According to the non-partisan Congressional Budget Office, "the bill would create a new refundable energy tax credit and rebate program aimed at offsetting the impact of the GHG cap-and-trade program on energy prices faced by low-income families. The credit would be based on the average loss of purchasing power for the poorest fifth of people caused by higher prices for energy and other goods. The credit would vary with family size, based on the average spending for families of different sizes at the bottom of the income scale. The credit amount would be calculated using the share of total expenditures made by those families, the GHG intensity of that spending, the amount of other relief provided to consumers under the bill, and how much of recipients' reduced purchasing power would be automatically offset by federal cost-of-living adjustments in other federal benefit programs."[54]

- **Under H.R. 2454, some regions and industries would experience substantially higher rates of unemployment and job turnover as the program became increasingly stringent**
  - According to the non-partisan Congressional Budget Office, "Some regions and industries would experience substantially higher rates of unemployment and job turnover as the program became increasingly stringent. That transition could be particularly difficult for individuals employed in those industries (such as the coal industry) or living in those regions (such as Appalachia)."[55]

Economic consequences of H.R. 2454, the American Clean Energy and Security Act of 2009: Several studies were commissioned on the economic impact of cap-and-trade legislation, H.R. 2454, the American

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[52] CQ Bill Analysis of H.R. 2454, *Congressional Quarterly*, July 1, 2009
[53] CQ Bill Analysis of H.R. 2454, *Congressional Quarterly*, July 1, 2009
[54] Congressional Budget Office Cost Estimate of H.R. 2454, American Clean Energy and Security Act of 2009, June 5, 2009
[55] Congressional Budget Office "The Estimated Cost to Households From the Cap-and-Trade Provisions of H.R. 2454," June 19, 2009

Clean Energy and Security Act, by a variety of organizations. In this section we will highlight a few of those studies and provide resources for candidates and campaigns to pursue more exhaustive information. In light of the epic scope of the legislation, economic modeling of the impact of cap-and-trade can vary from study to study, dependent upon the criteria used. Candidates should be aware of this reality when examining any study on cap-and-trade legislation, but also consider it further proof of the magnitude such legislation can have on the overall national economy and the American way of life.

National Association of Manufacturers (NAM) and the American Council for Capital Formation (ACCF) study on the economic impact of H.R. 2454: A report commissioned by NAM and the ACCF estimated that the bill could cause between 1.8 million and 2.4 million job losses by 2030. A one-page summary of the report's finding can be viewed here. A full executive summary can be viewed here. The full report may be viewed here.

The study also issued individual state economic reports on the impact of H.R. 2454, which can be found through the links below:

United States Results
Alabama
Alaska
Arizona
Arkansas
California
Colorado
Connecticut
Delaware
Florida
Georgia
Hawaii
Idaho
Illinois
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
Rhode Island
South Carolina
South Dakota
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin
Wyoming

The Heritage Foundation's Center for Data Analysis' study on the economic consequences of the American Clean Energy and Security Act of 2009: In a study conducted by the Heritage Foundation's Center for Data Analysis, analysts reached more conservative conclusions on the economic impact of H.R. 2454 than did the NAM/ACCF study, but the results were similarly negative. The Heritage study concluded that the legislation would increase unemployment levels for every year: 1.9 million fewer jobs in 2012, and an average of 1.14 million fewer jobs annually from 2012 through 2035. The study also concluded that the legislation would reduce the nation's economy (Gross Domestic Product or GDP) by no less than $120 billion in any year, with an average loss of $314 billion from 2012 to 2035 and cumulative losses exceeding $9.4 trillion. The report went on to say that the bill would increase average total energy costs for a family of four by $426 in 2012. Costs would fall slightly until 2019, when they would begin to rise dramatically. Gasoline and electricity costs alone would cost families $1,033 more per year in 2035. The full Heritage report can be viewed here.

U.S. Treasury Department analysis of Cap-and-Trade: A previously unreleased analysis prepared by the U.S. Department of Treasury, which was obtained under the Freedom of Information Act and then released

by the free-market Competitive Enterprise Institute found that a cap-and-trade law would cost American taxpayers up to $200 billion a year, the equivalent of hiking personal income taxes by about 15 percent. At the upper end of the Administration's estimate, the cost per American household would be an extra $1,761 a year. This estimate is based on the Treasury document memo**, which** said that "given the administration's proposal to auction all emission allowances, a cap and trade program could generate federal receipts on the order of $100 to $200 billion annually." Assuming that the costs of these fees paid by polluters to the government would be entirely passed on to consumers, and divided the number $200 billion by the number of households in the United States -- approximately 113.5 million according to the Census. That came out to $1,761 per family per year.

Energy Information Administration (EIA) on the Energy Market and Economic Impacts of H.R. 2454: In a report prepared by EIA, the independent statistical and analytical agency within the Department of Energy, concluded that average gasoline prices will rise to $3.62 per gallon in 2020 under a "business as usual" assumption, with no cap-and-trade legislation. The legislation would push gas prices up further, to $3.74 under the best case scenario, or $4.29 under the worst in 2020. By 2030, those average prices would be even higher at $3.82 per gallon (best case scenario) or $5.10 per gallon (worst case scenario).

The report also concluded that H.R. 2454 increases the cost of using energy, which reduces real economic output, reduces purchasing power, and lowers aggregate demand for goods and services. The result is that projected real gross domestic product (GDP) generally falls under any of their tested scenarios. The full EIA report can be viewed here.

Obama Administration EPA Action Since Failure of Cap-and-Trade

Although the Obama Administration has consistently said that it would prefer that Congress pass new legislation to address climate change, such legislation clearly now appears unlikely. Instead, over the last nearly three years, the EPA has developed greenhouse gas regulations using its existing Clean Air Act authority. These finalized emission standards were a result of the EPA acting in response to the Supreme Court's April 2, 2007, decision in *Massachusetts v. EPA* that the EPA does have authority to regulate greenhouse gas emissions since the emissions are clearly air pollutants under the Clean Air Act's definition of that term. On April 1, 2010, the EPA finalized greenhouse gas emission standards for cars and light trucks, and for larger trucks on Aug. 9, 2011.

The implementation of these standards has triggered permitting and Best Available Control Technology requirements for new major stationary sources of greenhouse gases. It is the triggering of standards for stationary sources (power plants, manufacturing facilities, etc.) that has raised the most concern in Congress. The EPA has taken action on a number of other air pollutant regulations, generally in response to court actions remanding previous rules. Remanded rules have included the Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule – rules designed to control the long-range transport of sulfur dioxide, nitrogen oxides and mercury from power plants through cap-and-trade programs. Other remanded rules included hazardous air pollutant (MACT) standards for boilers and cement kilns.

In addition to the power plant and MACT rules, EPA is also reviewing ambient air quality standards (NAAQS) for ozone, particulates and other widespread air pollutants. These standards serve as EPA's definition of clean air and drive a range of regulatory controls.

Editor's Note: *For more information regarding regulations, the rulemaking process and the rampant uptick of EPA's issuance of regulations (some mentioned above), please refer to the Regulations and the Federal Rulemaking Process chapter of the 2012 NRCC Issues Book.*

112th Congress: Related Legislative Action

Legislation has been considered in both the House and Senate aimed at preventing EPA from implementing provisions prohibiting the use of appropriated funds to implement various EPA greenhouse gas regulatory actions. This legislative strategy is typically done by way of the appropriations process either in the text of appropriations bills or through the amendment process with what are called limitation amendments which would restrict the use of funds by any agency or department funded by the appropriations bill to enforce EPA greenhouse gas regulations. Specifically, H.R. 1, the Full-Year Continuing Resolution which passed the House in February 2011, contained language that would have restricted EPA funding for the implementation of regulations on GHGs. Please refer to the Budget and Federal Spending chapter of the 2012 NRCC Issues Book for more information on H.R. 1.

Editor's Note: *There are hundreds of amendment votes related to the appropriations process, so please contact the NRCC for any further information.*

Additionally, many in Congress were still concerned that the EPA would attempt to go ahead and implement cap-and-trade, or a "national energy tax" through the regulatory process. Therefore, action was taken in the current 112th Congress to attempt to not allow this to happen.

H.R. 910, Energy Tax Prevention Act: H.R. 910 was a bill that would repeal EPA's endangerment finding, redefine "air pollutants" to exclude greenhouse gases, prohibit EPA from promulgating any regulations to address climate change and prohibit EPA from granting the state of California future waivers allowing it to control greenhouse gas emissions from mobile sources.

This legislation was not designed to eliminate long-standing regulations and would have granted the following exemptions for current regulations:

- Vehicle fuel efficiency standards;
- The renewable fuel program;
- Federal authorized research, development and demonstration programs;
- Enforcement of certain ozone protection regulations; and
- Implementation and enforcement of requirements for monitoring and reporting of carbon dioxide emissions.

H.R. 910 passed the House on April 7, 2011, by a vote of 255 to 172 (R: 236-0; D: 19-172). You can see how they voted here.

Below are selected vote hits on Democrats who voted against H.R. 910:

- **Voted against a bill that would prevent the Environmental Protection Agency (EPA) from imposing regulations on greenhouse gasses (GHGs) for the purpose of addressing climate change**

  - Voted against passage of the bill that would prohibit the Environmental Protection Agency (EPA) from regulating greenhouse gases in any effort to address climate change. It would amend the Clean Air Act to strike specific elements from the definition of "air pollutant," unless regulation of those chemicals is not used in an attempt to address climate change. It also would clarify that the bill does not limit the authority of a state to regulate the emission of a greenhouse gas, unless the regulation attempts to address climate change. (Passed: 255-172; D: 19-172; R: 236-0)[56]

- **The EPA issued a rule for regulating GHGs that went into effect on Jan. 2, 2011, which would require facilities to use best available control technology (BACT) to obtain a permit**

  - According to an EPA fact sheet regarding the final rule for prevention of significant deterioration and title V greenhouse gas tailoring rule, "On May 13, 2010, the U.S. Environmental Protection Agency (EPA) issued a final rule that establishes a common sense approach to addressing greenhouse gas emissions from stationary sources under the Clean Air Act (CAA) permitting programs. This final rule sets thresholds for greenhouse gas (GHG) emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and title V Operating Permit programs are required for new and existing industrial facilities."[57]

  - According to the same EPA fact sheet regarding the "implementation" of the final rule for prevention of significant deterioration and title V greenhouse gas tailoring rule, "Step 1 of this final rule will take effect on January 2, 2011. The final rule asks states to inform EPA whether they must make rule changes to implement the new GHG emissions thresholds, and when such changes will be adopted. If there are cases where this cannot happen by January 2, 2011, EPA will take appropriate action to ensure that the existing CAA permitting rules do not apply to sources excluded by today's rule.

    "EPA also plans to develop supporting guidance and other information to assist permitting authorities as they begin to address permitting actions for GHG emissions for the first time. EPA will be actively working with states on technical information and data needs related to identifying BACT [best available control technology] requirements for PSD permits. The guidance would first cover source categories that typically emit GHGs at levels exceeding the thresholds established through this rulemaking."[58]

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[56] H.R. 910, CQ Vote #249, April 7, 2011
[57] Fact Sheet, "Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule," Environmental Protection Agency, http://www.epa.gov/nsr/documents/20100413fs.pdf
[58] Fact Sheet, "Final Rule: Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule," Environmental Protection Agency, http://www.epa.gov/nsr/documents/20100413fs.pdf

- **Allowing the EPA to regulate GHGs by mandating BACT would "make energy more expensive" and "increase production costs"**

  - According to a December 2010 report by the American Council for Capitol Formation, "EPA Administrator Lisa Jackson claims that 'cost-effective strategies to reduce air pollution should spark clean energy innovation and help create green jobs.' While it is true that a certain number of jobs may be created in some industries that build the energy efficient equipment mandated by regulators, overall, however, the evidence suggests that the impact on U.S. net job growth will be negative. The main effect of EPA mandating BACT for GHG reduction under the CAA will be to make energy more expensive and to increase production costs (relative to a baseline forecast). Substituting more expensive energy and higher production costs for cheaper energy and lower production costs causes a slowdown in productivity growth and economic activity. Historically, each one percent increase in U.S. GDP growth is accompanied by a 0.2 percent increase in energy use; therefore, the higher the price of energy, the slower the rate of economic recovery."[59]

- **Allowing the EPA to regulate GHGs by mandating BACT would inhibit job growth, increase consumer costs and decrease wages in the long run**

  - According to a December 2010 report by the American Council for Capitol Formation, "EPA Administrator Lisa Jackson claims that 'cost-effective strategies to reduce air pollution should spark clean energy innovation and help create green jobs.' While it is true that a certain number of jobs may be created in some industries that build the energy efficient equipment mandated by regulators, overall, however, the evidence suggests that the impact on U.S. net job growth will be negative. The main effect of EPA mandating BACT for GHG reduction under the CAA will be to make energy more expensive and to increase production costs (relative to a baseline forecast). Substituting more expensive energy and higher production costs for cheaper energy and lower production costs causes a slowdown in productivity growth and economic activity. Historically, each one percent increase in U.S. GDP growth is accompanied by a 0.2 percent increase in energy use; therefore, the higher the price of energy, the slower the rate of economic recovery.

    "The initial adverse impact on job growth may be due to delays in getting PSD and Title V permits (which means delays in starting construction). However, the longer term reason that overall job growth is likely to be slower when EPA begins to mandate BACT for GHG reductions is that companies will have to try to pass on the higher costs of the new BACT requirements to their customers and also pass back the additional costs to workers and shareholders in the form of lower wages and smaller returns on equity investments. As costs rise in energy intensive industries, output tends to fall, there are fewer new jobs created because the total economic 'pie' grows more slowly, relative to a baseline forecast."[60]

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[59] Margo Thorning PhD, "EPA regulations of GHGs, U.S. Investment and Economic Recovery: Questions and Answers," American Council for Capital Formation, December 2010, http://accf.org/media/dynamic/4/media_498.pdf
[60] Margo Thorning PhD, "EPA regulations of GHGs, U.S. Investment and Economic Recovery: Questions and Answers," American Council for Capitol Formation, December 2010, http://accf.org/media/dynamic/4/media_498.pdf

SOLYNDRA

Solyndra and everything surrounding it receiving hundreds of billions of taxpayer dollars from the 2009 economic stimulus package through a Department of Energy (DOE) federal loan guarantee program is a highly controversial and volatile issue. To understand who did what and what went wrong, let us start by taking a look at the basics first. There is also quite a bit of confusion as to whether the loan guarantee program through which Solyndra received its loan was created under the Bush Administration or was created by the American Recovery and Reinvestment Act of 2009 (otherwise known as ARRA or the 2009 economic stimulus package). Solyndra received its loan guarantee under DOE's Section 1705 loan guarantee program which was created with enactment of the 2009 economic stimulus package. This section should clear up any confusion.

Editor's Note: *For more information about the 2009 economic stimulus package (ARRA), please refer to the Economy and Jobs chapter of the 2012 NRCC Issues Book.*

Federal Loan Guarantees

In general, a loan guarantee is defined by the Congressional Budget Office (CBO) as "a loan or security on which the federal government has removed or reduced a lender's risk by pledging to repay principal and interest in case of default by the borrower." Historically, loan guarantees have been used as a policy tool for many different purposes including home ownership, university education, small business growth, international development, etc. Today, 14 federal agencies manage approximately 68 loan guarantee accounts that include approximately $1.9 trillion of primary guaranteed loans outstanding in 2010, according to the Office of Management and Budget (OMB).

DOE Loan Guarantee Programs and the 2009 Economic Stimulus Package

Federal loan guarantee authorizations for demonstrating alternative energy technologies date back to the 1970s when the Geothermal Energy Research, Development and Demonstration act of 1974 (P.L. 93-410) authorized loan guarantees for geothermal demonstration facilities. Additionally in the 1970s, loan guarantees were also authorized by DOE for alternative fuel demonstration facilities and to create a domestic synthetic fuels industry in response to the energy price shock of 1979.

Most recently, loan guarantees have been used as a mechanism to encourage development and deployment of innovative clean energy technologies.

The Energy Policy Act of 2005 (and later the 2009 economic stimulus package), or EPACT 2005, resulted in the creation of DOE's Loan Programs Office (LPO) which was chartered to administer clean energy loan guarantee initiatives. EPACT 2005 (P.L. 109-58) was signed into law by then-President George W. Bush on Aug. 8, 2005 and established loan guarantee programs for multiple energy technologies. It enabled loan guarantees to be used in support of projects for: commercial byproducts from municipal solid waste and cellulosic biomass; sugar ethanol; integrated coal/renewable energy systems; coal gasification; petroleum coke gasification; and electricity production on Indian lands.

The DOE LPO administers three loan programs:

- **Section 1703** - loan guarantees for innovative clean energy technologies with high degrees of technology risk (**this is the program that was created by EPACT 2005**);

- **Section 1705** - loan guarantees for certain renewable energy systems, electric power transmission and innovative biofuel projects that may have varying degrees (high or low) of technology risk (**this is the program that was created by ARRA and this is through which Solyndra received its loan guarantee**); and

- **Advanced Technology Vehicle Manufacturing (ATVM)** - loans to support advanced technology vehicles and associated components.

The Section 1703 and Section 1705 programs are the two of the three of relevance here. Solyndra was the first company to ever receive a loan guarantee under either the Section 1703 or Section 1705 programs. Since then, nearly 40 projects have received loan guarantees through the two programs totaling nearly $35 billion. You can click here to access a list of and information about these companies.

Section 1703: The Section 1703 program was created under section 1703 of Title XVII of the Energy Policy Act of 2005. It was designed to help support U.S. companies developing "a new or significantly improved technology that is NOT a commercial technology," according to DOE's description of the program. Intended as a temporary program, Section 1703 was a self-pay credit subsidy program, meaning the companies receiving the loan guarantee would have to pay the government a fee "equal to the present value of estimated payments the government would make in the event of a default."As of the time of this writing, the Section 1703 program has issued conditional loan guarantee commitments to four projects with a total loan guarantee value of approximately $10.6 billion.

Section 1705: The Section 1705 program was created with the enactment of the ARRA in 2009. The ARRA amended EPACT 2005 to create section 1705 for "commercially available technologies," as DOE explains in a 2009 report about ARRA funding. The ARRA provided more funding for the loan guarantee programs. The loans under the new program – Section 1705 – came with no credit subsidy fees making them more attractive and less expensive than those under the Section 1703 program which was signed into law by President Bush. It was under this ARRA program – Section 1705 – that Solyndra was able to get financing, although the company had actually initially applied under the Section 1703 program.

As of December 2011, all finalized loan guarantee commitments have been for 28 projects within the Section 1705 program, which equal approximately $16.15 billion of federal loan guarantee commitments.

Solyndra and the Section 1705 Program

Solyndra was a company that manufactured cylindrical panels of copper indium gallium selenide (CIGS) thin-film solar cells based out of Fremont, Calif. In simpler terms, Solyndra designed, manufactured and sold solar photovoltaic (PV) systems composed of panels and mounting hardware for large, low-slope commercial rooftops.

Editor's Note: *Please refer to the Energy Sources section at the beginning of this chapter for more information on solar energy and PV systems.*

Solyndra would sell its products to value-added resellers that resell Solyndra systems to end-users such as businesses and utility companies. Unlike most solar modules manufactured for electricity generation (which use flat panel silicon technology), Solyndra's proprietary PV technology was based on a cylindrical design that used CIGS material to convert solar energy into electricity. Since its founding in 2005, Solyndra reportedly raised more than $1.5 billion: $1 billion in private investment and a $535 million loan facility from the Federal Financing Bank that is guaranteed by the DOE.

Solyndra's loan approval process actually began under the Bush Administration and the Section 1703 program since the Section 1705 program had not yet been created. But, the DOE under the Bush Administration never approved Solyndra for a Section 1703 loan.

On March 20, 2009, the DOE announced the $535 million loan guarantee for Solyndra. To further confirm that Solyndra's loan guarantee funding came solely from Section 1705, the announcement said, "This loan guarantee will be supported through the President's American Recovery and Reinvestment Act, which provides tens of billions of dollars in loan guarantee authority to build a new green energy economy."

In brief, proceeds from the DOE-guaranteed loan were used to construct Phase I of a manufacturing plant, known as Fab 2, that would have been capable of manufacturing 250 megawatts per year of Solyndra solar modules. Construction of Fab 2 began in September 2009 (which is when Solyndra received its loan guarantee commitment from DOE valued at $535 million) and first module shipments from the new production plant were scheduled to occur the first quarter of 2011. Total cost of Fab 2 Phase I was estimated to be $733 million. By July 2011, Solyndra reportedly had sold approximately 750,000 modules throughout the world totaling roughly 100 megawatts of installed capacity. On Sept. 6, 2011, Solyndra filed for Chapter 11 bankruptcy, laying off 1,100 employees and shutting down all operations and manufacturing while providing no severance for the fired employees or even providing back due vacation day credit. At the time of the bankruptcy announcement, Solyndra had drawn down $527 million of the DOE loan guarantee.

Solyndra Investigation

There has been a full-blown investigation by the Federal Bureau of Investigation, the U.S Treasury Department and Congress into whether Solyndra fabricated or misrepresented its finances to the government in seeking the loan or engaged in accounting fraud. House Republicans were investigating Solyndra and its loan guarantee approval long before it declared bankruptcy based on hearing of questionable methods used by DOE to analyze the loans. On one side, the Democrats are saying that Solyndra had already been approved for a conditional loan guarantee commitment by the Bush Administration's DOE, but Republicans countered this claim producing internal DOE emails indicating that DOE had made the unanimous decision to shelve Solyndra's application under the Section 1703 program.

Additionally, it has been asserted that the White House and DOE and Treasury were all aware that Solyndra's finances were deteriorating, but approved them for the loan guarantee anyway. And, even further, DOE officials continued to make loan payments to Solyndra even after it had defaulted on the terms of its loans. As of this writing, the Solyndra issue will continue to be investigated.

The House Energy and Commerce Committee, which has been the primary investigatory House committee on this issue, has compiled a timeline of its investigation of Solyndra's $535 million DOE loan guarantee which candidates may find helpful:

Timeline of Energy and Commerce Committee Investigation of Solyndra's $535 Million DOE Loan Guarantee

November 30, 2011

February 17, 2011 - Committee Leaders submit a letter to Energy Secretary Chu seeking documents and information about the $535 million loan guarantee awarded to Solyndra, Inc.

March 14, 2011 - Committee Leaders submit a letter to OMB requesting key documents and information concerning the review of the Solyndra loan guarantee. A two-week deadline is set.

March 17, 2011 – Subcommittee on Oversight and Investigations holds a hearing on "Oversight of DOE Recovery Act Spending."

March 28, 2011 – OMB fails to meet the Committee's deadline to produce documents.

April 11, 2011 – OMB finally provides an initial briefing in response to March 14, 2011, request for documents. OMB staff are unable to answer key questions about OMB's actions regarding the Solyndra review.

April-May 2011 – Committee investigators in ongoing negotiations with OMB over document production related to Solyndra. Despite repeated pledges to produce documents, OMB continues to give the Committee the run around. Committee investigators especially interested in credit subsidy and cash flow documents.

May 25, 2011 - Subcommittee on Oversight and Investigations Chairman Cliff Stearns directly contacts OMB Deputy Director Jeff Zients to demand production of the documents and communications requested in the March 14 letter.

June 7, 2011 – After weeks of negotiations, OMB agrees to allow Committee staff to participate in an in camera review of certain documents. However, when the review takes place, OMB produces only eight emails between OMB and DOE to make available to Committee staff, and refuses to produce the rest of the emails or the agreed-upon internal OMB emails and documents.

June 23, 2011 - Oversight and Investigations Subcommittee Chairman Cliff Stearns submits a letter to OMB expressing serious concern about OMB's refusal to produce agreed upon documents and reiterating the need for the administration's cooperation.

June 23, 2011 - Solyndra submits a document to the Committee proclaiming its sound financial status and optimistic outlook: "Exceeding Expectations: Solyndra Today."

June 24, 2011 - The Subcommittee on Oversight and Investigations holds a hearing regarding "OMB's Role in the DOE Loan Guarantee Process." Sole witness Jeffrey Zients, Deputy Director of the Office of Management and Budget, does not show up. (A full chronology and explanation of committee investigators' efforts to secure OMB cooperation with document requests can be found HERE.)

July 11, 2011 - Committee staff conduct a second in camera review. Again, OMB does not produce all requested documents, specifically declining to turn over OMB's internal communications and documents relating to Solyndra or its communications with the White House. As they have done for months, OMB staff refuses to provide an answer about whether they would produce these materials.

July 12, 2011 - Energy and Commerce Committee leaders schedule an Oversight and Investigations Subcommittee business meeting for Thursday, July 14, 2011, to consider a motion authorizing the issuance of a subpoena for certain OMB records relating to DOE's issuance of a loan guarantee to Solyndra, Inc. on September 2, 2009.

July 13, 2011 - Oversight and Investigations Subcommittee Chairman Cliff Stearns submits a letter to OMB Director Lew to provide a final opportunity to avoid the issuance of a subpoena. OMB refuses to cooperate.

July 14, 2011 - The Subcommittee on Oversight and Investigations holds a business meeting to consider the issuance of a subpoena. The subcommittee votes to issue the subpoena 14 to 8 – a straight party-line vote. A letter from Solyndra's CEO Brian Harrison regarding the company's finances is entered into the hearing record - the letter claims that Solyndra is fiscally sound.

July 15, 2011 – The subpoena is issued to OMB, setting a July 22, 2011, deadline.

July 22, 2011 – OMB fails to meet the subpoena's deadline. Oversight and Investigations Subcommittee Chairman Cliff Stearns informs OMB that they have failed to comply with the subpoena issued on July 15, 2011 regarding the Solyndra loan guarantee. Chairman Stearns requests that OMB produce the documents no later than 9:00a.m. Monday, July 25, 2011.

July 25, 2011 – OMB fails to produce the documents by 9:00am deadline. Committee investigators enter into another round of negotiations with OMB staff to secure their cooperation with the subpoena.

August 2011 – OMB agrees to produce all documents necessary to the Committee's investigation, with appropriate safeguards relating to proprietary information. Production continues.

August 31, 2011 – Solyndra announces it will file for bankruptcy. Committee leaders comment.

September 1, 2011 - Committee leaders ramp up investigation, press White House for documents.

September 8, 2011 – Committee leaders comment on FBI raid of Solyndra.

September 10, 2011 – In an e-mail, Solyndra company lawyers assure committee investigators that Solyndra executives will voluntarily appear and answer Committee questions.

September 14, 2011 – Oversight and Investigations Subcommittee holds a hearing on "Solyndra and the DOE Loan Guarantee Program." Executive Director of DOE's Loan Programs Office Jonathan Silver and OMB Deputy Director Zients testify. Subcommittee investigators release emails indicating that, due to political pressure from the White House, corners were cut and OMB was rushed in approving Solyndra loan. White House press secretary attempts to dismiss concerns that White House pressured OMB on loan guarantee as "scheduling matter."

September 20, 2011 – Committee leaders express concern to Energy Secretary Steven Chu as his agency rushes to dole out nearly $9 billion in loan guarantees by September 30, 2011. The leaders request financial details for 14 loan guarantees DOE is poised to award. Jonathan Silver responds on September 23, 2011.

September 21, 2011 – Oversight and Investigation Subcommittee members seek answers from Solyndra investors. In the letters to Argonaut Private Equity and Madrone Capital Partners, members request all materials related to now-bankrupt Solyndra's $535 million loan guarantee, the company's cancelled initial public offering, the $75 million credit facility, the February 2011 loan restructuring, the company's bankruptcy, as well as materials related to communications with the Obama administration.

September 21, 2011 – Oversight and Investigations Subcommittee members seek all materials related to communications between DOE and the White House, as well as all communications between DOE and the Treasury Department.

September 23, 2011 – Solyndra CEO and CFO invoke the Fifth Amendment during an Oversight and Investigations Subcommittee hearing on "From DOE Loan Guarantee to Bankruptcy to FBI Raid: What Solyndra's Executives Knew."

September 28, 2011 - As DOE continues its effort to quickly finalize billions in loan guarantees over the program's final 48 hours. Stearns expresses concern: "We cannot afford DOE rushing out more Solyndras in these final hours."

September 30, 2011 – DOE extends $4.7 billion in loan guarantees in program's final hours.

October 4, 2011 – President Obama finally ends silence on Solyndra during interview with ABC news. President Obama states that he had "no regrets," "hindsight is always 20/20," and that Solyndra "went through the regular review process."

October 5, 2011 – Committee leaders expand investigation, seeking all White House internal communications on Solyndra, between January 20, 2009, to the present.

October 6, 2011 – Committee leaders renew calls for details on financial condition of all loan recipients in Solyndra program. This was the Committee's second request to DOE.

October 6, 2011 – Jonathan Silver, Executive Director of DOE's Loan Programs Office, resigns. Committee leaders state: "Mr. Silver's resignation does not solve the problem."

October 7, 2011 – Upton and Stearns discover Treasury Department believed DOE violated law in restructuring Solyndra's loan. Committee leaders request information from Secretary Geithner and schedule a hearing on Treasury's concerns.

October 7, 2011 – White House allows a select number of hand-picked reporters to review explosive documents prior to delivering them to the Committee late Friday afternoon of Columbus Day weekend. Upton and Stearns declare the documents reveal a disturbingly close relationship between the President's inner circle, campaign donors, and wealthy investors that spawned the Solyndra mess.

October 14, 2011 – Oversight and Investigations Subcommittee holds a hearing on "Continuing Developments Regarding the Solyndra Loan Guarantee."

October 14, 2011 – White House Counsel refuses to turn over any additional Solyndra-related documents.

October 14, 2011 – Committee leaders reveal OMB questioned the legality of DOE's restructuring of Solyndra loan. OMB official: DOE "stretched this definition beyond its limits."

October 17, 2011 – Upton and Stearns ask "What is the White House trying to hide?" in response to White House's refusal to turn over internal Solyndra communications.

October 18, 2011 – Committee leaders renew request for all internal White House Solyndra-related communications.

October 20, 2011 – In response to DOE saying author of Solyndra restructuring legal memo cannot be interviewed under oath, Committee leaders press Energy Secretary to make DOE officials available.

October 25, 2011 – White House Counsel again refuses Committee requests for internal White House communications related to Solyndra.

October 27, 2011 - Stearns announces Energy Secretary Steven Chu will testify before the Oversight and Investigations Subcommittee on November 17, 2011.

October 27, 2011 – Chairman Upton phones White House Chief of Staff William Daley in an effort to negotiate document production without the need for a subpoena.

October 28, 2011 – Energy and Commerce Committee leaders announce plans to convene a business meeting to consider White House subpoena if final effort to secure White House cooperation is unsuccessful.

October 28, 2011 – In wake of Solyndra mess, White House announces plans to conduct 60-day review of DOE loan guarantee program.

November 2, 2011 –Upton and Stearns invite Ranking Member Waxman (D-CA) and Subcommittee Ranking Member DeGette (D-CO) to join them for a meeting with White House Counsel Kathryn Ruemmler to gain White House cooperation. Despite committee

leaders' attempts to broker a deal with the White House Counsel, the White House fails to turn over requested documents or answer basic questions about the documents.

November 2, 2011 – DOE produces additional documents in response to February 17, 2011, document request.

November 3, 2011 – Committee approves subpoenas by a 14 to 9 vote after White House fails to turn over internal Solyndra documents.

November 3, 2011 – Committee serves subpoenas to William Daley, White House Chief of Staff, and Bruce Reed, Office of the Vice President Chief of Staff. The subpoenas set a November 10, 2011, deadline for the White House to comply.

November 4, 2011 – Chairman Upton expresses disappointment with White House's partisan response to the subpoenas.

November 9, 2011 – As White House threatens to defy subpoena, Committee releases sampling of emails that offers glimpse of close ties between Solyndra investor and West Wing, directly contradicting public comments by White House.

November 10, 2011 – In face of deadline, Committee leaders continue seeking good faith efforts of compliance from White House regarding Solyndra subpoenas. White House informs committee that letter and responsive materials would be forthcoming by 5:00p.m.

November 11, 2011 – White House produces limited number of documents in response to Solyndra subpoena. Upton and Stearns look forward to "further productive discussions" with White House.

November 17, 2011 – The Subcommittee on Oversight and Investigations convenes the hearing, "The Solyndra Failure, Views from DOE Secretary Chu." According to a preliminary legal analysis prepared for DOE by outside counsel, subordination of the loan guarantee was prohibited under the 2005 Energy Policy Act. Secretary Chu acknowledges during the hearing that DOE never sought to have this analysis from outside counsel finalized, instead relying solely on a legal analysis prepared within DOE.

ENERGY TALKING POINTS

- Democrats have consistently stifled badly-needed domestic energy production, like when they rejected the Keystone XL pipeline in order to placate a few Democrat donors at the expense of American working families.

- The nearly $1 trillion stimulus was supposed to usher in a new era of energy independence and jobs, but instead gambled away billions of taxpayer dollars on schemes like the now-bankrupt Solyndra solar company.

- The Republican plan reverses the President's policies that drive up gas prices and instead, promotes an all-of-the-above strategy for unlocking American energy production to help lower costs, create jobs and reduce dependence on foreign oil.

ADDITIONAL INFORMATION AND RESOURCES

- Energy Explained: Your Guide to Understanding Energy, Energy Information Administration (EIA) – http://www.eia.gov/energyexplained/index.cfm

- Energy Information Administration (EIA), Department of Energy (DOE) – http://www.eia.gov/

- Gasoline and Diesel Fuel Update (weekly U.S. and regional gasoline and diesel fuel price data, EIA – http://www.eia.gov/petroleum/gasdiesel/

- House Energy and Commerce Committee – http://energycommerce.house.gov/

- House Natural Resources Committee – http://naturalresources.house.gov/

- Map: Gas Taxes (January 1 2011), Tax Foundation – http://taxfoundation.org/article/map-gas-taxes-january-1-2011

- Natural Gas Gross Withdrawals and Production, EIA - http://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGM_mmcf_m.htm