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Overview of Hydrocarbon Production, Consumption, Reserves and Potential, at World and Local Scales

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Statistics on Hydrocarbon Production, Consumption, Reserves and Resources at World and Country Scales

Oil and Gas Production, Reserves and Consumption

Hydrocarbon (oil and gas) production and consumption, along with remaining resources, are irregularly distributed across the world and within countries. Daily world hydrocarbon production, in 1999, was 72.6 million barrels of oil (mbo) and 232 billion cubic feet of gas (bcfg). Daily average production in 1999, for North America, was 14 mbo and 71.7 bcfg, and, for the United States, it was 8.1 mbo and 50.9 bcfg. North American average daily consumption for 1999 was 23.4 mbo and 71.5 bcfg. The United States produced 42 percent of the oil and 85 percent of the gas it consumed in 1999. Onshore federal lands in the United States account for 29 percent of the land area, but contribute only 5.1 percent of oil and 8.8 percent of gas produced in 1995.

As of January 1, 2000, world reserves were reported at approximately one trillion barrels of oil and about 5,200 trillion cubic feet (tcf) of gas. Most of the world's oil reserves are located in the Middle East (nearly 66 percent) and most gas reserves are in eastern Europe and the Former Soviet Union (38 percent). North America contains reserves of 55 billion barrels (bbl) of oil and 261 tcf of gas (as of January 1, 2000), or 5.5 percent of the world's oil reserves and 5 percent of the world's gas reserves. The United States contains reserves of 22 bbl of oil and 167 tcf of gas, or 2.2 percent of the world's oil and 3.2 percent of the world's gas reserves. About 26 percentage of the world total production was used by the United States.

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Undiscovered Oil and Gas Resources

Estimates of undiscovered volumes of oil and gas often mirror the geographic distribution seen in the reserve numbers. Recent world totals for mean estimates of undiscovered oil and gas are 724 bbl and 5,196 tcf, respectively. The former Soviet Union, the Middle East and North Africa are estimated to contain 47 percent of the world's undiscovered oil and 57 percent of the world's undiscovered gas. Mean estimates of undiscovered North American oil and gas are 146 bbl and 682 tcf, respectively, or 20 percent and 13 percent. Mean estimates of undiscovered oil and gas in the United States are 83.6 bbl and 527 tcf. These estimates are 11.6 percent and 10 percent of the world's undiscovered oil and gas resources, respectively. Mean total estimated volumes of oil and gas in onshore federal lands are 11.1 bbl and 201 tcf, as of January 1994. The preceding numbers do not include the possible additions to known reserves from the phenomenon of field growth, which is the increase in recoverable oil and gas as a result of continued development, technologic improvements in recovery, underestimation of original reserves and other factors.

Domestic oil production generally has decreased since 1985. This decrease will result in increased reliance on imported oil, even if our future usage remains constant. Projections of increases in United States gas consumption will require a corresponding increase in United States gas production and importation. More than 2.8 million wells have been drilled across the United States, and there are more than 39,000 oil and gas fields. Although discovery of new oil and gas fields continues and new types of reservoirs are recognized, most of the large oil and gas fields in the United States have been discovered.

Oil and gas reserves and resources have been assessed at world, country, basin and state scales, and much of this information is available on the web. Data for this summary came from several sources. Historical production, consumption and reserves data for the United States' oil and gas were accessed the from United States Department of Energy's websites: *http://www.eia.doe.gov/neic/historic/hpetroleum.htm* and *http://www.eia.doe.gov/neic/historic/hngas.htm* (September 18, 2001). Historical production, consumption and reserves data for worldwide oil and gas (exclusive of the United States) were accessed from the United States Department of Energy's

websites: *http://www.eia.doe.gov/emeu/international/petroleum.html* and *http://www.eia.doe.gov/emeu/international/gas.html* (September 14, 2001). Estimates of the world's undiscovered oil and gas (exclusive of the United States) were taken from United States Geological Survey World Energy Assessment Team (2000), and similar estimates for the United States were taken from Gautier and others (1996), unless otherwise noted. Included within the Gautier et al. (1996) CD-ROM are oil and gas reserve and resource estimates for formations in basins across the United States.

Oil and Gas Reserves and Resources for the Powder River Basin of Wyoming and for Wyoming

Proven oil reserves on existing fields for Wyoming was 561 mmb (Energy Information Administration 2001). This is 2.54 percent of the total United States reserves. Most future drilling for conventional oil and gas in Wyoming will be for smaller fields, or will be infill drilling within existing fields. An exception to this is unconventional gas from coal beds. Coal bed gas is a recently recognized commercial source of natural gas. The Wyoming Oil and Gas Commission reports that there are more than 18,000 active well permits for coal bed gas in the Powder River Basin of eastern Wyoming. More than 5,000 of these wells have been drilled and are currently producing gas or water. The federal government owns mineral rights for more than 50 percent of the land in the Powder River Basin. About 14 percent of coal bed gas wells are on federal lands; the majority are on state and private lands. The Wyoming Oil and Gas Conservation Commission lists cumulative production from coal bed gas wells at more than 350 Bcf and 880 mmb of water in the Powder River Basin (through December, 2001) and almost 500 Bcf for the State (Wyoming Oil and Gass Conservation 2000).

In April, 2000, the American Association of Petroleum Geologists Explorer listed estimated recoverable gas reserves and resources of 6 to 9 tcf of coal-bed methane in the Powder River Basin. The United States Geological Survey (1996) estimated the mean potential additions to reserves of gas, or resources, in the Powder River Basin at about 14 tcf. Additional information on Wyoming oil and gas reserves and resources can be found at *http://www.wims.uwyo.edu* (University of Wyoming 2000) and *http://www.wsgweb.uwyo.edu* (Wyoming Geological Survey 2000).

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