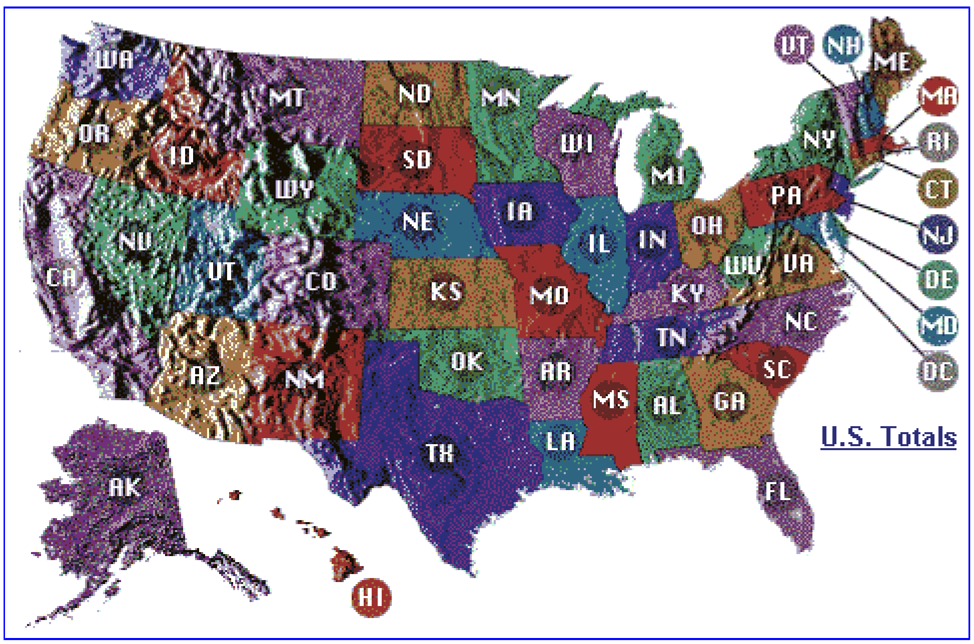
January 2005

United States of America

The United States of America is the world's largest energy producer, consumer, and net importer. It also ranks eleventh worldwide in reserves of oil, sixth in natural gas, and first in coal.

Information contained in this report is the best available as of January 2005 and is subject to change. For the latest monthly U.S. outlook by the Energy Information Administration, please see the "Short-Term Energy Outlook".



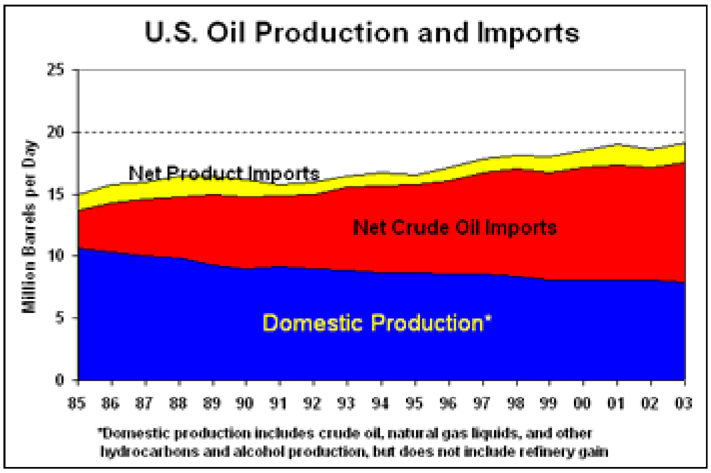
GENERAL BACKGROUND

As of late December 2004, the U.S. economy appeared to be recovering somewhat, with 2004 real growth in gross domestic product (GDP) running at about 4.4% (year-over-year). This follows real GDP growth of 1.9% in 2002 and 3.0% in 2003. The U.S. Federal Reserve recently raised its interest rate target slightly, but only to the extremely low level of 1.75%, in a continuing effort to stimulate economic growth without encouraging inflationary pressures. Fiscal policy also remains stimulatory, with the U.S. budget running large deficits (see below). The U.S. unemployment rate was estimated at 5.4% in December, flat from November, with the economy adding 157,000 net jobs during the month. For the year, the US economy added 2.2 million jobs, the biggest gain since 1999.

The 2003 U.S. merchandise trade deficit reached $548 billion and is estimated at around $660 billion in 2004. The current account deficit now is running at about 6% of GDP, compared to 1.5% in 1996. During the past two years, the dollar has depreciated significantly against several major currencies, including the Euro and the Japanese Yen.

OIL

According to the *Oil and Gas Journal*, the United States had 21.9 billion barrels of proved oil reserves as of January 1, 2005, eleventh highest in the world. These reserves are concentrated overwhelmingly (over 80%) in four states. As of December 31, 2003, Texas had 22% of total US oil reserves, Louisiana had 22%, Alaska 20%, and California 18% (note: all of these figures include onshore plus Federal and state offshore reserves). U.S. proven oil reserves have declined some 17% since 1990, with the largest single-year decline (1.6 billion barrels) occurring in 1991.



U.S. crude oil production, which declined following the oil price collapse of late 1985/early 1986, leveled off in the mid-1990s, and began falling again following the sharp decline in oil prices of late 1997/early 1998. During 2003, the United States produced around 7.8 million barrels per day (bbl/d) of oil, of which 5.7 million bbl/d was crude oil, and the rest natural gas liquids and other liquids. U.S. total oil production in 2003 declined sharply (around 2.8 million bbl/d, or 26%) from the 10.6 million bbl/d averaged in 1985. U.S. crude production, which averaged 5.4 million bbl/d during the first ten months of 2004, is now at 50-year lows.

The United States contains over 500,000 producing oil wells, the vast majority of which are considered "marginal" or "stripper" wells, generally producing only a few barrels per day of oil. During 2003, top oil producing areas included the Gulf of Mexico (1.6 million bbl/d), Texas onshore (1.1 million bbl/d), Alaska's North Slope (949,000 bbl/d), California (683,000 bbl/d), Louisiana onshore (244,000 bbl/d), Oklahoma (178,000 bbl/d), and Wyoming (143,000 bbl/d).

Lower-48 States oil production in 2004 is estimated to have decreased by 130,000 bbl/d, to 4.58 million barrels per day, in 2004, with an increase of 190,000 bbl/d expected in 2005. Generally speaking, Lower-48 onshore production, particularly in Texas, has fallen in recent years, while offshore (mainly Gulf of Mexico) production is rising. For 2004, prior to Hurricane Ivan in mid-September, Gulf of Mexico oil production had been expected to increase both from new fields that came online in late 2003 as well as from start-ups at the southern Green Canyon deepwater area in late 2004. By late 2005, the Mars, Mad Dog, Ursa, Thunder Horse and Nakika Federal Offshore fields are expected to account for about 12% of Lower-48 oil production.

However, in late September 2004, Hurricane Ivan caused significant disruptions to Gulf of Mexico operations, resulting in a loss of over 29 million barrels of oil through November 9, with a continuing disruption of more than 200,000 bbl/d (down from over 1 million bbl/d on September 14 and around 450,000 bbl/d in October) due to damage at platforms and other oil infrastructure in the Gulf. According to an assessment by the U.S Department of Interior's Minerals Management Service (MMS), seven platforms were destroyed and six had major storm damage. According to the MMS states, "Of the 4,000 structures and 33,000 miles of pipelines in the gulf....150 platforms and 10,000 miles of pipelines were in the direct path of Hurricane Ivan. A substantial amount of the deferred production is directly attributable to damage that has occurred along pipeline routes rather than actual structural damage to the producing platforms. Pipelines in mud slide areas off the mouth of the Mississippi River experienced failures and will take a significant effort to locate and repair because the pipelines are buried by as much as 20 to 30 feet of mud. Overall, twelve large diameter pipelines (10" or larger) were damaged in Federal waters." The MMS expects that oil production will return to near-normal by the end of 2004, with output reaching 96% of normal within six months.

Meanwhile, Alaskan oil production is expected to decrease by 5% in 2004 and by 1% in 2005, continuing a steady decline since the state's peak output in 1988, at 2.017 million bbl/d. For the period January-August 2004, Alaska averaged production of about 902,000 bbl/d of oil, or about 16% of total U.S. crude oil production. Most of Alaska's oil output comes from the giant Prudhoe Bay Field, and is transported via the Alyeska pipeline. A new oilfield, known as Alpine (owned 78% by Phillips Petroleum, 22% by Anadarko), began production in November 2000. Alpine represents one of the largest North American onshore oil discoveries in years, and currently is producing around 100,000 bbl/d of high quality, light crude oil. Production at Alpine is to be maintained using tie-ins to the Nanuq and Fiord satellite fields beginning in 2006. Phillips has been the largest oil producer in Alaska since acquiring Arco's Alaska fields in early 2000. The combined production rate from the Alpine and North Star fields averaged nearly 173,000 bbl/d during June 2003. Production from the Kuparuk River field plus the production from West Sak, Tobasco, Tarn and Meltwater fields is expected to produce an average of 210,000 bbl/d in coming years.

In early 2000, the Energy Information Administration (EIA), in response to a Congressional request, issued a report on potential oil reserves and production from the Arctic National Wildlife Refuge (ANWR). The report, which cited a 1998 U.S. Geological Survey study of ANWR oil resources, projected that for the mean resource case (10.3 billion barrels technically recoverable), ANWR peak production rates could range from 1.0 to 1.35 million bbl/d, with initial ANWR production possibly beginning around 2010, and peak production 20-30 years after that.

In recent years, production from deepwater areas of the Gulf of Mexico has been increasing rapidly, with deepwater wells now accounting for about two-thirds of total U.S. Gulf output. Large fields include ExxonMobil's $1.1 billion Hoover-Diana development (which started up in May 2000 and was producing 80,000 bbl/d by 2002), plus several by BP: 1) the $2.5 billion Atlantis project, scheduled to come online in the third quarter of 2006, with 150,000 bbl/d of peak oil production capacity; 2) the 1-billion-barrel Thunder Horse (previously "Crazy Horse") field, the largest single field ever discovered in the Gulf of Mexico, scheduled to come online in 2005 with 250,000 bbl/d of peak oil output; 3) Crosby (developed by Shell, came online in late 2001, peak output of 60,000 bbl/d); 4) Holstein (BP; expected online by the end of 2004); 5) King (BP); 6) King's Peak (BP); 7) Mad Dog (BHP Billiton; expected online by early 2005); 8) Marlin; and 9) Nakika (Shell and BP; first production in December 2003; ramping up to 110,000 bbl/d) fields. For its part, BP has stated that it plans to accelerate its deepwater Gulf of Mexico production plans, including the planned $1 billion "Mardi Gras" deep-sea pipeline system, designed to transport more than 1 million bbl/d of oil.

In June 2003, Unocal announced its intentions to build a $500 million deepwater crude oil port, the Bulk Oil Offshore Transfer System (BOOTS) in the Gulf of Mexico 100 miles south of Beaumont, TX. The BOOTS system would have a capacity of 1.2 million bbl/d, and would be linked to refineries in Houston/Texas City, Beaumont/Port Arthur, and Lake Charles. As of October 2004, however, Unocal had placed BOOTS development on hold "pending receipt of sufficient volume commitments from crude oil import shippers."

According to Baker Hughes Inc., which has tallied weekly U.S. drilling activity since 1940, domestic oil and natural gas drilling rebounded sharply since the low point of 488 reached in late April 1999 following the oil price collapse of late 1997. In mid-October 2001, for instance, the U.S. weekly "rig count" reached the 1,141 mark (933 for natural gas and 208 for oil), close to the highest number since late 1990. The U.S. "rig count" then fell, reaching 843 (703 gas rigs and 137 oil rigs) as of mid-October 2002, before rising once again, reaching 1,225 during the week ending October 15, 2004. During October 2004, natural gas rigs outnumber oil rigs in the United States by more than six-fold (1,068 to 171). Historically, U.S. drilling activity peaked in 1981, with a total of 91,553 wells (43,598 oil, 20,166 natural gas, 27,789 dry wells) drilled in that year. For 2003, a total of 29,984 wells (19,722 natural gas wells, 6,284 oil wells, and 3,978 dry wells) were drilled in the United States, up from the low point of 18,465 total wells drilled in 1999, and also up (16%) from 25,744 wells drilled in 2002. During January-September 2004, total U.S. oil and natural gas wells drilled were up 15% from the same period in 2003.

Petroleum Imports/Exports

The United States averaged *total net oil* (crude and products) imports of an estimated 11.8 million bbl/d during January-October 2004, representing around 58% of total U.S. oil demand. Crude oil imports from Persian Gulf sources averaged 2.4 million bbl/d during that period. Overall, the top suppliers of crude oil to the United States during January-October 2004 were Canada (1.6 million bbl/d), Mexico (1.6 million bbl/d), Saudi Arabia (1.5 million bbl/d), Venezuela (1.3 million bbl/d), and Nigeria (1.1 million bbl/d).

Refining/Downstream

The United States experienced a steep decline in refining capacity between 1981 and the mid-1990s. Between 1981 and 1989, the number of U.S. refineries fell from 324 to 204, representing a loss of 3 million bbl/d in operable capacity (from 18.6 million bbl/d to 15.7 million bbl/d), while refining capacity utilization increased from 69% to 87%. Much of the decline in U.S. refining capacity resulted from the 1981 deregulation (elimination of price controls and allocations), which effectively removed the major prop from underneath many marginally profitable, often smaller, refineries.

Refinery closures have continued since 1989, bringing the total number of operable U.S. refineries to 149 in 2003. In general, refineries that have closed have been relatively small and have had less favorable economics than other refineries in their market area. Also, in recent years, some smaller, less-economic refineries that had faced additional investments for environmental reasons in order to stay in business found closing preferable because they predicted that they could not stay competitive in the long term.

While some refineries have closed, and no new refineries have been built in nearly 30 years, many existing refineries have expanded their capacities. As a result of capacity creep," whereby existing refineries create additional refining capacity from the same physical structure, capacity per operating refinery increased by 28% over the 1990 to 1998 period, for example. Overall, since the mid-1990s, U.S. refinery capacity has increased from 15.0 million bbl/d in 1994 to 16.9 million bbl/d in September 2004. Also in September 2004, utilization of operating capacity at U.S. refineries was averaging around 90%, down from 97% in July and August. Although financial, environmental, and legal considerations make it unlikely that new refineries will be built in the United States, expansion at existing refineries likely will increase total U.S. refining capacity in the long-run.

Financial Performance

Twenty-four major U.S. energy companies reported overall net income (excluding unusual items) of

$16.7 billion on revenues of $213 billion during the second quarter of 2004 (2Q04). This level of net income represented a 67% increase relative to the second quarter of 2003 (2Q03) (see EIA's "Financial News for Major Energy Companies "). Domestic upstream oil and natural gas production operations accounted for $6.3 billion of net income, with domestic refining and marketing operations also earning $6.3 billion. Foreign upstream oil and natural gas production operations accounted for $5.0 billion of net income, with foreign refining and marketing operations at $1.3 billion.

Independent oil and natural gas producers, oil field companies and refiner/marketers reported a sharp increase in net income (up 75%) during 2Q04 compared to 2Q03 (see EIA's "Financial News for Independent Energy Companies"). This increase in net income was due primarily to large increases in the prices of natural gas and crude oil, and a rise in gross refining margins of 49% year-over-year.

Rcent mergers and acquisitions also have contributed positively to several corporate balance sheets. On April 7, 2004, Westport Resources Corporation agreed to be acquired by Kerr-McGee Corporation in a deal worth about $3.4 billion. The *Wall Street Journal* said that this deal, "... will create the U.S.'s fifth-largest independent oil-and-natural-gas producer." The estimated $3.4 billion sale price reportedly includes about $900 million of Westport debt that Kerr-McGee absorbed in addition to approximately $2.5 billion of Kerr-McGee stock that will be exchanged for Westport stock.

On March 19, 2004 *The Wall Street Journal* reported that Marathon Oil would acquire from Ashland Corporation the 38% of the Marathon Ashland Petroleum refining/marketing joint venture that it did not already own. Marathon reportedly paid about $3 billion (about $1.1 billion of cash and stock and assume about $1.9 billion of debt) for Ashland's share in the refining/marketing joint venture. In addition to the acquiring full ownership of the Marathon Ashland Petroleum assets, Marathon also acquired 61 Valvoline Instant Oil Change outlets and other related assets currently owned by Ashland.

Two independent refiners, Frontier Oil and Holly, agreed to merge on March 31, 2003. The merger was valued at $462 million, including Frontier's assumption of $26 million of Holly's debt. If the deal is completed (currently, it is in litigation), the new company will retain the name of Frontier Oil. On February 24, 2003, Ocean Energy agreed to be acquired by Devon Energy in a transaction valued at $5.3 billion, creating (at the time) the largest independent oil and gas producer in the United States.

Other mergers and acquisitions in the past few years include: the September 2002 purchase of Pennzoil-Quaker State Co. by Shell Oil Co.; the August 2002 merger of Phillips Petroleum and Conoco Inc. in a $15.2 billion transaction (creating ConocoPhillips); the January 2001 purchase by Russia's Lukoil of Getty Petroleum Marketing for $71 million (in late September 2004, ConocoPhillips announced that it was seeking to acquire a 20% stake in Lukoil); and the 1999 merger between Exxon and Mobil for $81 billion.

However, due to low profitability in the refining/marketing line of business, U.S. integrated major energy companies began a process during the 1990s of selective refining/marketing divestiture, and numerous U.S. refineries were shut down. Among independent refiners, growth largely has been concentrated in the following group of companies -- Citgo/PDV America, Diamond Shamrock (merged with Ultramar during 1996, creating Ultramar Diamond Shamrock), Koch Industries, Premcor (formerly known as Clark Refining and Marketing), Tesoro Petroleum, and Valero Energy. In May 2001, Valero agreed to acquire Ultramar Diamond Shamrock for $6 billion. Another company, Tosco Corporation, was purchased by Phillips Petroleum for $7.5 billion in September 2001, creating the second largest refining group in the United States, behind ExxonMobil.

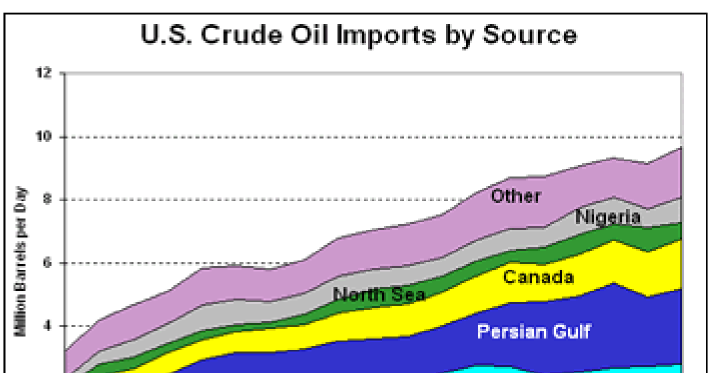
Over the past year or so, several smaller companies announced or closed deals to purchase refining and/or related assets. For instance, Valero said in March 2003 that it would pay $289 million to buy El Paso's 102,500-bbl/d Corpus Christi refinery. This follows Valero's sale of its 168,000-bbl/d Golden Eagle refinery and related assets in northern California to Tesoro Petroleum for $1.1 billion in May 2002. On March 4, 2003, Premcor completed a $310 million purchase of Williams Company's 180,000-bbl/d refinery in Memphis, plus another $145 million for inventories. In other news, Canada's Suncor announced in April 2003 that it would buy ConocoPhillips' 58,000-bbbl/d Commerce City, Colorado refinery and related assets for $150 million. On December 30, 2003, Sunoco completed its purchase of El Paso's 150,000-bbl/d Eagle Point refinery and related assets in New Jersey for $130 million. Premcor announced in January 2004 that it would pay approximately $800 million to acquire Motiva's 175,000-bbl/d Delaware City refinery. Williams Companies announced on April 1, 2004 that it had completed the sale of its 220,000-bbl/d North Pole refinery to a subsidiary of Koch Industries, making Koch the 9th-largest refiner in the United States.

Consumption

The United States consumed an average of about 20.4 million bbl/d of oil during the first ten months of 2004, up from 20.0 million bbl/d in 2003. Of this, motor gasoline consumption was 9.0 million bbl/d (or 44% of the total), distillate fuel oil consumption was 4.1 million bbl/d (20%), jet fuel consumption was 1.6 million bbl/d (8%), and residual fuel oil consumption was 0.8 million bbl/d (4%)l. Total 2005 petroleum demand is projected to grow by just 1.4% (280,000 bbl/d), to an average 20.7 million bbl/d, in response to the combined effects of somewhat slower economic growth and relatively high crude oil and product prices. All the major products (except residual fuel oil) are expected to contribute to this growth. Motor gasoline demand is projected to increase 1.8%, to 9.22 million bbl/d. Jet fuel demand is projected to post a growth rate of 3.1% in 2005 to average 1.67 million barrels per day, still below 2000 jet fuel consumption but sharply up from post-9/11 lows it reached in 2002 and 2003. Distillate demand in 2005 is projected to grow only 1.5% year-over-year as industrial growth slows. Demand for residual fuel oil is projected to remain about flat in 2005.

Petroleum Prices

Since the third week of June 2004, the U.S. monthly average pump price for regular gasoline varied from the upper $1.80s to just over $2.00 per gallon. On October 18, 2004, the average price was $2.04 per gallon, 46.4 cents per gallon higher than the same time in 2003. Prices were up throughout the country, with the West Coast region seeing the largest increase of 5.4 cents to 229.5 cents per gallon. Since October, gasoline pump prices have fallen. On December 6, 2004 the U.S. monthly average pump price for regular gasoline stood at $1.91 per gallon, down 11 cents per gallon from one month earlier.



Strategic Petroleum Reserve (SPR)

The SPR was officially established in December 1975 under the Energy Policy and Conservation Act (EPCA), which created a reserve of up to 1 billion barrels. To store the reserve oil, the U.S. government acquired several salt caverns along the Gulf of Mexico coastline. The first crude oil was delivered to the SPR in

1977 and stored at the West Hackberry storage site near Lake Charles, LA. Other major storage sites include: Bryan Mound and Big Hill in Texas and Bayou Choctaw in Louisiana, with a total storage capacity of 700 million barrels.

In mid-November 2001, President Bush directed the Department of Energy (DOE) to fill the SPR to its capacity of 700 million barrels to "maximize long-term protection against oil supply disruptions." Under the DOE plan, the SPR is to be filled with "royalty in kind" (RIK) oil. As of October 21, 2004, the SPR contained around 670 million barrels of oil -- the largest emergency oil stockpile in the world. The SPR has a maximum drawdown capability of 4.3 million bbl/d for 90 days, with oil beginning to arrive in the marketplace 15 days after a presidential decision to initiate a drawdown. The SPR drawdown rate declines to 3.2 million bbl/d from days 91-120, to 2.2 million bbl/d for days 121-150, and to 1.3 million bbl/d for days 151-180.

Under EPCA, there is no preset "trigger" for withdrawing oil from the SPR. Instead, the President determines that drawdown is required by "a severe energy supply interruption or by obligations of the United States" under the International Energy Agency. EPCA defines a "severe energy supply interruption" as one which: 1) "is, or is likely to be, of significant scope and duration, and of an emergency nature;" 2) "may cause major adverse impact on national safety or the national economy" (including an oil price spike); and 3) "results, or is likely to result, from an interruption in the supply of imported petroleum products, or from sabotage or an act of God." Should the President decide to order an emergency drawdown of the SPR, oil would be distributed mainly by competitive sale to the highest bidder(s). This would be accomplished in a 4-step process, including a "Notice of Sale," receipt of bids, selection of bidders, and finally delivery of oil.

On September 23, 2004, in response to Hurricane Ivan, DOE announced that it intended "to enter into negotiations to make available a limited quantity of crude oil from the Strategic Petroleum Reserve (SPR), to help relieve physical shortages of crude oil supplies in the Gulf of Mexico..." In response, "sweet oil was delivered to Placid Refining and Shell Trading. ConocoPhillips is currently receiving sweet crude; Astra Oil will be receiving sweet crude during the month of October and Premcor will be receiving sweet crude during the months of October and November." Other withdrawals from the SPR have occurred in 1985, 1990, 1991, and 1996-97.

U.S. Energy Sanctions

The United States maintains energy sanctions against several countries. Since August 1996, Iran has been impacted by the Iran-Libya Sanctions Act (ILSA). ILSA imposes mandatory and discretionary sanctions on non-U.S. companies that invest more than $20 million annually (lowered in August 1997 from $40 million) in the Iranian oil and natural gas sectors. In April 2004, application of ILSA to Libya was halted following fulfillment of Libya's commitments to rid itself of weapons of mass destruction and Missile Technology Control Regime-class missile programs, and to renounce terrorism. On August 3, 2001, President Bush signed into law the ILSA Extension Act of 2001. This Act provides for a 5-year extension of ILSA with amendments that affect certain of the investment provisions.

Attempts by the United States to implement ILSA have run into opposition from a number of foreign governments. The European Union (EU) opposes the enforcement of ILSA sanctions on its members, and on November 22, 1996 passed Resolution 2271 directing EU members to not comply with ILSA. On May 18, 1998, the EU and the U.S. reached an agreement on a package of measures to resolve the ILSA dispute at the EU/U.S. Summit in London, but the Summit deal is contingent upon acceptance by the U.S. Congress before full implementation may take place.

In February and April 2004, U.S. economic sanctions against Libya -- in place since 1986 -- were eased, eliminating travel restrictions and allowing investment by U.S. corporations, including in Libya's petroleum sector, as well as Libyan investment in the United States. Despite the improvement in U.S. Libyan relations as of July 2004, the United States has not reinstated full diplomatic and economic ties, including the opening of embassies in Washington, D.C. and Tripoli. Libya also remains on the State Sponsors of Terrorism List.

NATURAL GAS

As of January 1, 2004, the United States had estimated proven natural gas reserves of 187 trillion cubic feet (Tcf), or 3.1% of world reserves (6th in the world). Natural gas consumption for 2004 is estimated at about 22.0 Tcf, with gross imports of 4.1 Tcf. More than 80% of U.S. natural gas imports come from Canada, mainly the western provinces of Alberta, British Columbia, and Saskatchewan. Overall, the United States depends on natural gas for about 24% of its total primary energy requirements (oil accounts for around 40% and coal for 23%).

Natural Gas Production and Storage

With continuing high rates of drilling for natural gas, U.S. dry natural gas production is expected to increase by about 1.8% in 2005, to 19.1 Tcf, from an estimated 18.7 Tcf in 2004. Steady, if modest, increases in liquefied natural gas (LNG) imports, restrained export growth, and carryover from the robust storage levels noted above are expected to contribute to moderate improvement in the supply picture through 2005.

Strong increases in U.S. natural gas production and net imports are needed over the next two decades to meet growing demand. Increased natural gas production is expected to come mainly from onshore sources, although offshore Gulf of Mexico production also is forecast to grow significantly. In August 2001, for instance, ExxonMobil began production at its $330 million Mica natural gas project in the deepwater Gulf of Mexico. Alaska's North Slope fields also represent a large potential natural gas source, with an estimated 30-35 Tcf of natural gas resources. Getting the gas to market is the main challenge. One possibility is a $20 billion natural gas pipeline running 3,500 miles from the North Slope along the Alaska Highway into Alberta and on to markets in the U.S. Midwest. In October 2004, Congress promised to cover 80% of the project's cost if it were to go bankrupt. Still, the project is considered risky by major energy companies, and it remains uncertain whether or not the project will move ahead.

In the near term, increases in natural gas production likely will come mainly from lower 48 sources, with increased use of cost-saving technologies expected to result in continuing large natural gas finds, including in the deep waters of the Gulf of Mexico but also in conventional onshore fields. As of 2002, top natural-gas-producing states (in descending order) included Texas, New Mexico, Oklahoma, Wyoming, Louisiana, Colorado, Alaska, Kansas, California, and Alabama.

Natural Gas Demand

From 1990 through 2003, natural gas consumption in the United States increased by about 15%, although consumption fell about 5% during 2003 in large part as a result of high gas prices. In response to continued economic growth, natural gas demand is projected to increase by 3.7% in 2005. Natural gas is consumed in the United States mainly in the industrial (37%), electric power (23%), residential (22%), and commercial (14%) sectors.

U.S. natural gas consumption and imports, overwhelmingly from Canada -- and to a far lesser extent from Trinidad, Algeria, Qatar, and others in the form of LNG -- are expected to expand substantially in coming decades, with the fastest volumetric growth resulting from additional natural-gas-fired electric power plants. Increased U.S. natural gas consumption will require significant investments in new pipelines and other natural gas infrastructure.

Domestic and Import Pipelines
At the close of 2003, the U.S. natural gas transportation network included more than 226 gas pipeline systems, more than 306,000 miles of pipeline, and more than 178 Bcf/d of gas transportation capacity. During 2003, total U.S. gas pipeline system mileage increased by about 1% while overall system capacity increased by slightly more than 5%. There are currently approximately 400 underground gas storage sites located in the United States, operated by 127 companies.

Overall, the U.S. gas transportation network continued to grow in 2003, although at a slower pace than in 2002. After record additions in 2002, the installation of new natural gas pipeline capacity fell by 19% in 2003, while added mileage fell by 37%. In part, this decline reflected the fewer number of larger-scale (200 MMcf/d or greater) pipeline projects completed during 2003 compared with those completed in 2002 (21 versus 26), and fewer new laterals (7 versus 17) serving new power generation plants. At least 10 proposed new laterals or expansions to existing systems originally scheduled for 2003 were canceled or downsized because a planned gas-fired power plant was not completed on schedule or was canceled.

On November 1, 1993, FERC issued Order No. 636, which decoupled the various stages of the natural gas industry between wellhead and end-user. This order has led to significant restructuring of the interstate natural gas pipeline industry, including moves towards unbundled services, diversification into other energy sectors, and development of mega-pipeline systems.

Five major new natural gas pipeline systems were completed and placed in operation during 2002. They were: the Gulfstream Pipeline, 1,130 MMcf/d–560 miles, which carries natural gas under the Gulf of Mexico from gas-processing facilities located on the Gulf coasts of the States of Mississippi and Alabama to west central Florida; the North Baja Pipeline, 500 MMcf/d–80 miles (in U.S.), which exports gas to electric power plants located in Baja California, Mexico; the Questar Southern Trails Pipeline, 87 MMcf/d–405 miles, which transports as from the four corners area of New Mexico/Utah (San Juan Basin) to the California/Arizona border area; and the Guardian, 750 MMcf/d–142 miles, and Horizon, 380 MMcf/d—29 miles, pipelines, which expanded the flow of gas supplies between the Chicago (Illinois) hub and the growing market of northern Illinois and southern Wisconsin.

On December 1, 2000, the $2.9 billion, 1.3-Bcf/day Alliance Pipeline from western Canada (Fort St. John, British Columbia) to the Chicago area entered service. Another pipeline, the Independence Pipeline ($678 million) received FERC approval in July 2000, but was cancelled in June 2002 due to lack of customer interest.

Columbia Gas System’s Millennium project ($700 million), which is to connect Canadian natural gas sources to New York and Pennsylvania, received FERC go-ahead on September 19, 2002. Current plans are for Phase I of the Millennium line to be in service by November 2006, while Phase II's start date has not yet been determined. When complete, Millennium will transport up to 700 MMcf/d of natural gas, providing an environmentally preferred option for generating electricity. According to the Millennium Pipeline consortium's web site, more than 90% of the pipeline’s 425-mile overland route uses existing utility corridors, with about 224 miles of the project replacing and upgrading a 50-year-old pipeline system owned and operated by Columbia Gas Transmission Corp.

Growing U.S. demand for Canadian natural gas has been a dominant factor underlying many of the pipeline expansion projects this decade. The U.S. and Canadian natural gas grids are highly interconnected and Canadian natural gas has become an increasingly important component of the total natural gas supply for the United States. This is especially true for certain U.S. regions such as the Northeast, Midwest, the Pacific Northwest and California, which depend on Canadian natural gas for significant amounts of their supply. Overall, the United States received about 4.0 Tcf of natural gas (gross) from Canada during 2003, the same as in 2001 and 2002. Mexico is a small net importer of natural gas from the United States.

Considerable progress has occurred in recent years to connect Canadian natural gas supplies to U.S. consumers. The Northern Border Pipeline, an extension of the Nova Pipeline, came onstream in late 1999 and connects to Chicago through the upper Midwest. A further extension to Indiana entered service in 2001. The Maritimes and Northeast Pipeline came onstream in January 2000, running from Sable Island to New England, with further extensions into the Boston area to be completed during 2003. The pipeline has a capacity of 400 MMcf/d.

The $2.5 billion Alliance Pipeline, at 1,875 miles, is the longest pipeline ever built in North America, and is designed to carry about 1.3 Bcf/d of gas from western Canada (Fort St. John, British Columbia) to the Chicago area. The pipeline began commercial service on December 1, 2000. The U.S. utility Pacific Gas & Electric imports natural gas from British Columbia via the Alliance pipeline. To date, the Alliance system has been operating at close to its capacity of 1,630 MMcf/d.

Another possibility for future U.S. natural gas supplies lies in northern Canada, which contains around one third of that country's recoverable gas reserves. The Mackenzie Valley pipeline, for instance, could carry as much as 1.9 Bcf/d of gas from Canada's far north to southern Canada and the United States, possibly beginning in 2008. However, Canada is consuming increasing volumes of gas itself for such activities as oil sands extraction and processing. Accordingly, Canada may export less natural gas to the United States than is now expected. A competing pipeline would transport natural gas from Alaska's North Slope to the lower-48 states, with possible capacity as high as 4-5 Bcf/d, and potentially beginning sometime around 2012.

On October 12, 2001, the U.S. Coast Guard lifted a ban on LNG tankers from Boston harbor. The ban, in effect starting September 26, 2001 (two weeks after the terrorist attacks in New York and Washington, DC), was established in response to security and safety concerns about the ships that bring LNG to the import facility of Distrigas of Massachusetts (a Division of Tractebel, Inc.). The decision enabled the reopening of the Distrigas facility in Everett, Massachusetts, which received 45 shipments containing 99 Bcf of natural gas in 2000, mostly from Trinidad, accounting for 44% of total LNG imports into the United States that year. The Distrigas facility is one of four currently active LNG facilities in the United States (plus one in Puerto Rico). The other three active U.S. LNG facilities are located in Lake Charles, Louisiana; Elba Island, Georgia; and Cove Point, Maryland, which received its first commercial LNG cargo in 23 years in August 2003. Cove Point is now the nation's largest LNG import facility, and a new 2.5-Bcf storage tank is scheduled to be added in January 2005 by its owner, Dominion. Expansion is also planned for the Lake Charles and Elba Island LNG facilitie.

On balance, interest is growing in LNG as a source of natural gas for U.S. electric power generation and also as a source that would provide supply flexibility. EIA expects that LNG imports to the United States will increase sharply beginning in 2007, growing to 2.2 Tcf in 2010 and 4.8 Tcf in 2025. During 2003, the United States received about 506 Bcf of LNG, mainly from Trinidad and Tobago, Algeria, and Qatar.

Currently, two dozen LNG terminals are on the drawing board to serve North America (mainly the United States). The Sempra Energy Cameron LNG project in Hackenberry, LA, approved in September 2003 by the Federal Energy Regulatory Commission (FERC), marks the first new LNG plant granted approval in the United States in 25 years. Besides the Hackenberry facility, Sempra signed a deal with BP in December 2003 to supply Indonesian LNG to a proposed receiving terminal in Baja California. The gas would then be piped to U.S. West Coast markets. Also, in December 2003, Shell announced plans to build a $700 million LNG receiving terminal, called Gulf Landing, 38 miles off the coast of Louisiana. The project is slated to handle 1 Bcf/d of LNG starting in 2008 or 2009. Other possible LNG projects include: an offshore LNG receiving terminal called Port Pelican, located 40 miles off the Louisiana coast (ChevronTexaco); a $600 million facility near Port Arthur, Texas (ExxonMobil); and a $450 million terminal in eastern Mississippi (Gulf LNG Energy). . In late October 2004, ExxonMobil announced that it was abandoning plans for an LNG terminal in Mobile, Alabama in the face of local opposition. .

In December 2003, EIA issued a report, "The Global Liquefied Natural Gas Market: Status and Outlook, in conjunction with a Department of Energy LNG summit. At the summit, Energy Secretary Spencer Abraham pledged to make the process of licensing and building LNG receiving terminals easier. In March 2004, an agreement between FERC, the Coast Guard, and the Department of Transportation aims at streamlining the process regarding environmental, safety, and security reviews of proposed LNG projects.

Natural Gas Prices

Natural gas wellhead prices reached record highs of nearly $10.00 per thousand cubic feet (mcf) in late 2000/early 2001, but fell sharply soon thereafter to around $2.50 per mcf. Cold weather in the U.S. Northeast and Midwest during the winter of 2002/2003 raised prices once again, as gas storage levels hit unusually low levels and cold weather limited pipeline operations. The average spot price for natural gas at the Henry Hub for the month of September 2004 stood at $5.15 per mcf. Henry Hub prices are expected to average $6.10 per mcf in 2004 and $6.18 per mcf in 2005. As of October 22, 2004, working gas in underground storage was about 6.9% (210 Bcf) above the 5-year average of 3,039 Bcf, and 128 Bcf higher than one year earlier. Working gas stocks hit their low point on March 14, 2003, at 50% below the 5-year average.

On June 10, 2003, Federal Reserve Chairman Alan Greenspan noted that rising natural gas prices in the United States could have a negative impact on the economy if prices remained at high levels. Greenspan stated, "I have no doubt that...if we stay at these very elevated prices we're going to see some erosion in a number of macroeconomic variables which are not evident at this stage. A very significant amount of natural gas using infrastructure in the American economy was based on $2 [per mcf] gas. That means a lot of noncompetitive structures are sitting out there." Greenspan emphasized the need for greater imports of liquefied natural gas (LNG) in order to boost domestic supplies and keep prices under control.

COAL

The United States produced 1,072 million short tons (Mmst) of coal in 2003, down 2.1% from 2002 output, and the second annual decline in a row. In contrast, during the first ten months of 2004, coal production increased 3.0% year-over-year. Led by Wyoming (376 Mmst of production in 2003), the West accounts for about 56% of the U.S. total, overwhelmingly from surface mines. Appalachia (led by West Virginia and Kentucky) accounts for about 35% of total U.S. coal production, mainly from underground mines. Around three-fifths of U.S. coal production is bituminous, one-third subbituminous, and about one-tenth lignite (brown coal). Around 80,000 miners work in the $20 billion U.S. coal industry, down from a peak of 700,000 in 1923, when U.S. coal production was half what it is today. Major U.S. coal companies include Peabody Energy (the largest in terms of production), Arch Coal (the second largest coal producer); and Kennecott Energy.

Coal production in the Appalachian Region declined in 2003 to a total of 376.0 million short tons, the lowest level seen since 1978, when coal production was curtailed by a United Mine Workers of America strike curtailed coal production from December 6, 1977, to March 25, 1978. The recent decline was the result of several factors . The legacy of past lawsuits, that had temporarily halted the issuance of needed permits to open new mines, continued to constrain the amount of coal produced. Bankruptcies continued to plague Appalachia as another mid-sized coal company filed for Chapter 11 in early 2003, while several other coal companies were still working through their bankruptcy processes. Geological problems and underground mine fires added to the decline in coal production in some Appalachian States. Finally, several mines closed as they reached the end of their reserve base adding to the continuing reserve depletion that is affecting coal production in the East. Declining productivity and increasing labor costs also contributed to lower production levels in the region.

During 2005, coal production is expected to rise slightly in Appalachia, fall slightly in the U.S. interior, and increase strongly in the West. In 1998, low-sulfur western coal production surpassed relatively higher-cost, higher-sulfur, Appalachian coal for the first time, following strong increases since 1994, prompted largely by Phase 1 of the CAAA (1990). CAAA originally took effect during 1995, and required lower sulfur emissions from coal combustion. In response, Wyoming increased its coal production sharply, particularly low-sulfur, low-ash (and low cost) coal from the Powder River Basin, where coal is strip-mined.

Several factors had an impact on coal production in 2003. Among the minor issues were weather (rain or the lack thereof), transportation bottlenecks, and a one-day disruption in the electric power grid. The weather played a part in some of the transportation bottlenecks. The lack of rain led to low water levels in the river transportation sys-tem, in particular on the Mississippi River in January and again in August, which resulted in delayed coal barge shipments. Severe rains in the Powder River Basin in June impacted both coal production (causing some mine pit flooding and collapsing highwalls) and transportation (delays in train deliveries). Rail congestion problems continued to occur periodically in some States in the Western Region during the year. In August 2003, there was an electricity blackout that affected over 50 million customers in the northeast United States and portions of Canada.

Legal issues continued to affect all aspects of the coal industry during 2003. For example, a new lawsuit was filed over the level of environmental review needed in the permitting system process, and there have been challenges to the New Source Review program requirements for power plants. A coalition of environmental groups filed a lawsuit stating that all applications for permits should get full environmental review, while a coalition of several States and local governments sued the Environmental Protection Agency (EPA) to block the implementation of the new rule published at the end of October 2003. Also, on January 29, 2003, the Fourth Circuit Court of Appeals ruled in favor of the coal industry and the Department of Justice by overturning Judge Charles Haden's May 2002 ban on new valley fill permits at coal mines in West Virginia and eastern Kentucky. The three-judge panel ruled that the 2002 ruling had been "over broad" and essentially supported the existing policies that the Army Corps of Engineers has followed for many years in issuing fill permits under the Clean Water Act.

In 2003 the rebounding U.S. economy, coupled with the slightly warmer than normal summer experienced in the western part of the country, helped drive up demand for coal. For the year, the United States consumed 1,095 Mmst, up 2.7% from 2002. Although preliminary data show that total electricity generation decreased by 0.2% in 2003, coal-based generation increased by 1.6%, resulting in a 26.8-Mmst increase in coal consumed in the electric power sector. Total coal use in the non-electricity sector (coke plants, other industrial plants, and the residential and commercial sectors) rose by 1.8 % during 2003, to a level of 90.4 Mmst.

Coal prices at mines declined slightly in 2003 at the national level. The average open market price of coal was $17.85 per ton in 2003, a drop of 14 cents per ton from 2002. The price per ton of surface mined coal declined in 2003 by 23 cents per ton, while the price of underground coal increased by 3 cents per ton at the national level. Coal prices in the consuming sectors were mixed in 2003. Coal prices to electric utilities (a subset of the electric power sector) increased for the third year. However, the delivered price of coal declined in the other sectors in 2003. The average delivered price of coal to electric utilities was $25.29 per short ton (124.3 cents per million Btu), up 2.2% from the annual 2002 level of $24.74 per short ton (121.8 cents per million Btu)

The electric power sector (made up of electricity producers whose primary business is producing power for public distribution) accounts for the vast majority over 90%) of U.S. coal consumption, with coke plants and "other industrial" accounting for most of the remainder. In coming years, as sulfur dioxide emissions standards are tightened (in 2000, for instance, Phase 2 of the Clean Air Act Amendments -- CAAA -- took effect), the share of low-sulfur coal (mainly from the western U.S.) in the country's coal consumption mix is expected to increase. In 2002, production of medium- and high-sulfur coal was 578 Mmst (52%), while low-sulfur coal output was 527 Mmst (48%). By 2025, medium- and high-sulfur coal is expected to make up just 43% of total U.S. coal output, with low-sulfur coal accounting for 57% of the total.

U.S. gross coal exports fell sharply starting in the mid-1990s due mainly to lower world coal prices and increased competition from other coal-producing nations (i.e., Australia, South Africa, China, Venezuela, Colombia), plus natural gas -- especially in Europe. In 2002, the United States exported 40 Mmst of coal, down from 108 Mmst of exports in 1991. In 2003, U.S. coal exports increased slightly, to 43 Mmst, of which nearly half went to Canada. In coming years, the U.S. coal industry is expected to continue to face strong competition from other coal-exporting countries, with limited or negative growth in import demand in Europe and the Americas. U.S. gross coal imports are estimated at 25.0 Mmst in 2003, up 48% from 16.9 Mmst in 2002. The continued rise in U.S. gross coal imports is partly attributable to heightened demand for low-sulfur coal, and in part to the need to meet stricter sulfur emission requirements of Phase II of the CAAA.

Bankruptcies continued to exert influence on the coal industry as several producers and a few consumers attempted to emerge from Chapter 11 during the year and another mid-sized coal company filed for bankruptcy protection in 2003 as it tried to realign its finances. The year also saw the continuing effort of several companies trying to exit the coal business by selling their mining interests to other parties. Adverse geological conditions and equipment problems continue to trouble some mining operations in both the Appalachian and Western Regions, while underground fires in Appalachia caused some mining operations to temporarily suspend production during 2003.

ELECTRICITY

In 2003, the United States generated 3,848 billion kilowatthours (Kwh) of electricity, including 3,691 billion Kwh from the electric power sector plus an additional 157 billion Kwh coming from combined heat and power (CHP) facilities in the commercial and industrial sectors. For the electric power sector, coal-fired plants accounted for 53% of generation, nuclear 21%, natural gas 15%, hydroelectricity 7%, oil 3%, geothermal and "other" 1%. During the first eight months of 2004, electric power generation rose about 2.2% year-over-year.

Natural gas-fired power generation has greatly increased its share of the U.S. power mix over the past few years, from just 9% in 1988 to 18% in 2002, although it fell back in 2003, to 16%, due in large part to higher gas prices during 2003. Investment in coal-fired power generation generally has been less attractive than natural gas in recent years due to relatively high capital costs and longer construction periods. As a result, coal's share in the U.S. power mix has fallen from 57% in 1988 to 51% in 2003. The share of nuclear power generation in the U.S. power mix has remained relatively flat over the past 15 years or so, increasing slightly from 19% in 1988 to 20% in 2003. Oil's share has fallen from 5% in 1988 to 3% in 2003.

On a national level during 2003, the retail price of electricity averaged 7.40 cents per Kwh, up 2.6% from 7.21 cents per Kwh in 2002. Electricity prices in the United States fell every year between 1993 and 1999, but this trend reversed in 2000, 2001, and 2003. For the first eight months of 2004, electricity prices were up 1.7% year-over-year, to 7.57 cents per Kwh.

As of 2002, U.S. net summer electric generating capacity was 905 gigawatts (GW). Of this total, 76% was thermal (35% coal, 19% natural gas, 18% "dual-fired," 4% petroleum), 11% hydro, 11% nuclear, and 2% "other renewables" (geothermal, solar, wind). The amount and geographical distribution of capacity by energy source is a function of, among other things, availability and price of fuels and/or regulations. Capacity by energy source generally shows a geographical pattern such as: significant nuclear capacity in New England, coal in the central U.S., hydroelectric in the Pacific West, and natural-gas-fired capacity in the Coastal South.

Total U.S. annual electricity demand grew only slightly -- about 0.9% -- during 2003. For the first eight months of 2004, electricity demand increased about 1.3% year-over-year, driven by accelerated growth in the economy and weather-related increases in the first and the fourth quarters.

On August 14, 2003, a huge electric power blackout hits large parts of the northeastern United States, the Midwest, and southern Canada late in the afternoon. Power was knocked out for at least several hours in major cities like New York, Detroit, Cleveland, and Toronto. Three months later (November 2003), the U.S.-Canada Power System Outage Task Force, led by U.S. Secretary of Energy Spencer Abraham and Canadian Natural Resource Minister Herbert Dhaliwal, released a 124-page investigative report which concluded that the blackout was "largely preventable" and cited several failures by regional utility companies and regulators. Analyses of the blackout also were completed by the Michigan Public Service Commission and the Electric Power Research Institute (EPRI).

In March 2001, the Energy Secretaries of Canada, Mexico, and the United States met to discuss a common energy strategy for the three countries, including integration of the three countries' power grids and creation of a US-Mexican working group to focus on promoting cross-border electricity trade. At present, power trade between Mexico and the United States is severely limited by infrastructure constraints, including inadequate power transmission capability (there are only three cross-border transmission lines, two between El Paso and Ciudad Juarez and one between Brownsville and Matamoros). In January 2001, a small (50-MW), natural-gas-fired power plant in Baja California began exporting power to California. Canada exported about 30 billion Kwh of electricity to the United States in 2003, mostly from Quebec, Ontario, and New Brunswick to New England and New York. Smaller volumes are exported from British Columbia and Manitoba to Washington state, Minnesota, California, and Oregon. Considerable reciprocity exists between Canadian and U.S. power markets, as the United States also exports smaller volumes of electricity to Canada.

Nuclear

In 2003, U.S. nuclear power accounted for about 20% of total U.S. electricity generation, second only to coal in the U.S. electricity generation mix. Nearly 40% of U.S. nuclear output was generated in just five states: Illinois, Pennsylvania, South Carolina, North Carolina, and New York. The average utilization rate for all nuclear units nationwide increased from 66% in 1990 to over 90% in 2002, an all-time record high. For 2003, the nuclear capacity utilization rate fell slightly, to 88%, but then increased again -- to 92.1% -- during the first eight months of 2004. Following the September 11, 2001 terrorist attacks on the United States, security at nuclear power plants around the United States was increased dramatically.

Nuclear power in the United States grew rapidly after 1973, when only 83 billion kWh of nuclear power were produced. By 2003, nuclear power output had increased nine-fold, with 104 licensed nuclear power units generating 764 billion kWh of electricity (nuclear generation was up 4.1% year-over-year during the first seven months of 2004). This rapid growth in nuclear power generation, however, obscures serious underlying problems in the U.S. nuclear industry. After 1974, many planned units were canceled, and since 1977, no orders have been placed for new nuclear units, and none are currently planned. The 1979 Three Mile Island accident greatly increased concerns about the safety of nuclear power plants in the United States. The regulatory reaction to those concerns contributed to the decline in the number of planned nuclear units, with Watts Bar I (1996) the last plant completed. In late March 2000, the Nuclear Regulatory Commission (NRC), in a positive signal to the U.S. nuclear power industry, granted the first-ever renewal of a nuclear power plant's operating license. The 20-year extension (until 2034 and 2036 for two reactors) went to the 1,700-MW Calvert Cliffs plant in Maryland.

On July 9, 2002, the U.S. Congress voted to formally approve Yucca Mountain, located 100 miles north of Las Vegas, as the nation's permanent nuclear waste depository (on December 2, 2003, President Bush signed a $27.3 billion energy and water bill that included funding for the Yucca Mountain facility). Studies on Yucca Mountain as a possible nuclear power plant waste site have been going on for over two decades, with concerns centering on the dangers of transporting nuclear materials to the site via rail or highway. Nuclear utilities have complained that they are running out of nuclear waste storage capacity at their nuclear plants, with many being forced to resort to "dry cask" storage of spent fuel assemblies after water-storage pools reached capacity. The repository also remains a source of controversy between state and federal officials. In February 2002, Nevada Governor Kenny Guinn indicated that he would oppose the project, making congressional approval necessary for Yucca Mountain to go forward. The site's selection is also being challenged in Federal Appeals court by the state of Nevada. Overall, the project is expected to cost $40 to $50 billion and be able to store 77,000 tons of radioactive waste. In November 2004, Congress cut funding for the Yucca Mountain program by $303 million in fiscal year 2005, possibly delaying the facility's opening by several years.

Hydroelectricity/Other Renewables

During 2003, the United States consumed 6.2 quadrillion Btu of renewable energy, about 6% of total domestic gross energy demand, with the largest component used for electricity production. As of June 2004, 18 states had adopted renewables portfolio standards (RPS) or mandates aimed at increasing the share of renewable power in the energy mix. Several other states are considering adoption of an RPS, while others with RPS already in place are looking for ways to accelerate the development of renewables. Growth in renewable energy continues to be challenged by little or no development of new hydroelectric sites, a slow but lengthy decline in the use of biomass for non-electric purposes, and the high capital costs of most renewable energy production facilities, relative to fossil-fueled alternatives.

Overall, hydropower provided around 45% of total U.S. renewable production in 2003, with biofuels (including wood and waste), solar, wind, and geothermal making up most of the remainder. Total hydropower generation rose by around 4% during 2003 compared to 2002, and 27% compared to 2001, a bad drought year. In 2003, about 61% of U.S. hydroelectric output was supplied by just four states: Washington, California, and Oregon on the Pacific coast, plus New York. For the first seven months of 2004, total hydropower generation was down 6.3% year-over-year.

Wind, solar, biomass, and geothermal power, although growing, continue to supply a tiny fraction of total U.S. energy needs. According to EIA's Annual Energy Outlook 2005, however, renewable power production is expected to grow by 1.5% per year between 2003 and 2020, the fastest growth rate of any domestic energy source. In 2002, shipments of solar PV cells and modules expanded by 15%, to around 112 megawatts, according to EIA's Renewable Energy Annual 2002. The average unit price of PV cells decreased in 2002 by 14%, to $2.12 per peak megawatt. Solar thermal collector manufacturing rose modestly in 2002, consistent with the general pattern seen since 1992 (except for a sharp rise between 2000 and 2001). Total shipments of solar thermal collectors rose 4%, to 11.7 million square feet.

In 2003, the United States added 1,687 MW of wind power capacity, pushing the total to 6,374 MW, a 36% increase from 2002 (and up nearly four-fold from the 1,584 of wind capacity in 1992). This growth, while rapid, was slightly slower than the record growth of 1,694 MW seen in 2001, according to the American Wind Energy Association (AWEA). For 2004, the AWEA estimates that the United States will add just 480 MW of wind power capacity. Fluctuations in wind power capacity additions stem in part from the uncertain status of a key federal wind Production Tax Credit, or PTC, first established in 1992. The PTC expired on December 31, 2003, and was not renewed until September 2004. With the renewal, of the PTC, the AWEA estimates that wind power capacity additions in 2005 may set an all-time record high. The AWEA estimates that by 2020, wind power could supply at least 6% of U.S. electric power needs. California, Texas, Minnesota, and Iowa currently are the top four states in terms of installed wind power capacity, while the largest wind farm is located on the Oregon-Washington state line.

The first U.S. offshore windmill park, with a peak capacity of 450 MW from 130 turbines, has been proposed for construction off the Cape Cod coast. The project (by Cape Wind) could power more than 200,000 homes in Cape Cod, but has been opposed by local residents who believe the project would mar the area's landscape. On November 9, 2004, the US Army Corps of Engineers (USACE) issued a draft environmental impact statement on the Cape Cod wind project, finding that the positives of the project outweighed any possible negatives. Meanwhile, Iowa's largest utility (MidAmerican Energy) has announced plans for a 310-MW wind power facility, the country's largest to date. Both Cape Cod and Iowa are areas of the country considered to have significant wind energy potentials. Iowa's governor, Tom Vilsack, has set a target of at least 1,000 MW in renewable power capacity by 2010.

ENVIRONMENT

Over the past several decades, advances in technologies and environmental regulations have decreased emissions associated with energy production, generation, and use, such as sulfur dioxide and nitrogen oxides. According to the U.S. EPA, the nation's air is much cleaner today than it was 30 years ago. Remarkably, this progress has occurred even while, during the same 30-year period, the U.S. GDP increased 161%, energy consumption increased 42%, and vehicle miles traveled increased 149%. For information on EPA’s efforts to develop environmental indicators to track environmental conditions over time, click here. Notwithstanding this progress, challenges remain in addressing energy/environment issues. Key Bush Administration policy initiatives and recent federal regulatory actions aimed at reducing emissions from power plants, improving energy efficiency, and addressing greenhouse gas emissions, include:

Multi-pollutant Legislation and Regulations: A variety of bills addressing pollution control at electric power plant were proposed in the 108th Congress but not passed into law (due, in part, to opposition from environmentalists), including President Bush's "Clear Skies" Initiative, whose stated goal is to reduce power plants' emissions of sulfur dioxide, nitrogen oxide, and mercury, by approximately 70% over the next 15 years. *Mercury Emissions:* The Bush Administration proposal (currently receiving public comment) would impose a mandatory 70% cut in mercury emissions from new and existing coal-fired plants by 2018. *Interstate Air Quality Rule:* The EPA has announced a proposal to require coal-burning power plants to make the steepest emissions cuts in over a decade. The Interstate Air Quality Rule will require power plants to substantially reduce emissions of sulfur dioxide (SO2) and nitrogen oxide (NOx). SO2 emissions will be cut by nearly 70% and NOx emissions by approximately 50%. *Emissions from Non-Road Heavy-Duty Diesels:* In April 2003, EPA issued a proposed rule that would dramatically reduce pollution from heavy duty diesel engines used in construction, agricultural, and industrial equipment. *Fuel Economy Standards for Light Trucks:* In April 2003, the National Highway Traffic Safety Administration (NHTSA) issued a final rule to boost the Corporate Average Fuel Economy (CAFE) of light trucks (a category which includes SUVs) by 1.5 mpg by 2007. *Efficiency Standards:* Re-establishment of air conditioner and heap pump efficiency standards, requiring a 30% increase in efficiency relative to current law.

The United States, with the world's largest economy, remains the world's largest single source of anthropogenic (human-caused) greenhouse gas emissions. Current projections indicate that U.S. emissions of carbon dioxide, which is released into the atmosphere when fossil fuels are burned, will reach 5,985 million metric tons in 2005, an increase of 1,083 million metric tons from the 4,902 million metric tons emitted in 1990, and around one-fourth of total world energy-related carbon emissions. On March 27, 2001, the Bush administration declared that the United States had "no interest" in implementing or ratifying the Kyoto treaty limiting greenhouse gas emissions, but that it would pursue other ways of addressing the climate change issue. To address the greenhouse gas emissions issue, the Bush Administration has proposed several initiatives:.

Greenhouse Gas Intensity: President Bush has called for reducing the ratio of greenhouse gas emissions to economic output by 18% by 2012 compared to 2002 (U.S. carbon emissions per dollar of GDP have been declining steadily since at least 1980). *R enewable Energy and Hybrid and Fuel-Cell Vehicles:* The Bush Administration has called for tax incentives totaling $4.1 billion through 2009 to spur the use of clean, renewable energy, and energy-efficient technologies, such as hybrid and fuel-cell vehicles, residential solar heating systems, renewable energy produced from landfill gas, wind, or biomass, and efficient combined heat and power systems. *Climate Change Research Initiative (CCRI):* The proposed FY 2005 budget includes $238 million for the Climate Change Research Initiative (CCRI), a $70 million, or 42%, increase over 2004 funding levels. *Federal Energy and Carbon Sequestration Programs.* With international and private-sector partners, the United States is sponsoring a $1 billion, 10-year demonstration project to create the world's first coal-based, zero-emissions electricity and hydrogen power plant (FutureGen). The Hydrogen Fuel Initiative combined with the FreedomCAR Partnership will provide $1.7 billion over the next five years to develop hydrogen-powered fuel cells, a hydrogen infrastructure, and advanced automobile technologies that emit no greenhouse gases.

State Energy/Environment Actions. As of the end of 2003, 15 States had legislated programs to encourage the development of renewable energy for electricity generation. In addition, several States have recently enacted air emission regulations that are intended to improve air quality.

COUNTRY OVERVIEW
President: George W. Bush (since January 20, 2001; reelected November 2, 2004)

Legislative Branch: Bicameral Congress (Senate, House of Representatives)
Judicial Branch: Supreme Court
Independence: July 4, 1776
Population (July 2004E): 293.0 million
Location/Size: North America, between Canada and Mexico/9,629,091 sq. km (3,717,792 sq. miles)., the third largest country in the world, behind Russia and Canada
Major Cities: Washington, DC (capital), New York, Los Angeles, Chicago, Houston, Miami, Philadelphia, etc.
Languages: English, Spanish (spoken by a sizable minority)
Ethnic Groups (2000): White (77.1%), Black (12.9%), Asian (4.2%), Native American (1.5%), other (4%). Note: Hispanics, who can be of any race, made up 11.8% of the U.S. population as of 8/1/2000.
Religions (1997): Protestant (58%), Roman Catholic (26%), Jewish (2%), other (6%), none (8%)

ECONOMIC OVERVIEW
Currency: Dollar ($)
Exchange Rates, per Dollar (12/15/2004): British Pound (0.51854); Canadian Dollar (1.2357); Euro (0.75177); Japanese Yen (105.56)
Gross Domestic Product (GDP) (2003E): $11.0 trillion; **(2004E):** $11.7 trillion
Real GDP Growth Rate: (2003E): 3.0% **(2004E):** 4.4%; **(2005F):** 3.4%
Inflation Rate (consumer price index) (2003E): 2.3%; **(2004E):** 2.6%; **(2005F):** 1.8%
Unemployment Rate (2002E): 5.8%; **(2003E):** 6.0%; **(3/04E):** 5.7%
Current Account Balance (2003E): -$531 billion; **(2004E):** -$663 billion;**(2005F):** -$703 billion
Merchandise Exports (2003E): $713 billion; **(2004E):** $807 billion; **(2005F):** $895 billion
Merchandise Imports (2003E): $1,261 billion; **(2004E):** $1,467 billion; **(2005F):** $1,571 billion
Merchandise Trade Balance (2003E): -$548 billion; **(2004E):** -$660 billion; **(2005F):** -$676 billion
Major Exports: Capital goods, automobiles, industrial supplies and raw materials, consumer goods, agricultural products
Major Imports: Crude oil and refined petroleum products, machinery, automobiles, consumer goods, industrial raw materials, food and beverages
Major Trading Partners: Canada, Japan, European Union, Mexico
Unified Federal Budget Balance (2003E): -$375 billion; **(2004E):** -$422 billion; **(2005F)**: -$348 billion

ENERGY OVERVIEW
Secretary of Energy: Spencer Abraham (since January 20, 2001)
Proven Oil Reserves (1/1/05E) (*Oil and Gas Journal*): 21.9 billion barrels
Oil Production (2003E): 7.8 million barrels per day (bbl/d), of which 5.7 million bbl/d is crude oil (Note: including "refinery gain," U.S. oil production in 2003 is estimated at 8.8 million bbl/d)
Oil Production (January-October 2004E): 7.7 million barrels per day (bbl/d), of which 5.4 million bbl/d is crude oil
Oil Consumption (2003E): 20.0 million bbl/d; **(January-October 2004E):** 20.4 million bbl/d
Net Oil Imports (2003E): 11.2 million bbl/d (56% of total consumption); **(January-October 2004E):** 11.8 million bbl/d (58% of total consumption)
Gross Oil Imports (2003E): 12.2 million bbl/d (of which, 9.6 million bbl/d was crude oil and 2.6 million bbl/d were petroleum products)
Crude Oil Imports from the Persian Gulf (2003E): 2.4 million bbl/d**; (January-October 2004E):** 2.4 million bbl/d
Top Sources of U.S. Crude Oil Imports (January-October 2004E): Canada (1.61 million bbl/d); Mexico (1.59 million bbl/d); Saudi Arabia (1.48 million bbl/d); Venezuela (1.29 million bbl/d);

Nigeria (1.09 million bbl/d)
Value of Gross Oil Imports (2003E): $132.4 billion (up from $102.7 billion in 2002); **(January-September 2004E):** $127.0 billion
Crude Oil Refining Capacity (1/1/05E) (*Oil and Gas Journal*): 16.8 million bbl/d (132 refineries)

Total Oil Stocks (12/10/04): 1.65 billion barrels (including about 673 million barrels in the U.S. Strategic Petroleum Reserve)
Oil Wells Drilled (2003): 6,284 (down from 8,060 during 2001); **(January-September 2004):** 4,391 (down from 4,871 during Jan.-Sep. 2003)
Operating Oil and Natural Gas Rotary Rigs in Operation (10/04E): 1,163 (1,068 for natural gas and 161 for oil)
Natural Gas Reserves (1/1/05E) (*Oil and Gas Journal*): 189 trillion cubic feet (Tcf)
Dry Natural Gas Production (2002E): 19.0 Tcf; **(2003E)**: 19.1 Tcf; **(2004F)**: 18.7 Tcf
Natural Gas Consumption (2002E): 23.0 Tcf; **(2003E)**: 21.9 Tcf; **(2004F)**: 21.9 Tcf
Gross Natural Gas Imports (2002E): 4.0 Tcf (94% from Canada); **(2003E):** 4.0 Tcf (87% from Canada); **(2004F):** 4.1 Tcf
Natural Gas Wells Drilled (2003E): 19,722 (up from 16,155 in 2002 but down from 22,083 in 2001); **(Jan.-Sep. 2004E):** 17,256
Recoverable Coal Reserves (12/31/98): 275.1 billion short tons (54% lignite and subbituminous; 46% anthracite and bituminous)
Coal Production (2002E): 1,094 million short tons (Mmst); **(2003E):** 1,072 Mmst; **(2004F)**: 1,105 Mmst
Coal Consumption (2002E): 1,066 Mmst; **(2003E):** 1,095 Mmst; **(2004F)**: 1,102 Mmst
Gross Coal Exports (2002E): 40 Mmst; **(2003E):** 43 Mmst; **(2004F)**: 51 Mmst
Gross Coal Imports (2002E): 17 Mmst; **(2003E):** 25 Mmst; **(2004F)**: 27 Mmst
Primary and Secondary Coal Stocks (closing; 8/04E): 150 Mmst (compared to 164 Mmst in 8/03)
Electric Net Summer Installed Capacity (2002E): 905 gigawatts (76% thermal-fired, 11% nuclear; 11% hydroelectric, and 2% "renewables")
Net Electricity Generation (2002E): 3,858 billion kilowatthours (Bkwh); **(2003E)**: 3,848 Bkwh; **(2004F)**: 3,921 Bkwh
Electricity End Use Consumption (2002E): 3,641 Bkwh; **(2003E):** 3,674 Bkwh; **(2004F):** 3735 Bkwh

ENVIRONMENTAL OVERVIEW
Administrator of the U.S. Environmental Protection Agency: Michael Leavitt (since November 6, 2003; succeeded Christie Todd Whitman)
Total Energy Consumption (2002E): 98.3 quadrillion Btu; **(2003E):** 98.1 quadrillion Btu (25% of world total energy consumption)
Energy-Related Carbon Dioxide Emissions (2002E): 5,796 million metric tons of carbon (about 24% of world total carbon emissions)
Per Capita Energy Consumption (2003E): 338 million Btu
Per Capita Carbon Dioxide Emissions (2002E): 20.3 metric tons
Energy Intensity (2003E; nominal): 8,918 Btu
Carbon Dioxide Intensity (2002E; nominal): 0.55 metric tons of carbon dioxide/thousand dollars
Sectoral Share of Energy Consumption (2003E): Industrial (33%), Transportation (27%), Residential (22%), Commercial (18%)
Fuel Share of Energy Consumption (2003E): Oil (40%), Coal (23%), Natural Gas (23%), Nuclear (8%), Hydroelectricity (3%), Other "renewables" (3%)
Fuel Share of Carbon Dioxide Emissions (2001E): Oil (44%), Coal (36%), Natural Gas (20%)
Renewable Energy Consumption (2003E): 6.1 quadrillion Btu (about 45% of which was

conventional hydroelectric power)
Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified October 15, 1992). In 2001, the U.S. announced that it would not ratify the Kyoto Protocol, citing its high cost to the economy and the lack of commitments from major developing nations.
Major Environmental Issues: Air pollution resulting in acid rain in both the US and Canada; the US is the largest single emitter of carbon dioxide from the burning of fossil fuels; water pollution from runoff of pesticides and fertilizers; very limited natural fresh water resources in much of the western part of the country; desertification.
Major International Environmental Agreements: A party to Conventions on Air Pollution, Air Pollution-Nitrogen Oxides, Antarctic-Environmental Protocol, Antarctic Treaty, Climate Change, Endangered Species, Environmental Modification, Marine Dumping, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands and Whaling. Has signed, but not ratified, Air Pollution-Persistent Organic Pollutants, Air Pollution-Volatile Organic Compounds, Biodiversity, Desertification, Hazardous Wastes.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

ENERGY INDUSTRY
Major U.S. Oil Companies (2002): BP, ChevronTexaco, Shell, ConocoPhillips, ExxonMobil, Occidental, Aera, Amerada Hess, Anadarko, Marathon, Unocal
Major U.S. Coal Companies (2003): Peabody Coal Co.; Kennecott Energy; Arch Coal.; RAG American Coal Holding; Consol Energy; Vulcan Partners; A.T. Massey; Horizon Natural Resources; North American Coal; Westmoreland Mining; TXU
Oil Pipelines (2001E): Around 2 million miles **Natural Gas Transmission Pipelines (2000E):** 250,000 miles
Major Ports: Baltimore, Chicago, Hampton Roads, Houston, Los Angeles, New Orleans, New York, Philadelphia

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Sources for this report include: Associated Press; Christian Science Monitor; Dallas Morning News; Dow Jones; EIU Viewswire; Energy Daily; Energy Report; Financial Times; Financial Times Energy Newsletters; Gas Daily; Global Insight; Houston Chronicle; Los Angeles Times; Megawatt Daily; New York Times; Oil and Gas Journal; Oil Daily; Petroleum Intelligence Weekly; Pipeline and Gas Journal; Platts Oilgram News; PR Newswire; Reuters; U.S. Energy Information Administration (numerous publications -- see links); USA Today; Washington Post; Weekly Petroleum Argus; World Gas Intelligence; World Markets Online; World Oil.

LINKS

For more information on U.S. energy, see these other sources on the EIA web site:
EIA - Short-Term Energy Outlook
EIA - Annual Energy Outlook
EIA - Monthly Energy Review
EIA - Petroleum Page
EIA - Natural Gas Page
Natural Gas Annual

EIA - Nuclear Page
EIA - Coal Page
EIA - Electricity Page
Electric Power Annual
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Links to other U.S. government sites:

CIA World Factbook - U.S.
U.S. Department of Energy's Office of Fossil Energy Home Page
U.S. Department of Energy: United States report
U.S. Department of Energy Home Page
U.S. Nuclear Regulatory Commission
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National Association of State Energy Officials
National Renewable Energy Laboratory (NREL)

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Independent Petroleum Association of America
Petroleum Marketers Association of America
National Petroleum Refiners Association
American Gas Association
National Mining Association
Electric Power Research Institute
Edison Electric Institute
North American Electric Reliability Council
Nuclear Energy Institute
Global Climate Coalition
Resources for the Future
Export Council for Energy Efficiency
Alliance to Save Energy
American Solar Energy Society
Solar Energy Industries Association
American Wind Energy Association
Geothermal Energy Association
American Bioenergy Association

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