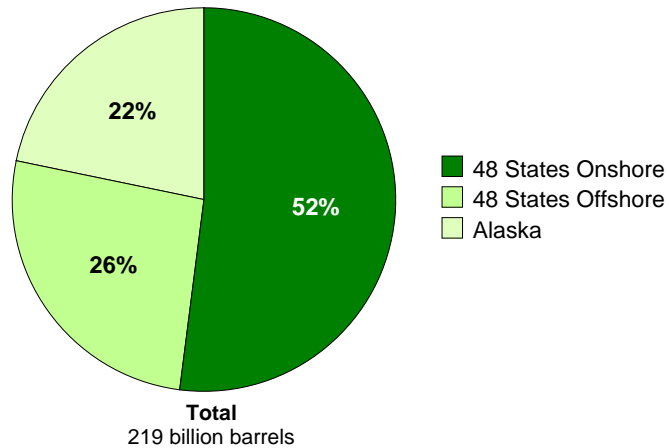


4. Energy Resources

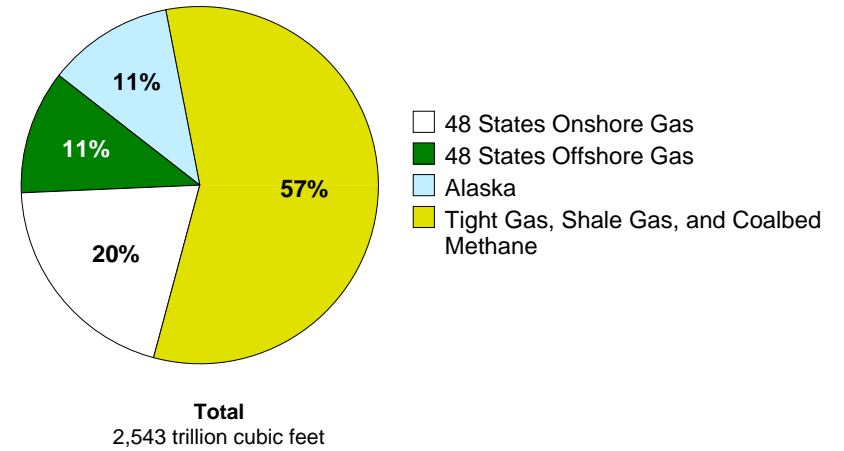


Figure 4.1 Technically Recoverable Crude Oil and Natural Gas Resource Estimates, 2008

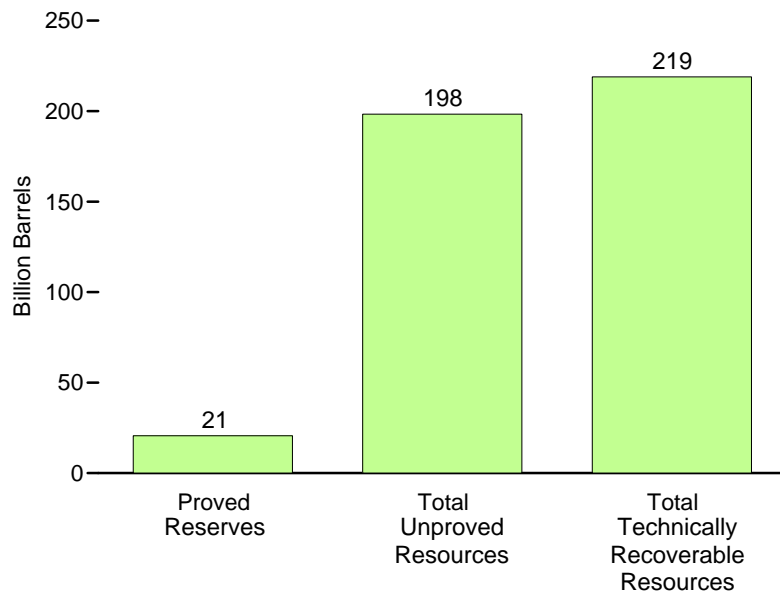
Crude Oil and Lease Condensate, Total Technically Recoverable Resources



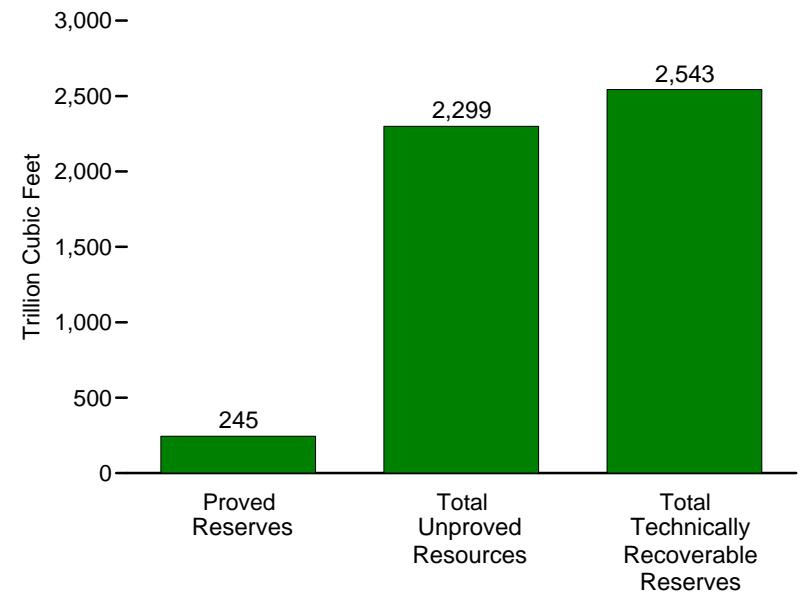
Dry Natural Gas, Total Technically Recoverable Resources



Crude Oil and Lease Condensate by Type



Dry Natural Gas by Type



Note: Sum of components may not equal 100 percent due to independent rounding.

Source: Table 4.1.

Table 4.1 Technically Recoverable Crude Oil and Natural Gas Resource Estimates, 2008

Region	Proved Reserves	Unproved Resources			Total Technically Recoverable Resources
		Inferred Reserves ¹	Undiscovered Resources	Total Unproved	
Crude Oil and Lease Condensate (billion barrels)					
48 States Onshore	12.7	50.1	51.1	101.2	113.9
48 States Offshore	4.3	10.3	42.7	53.0	57.4
Alaska	3.5	2.1	42.0	44.1	47.6
Total U.S.	20.6	62.5	135.8	198.3	218.9
Dry Natural Gas ² (trillion cubic feet)					
Conventionally Reservoired Fields ³	102.8	312.2	673.0	985.3	1,088.0
48 States Onshore Gas ⁴	78.7	236.1	197.8	433.9	512.5
48 States Offshore Gas ⁵	16.4	51.3	217.7	269.1	285.5
Alaska	7.7	24.8	257.5	282.3	290.0
Tight Gas, Shale Gas, and Coalbed Methane	141.9	1,208.1	105.3	1,313.4	1,455.3
Total U.S.	244.7	1,520.3	778.3	2,298.6	2,543.3

¹ Inferred reserves (reserve growth) is the volume by which the estimate of total recovery from a known crude oil or natural gas reservoir or aggregation of such reservoirs is expected to increase during the time between discovery and permanent abandonment.

² Natural gas plant liquids are not included.

³ Conventionally reservoired deposits are discrete subsurface accumulations of crude oil or natural gas usually defined, controlled, or limited by hydrocarbon/water contacts.

⁴ Includes associated-dissolved (AD) natural gas that occurs in crude oil reservoirs either as free gas (associated) or as gas in solution with crude oil (dissolved).

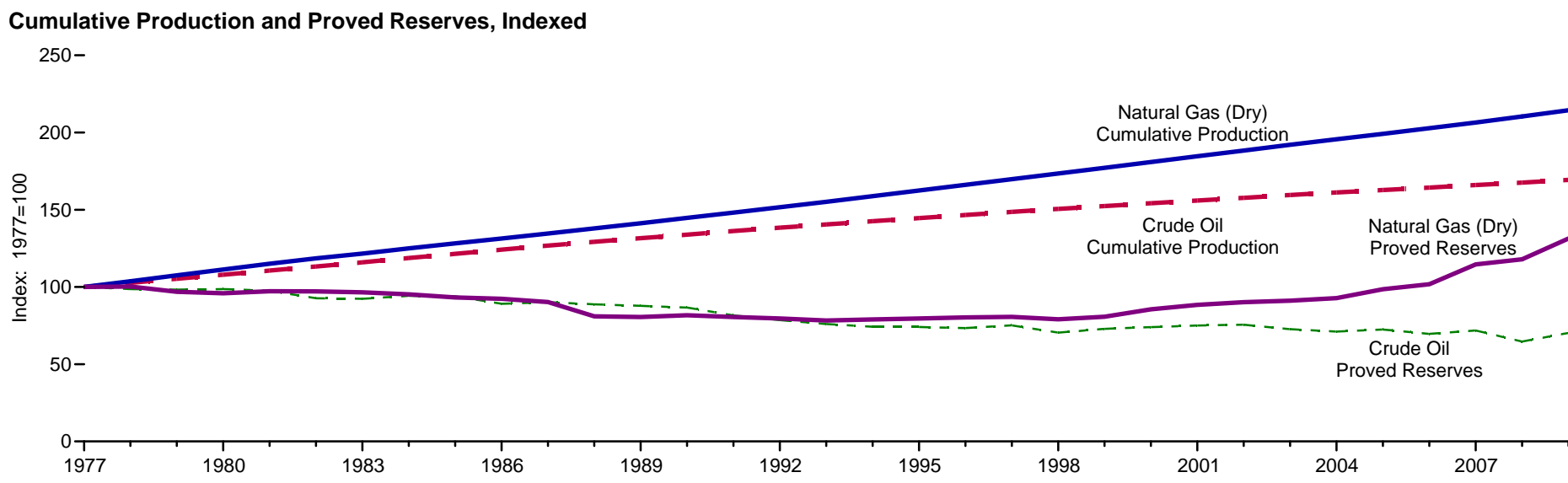
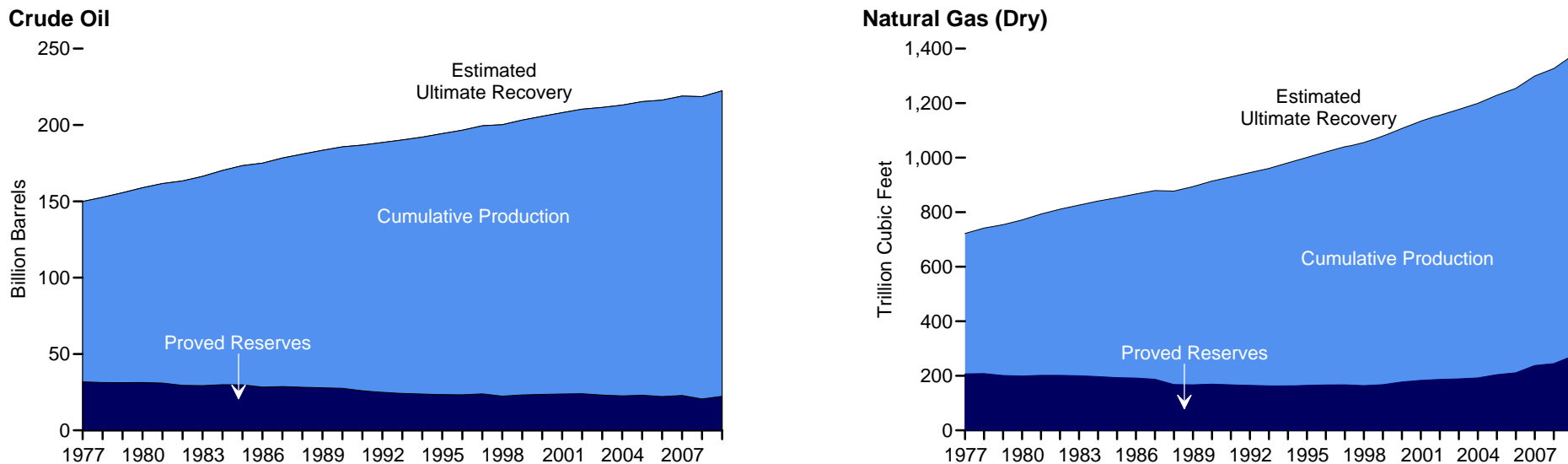
⁵ Includes Federal offshore and State offshore waters (near-shore, shallow-water areas under State jurisdiction).

Notes: • Data are at end of year. • "Technically recoverable" resources are those that are producible using current technology without reference to the economic viability thereof. • Resources in areas where

drilling is officially prohibited are not included. Estimates of the resources in the Northern Atlantic, Northern and Central Pacific, and within a 50-mile buffer off the Mid and Southern Atlantic OCS are also excluded from the technically recoverable volumes. • "48 States" is the United States excluding Alaska and Hawaii. • Totals may not equal sum of components due to independent rounding.

Sources: **Proved Reserves:** U.S. Energy Information Administration (EIA), Office of Energy Statistics. Table values reflect the removal of intervening reserve additions between the date of the last available assessment and December 31, 2008. **Inferred Reserves:** EIA, Office of Energy Analysis. **Undiscovered Onshore, State Offshore, and Alaska:** National Oil and Gas Resource Assessment Team, United States Geological Survey with adjustments made to shale gas by Intek, Inc., and the EIA, Office of Energy Analysis, Oil and Gas Production Analysis Team. **Undiscovered Federal (Outer Continental Shelf) Offshore:** Bureau of Ocean Energy Management, Regulation and Enforcement.

Figure 4.2 Crude Oil and Natural Gas Cumulative Production, Proved Reserves, and Estimated Ultimate Recovery, 1977-2009



Notes: • Data are at end of year. • Crude oil includes lease condensate.

Source: Table 4.2.

Table 4.2 Crude Oil and Natural Gas Cumulative Production, Proved Reserves, and Estimated Ultimate Recovery, 1977-2009

Year	Crude Oil and Lease Condensate ¹			Natural Gas (Dry)		
	Cumulative Production	Proved Reserves ²	Estimated Ultimate Recovery ³	Cumulative Production	Proved Reserves ⁴	Estimated Ultimate Recovery ³
	Billion Barrels			Trillion Cubic Feet		
1977	118.1	31.8	149.9	514.4	207.4	721.9
1978	121.3	31.4	152.6	533.6	208.0	741.6
1979	124.4	31.2	155.6	553.2	201.0	754.2
1980	127.5	31.3	158.9	572.6	199.0	771.6
1981	130.7	31.0	161.7	591.8	201.7	793.5
1982	133.8	29.5	163.3	609.6	201.5	811.1
1983	137.0	29.3	166.3	625.7	200.2	826.0
1984	140.2	30.0	170.2	643.2	197.5	840.7
1985	143.5	29.9	173.4	659.6	193.4	853.0
1986	146.7	28.3	175.0	675.7	191.6	867.3
1987	149.7	28.7	178.4	692.3	187.2	879.5
1988	152.7	28.2	180.9	709.4	168.0	877.4
1989	155.5	27.9	183.4	726.7	167.1	893.9
1990	158.2	27.6	185.7	744.5	169.3	913.9
1991	160.9	25.9	186.8	762.2	167.1	929.3
1992	163.5	25.0	188.5	780.1	165.0	945.1
1993	166.0	24.1	190.2	798.2	162.4	960.6
1994	168.4	23.6	192.0	817.0	163.8	980.8
1995	170.8	23.5	194.4	835.6	165.1	1,000.7
1996	173.2	23.3	196.5	854.5	166.5	1,020.9
1997	175.6	23.9	199.4	873.4	167.2	1,040.6
1998	177.8	22.4	200.2	892.4	164.0	1,056.4
1999	180.0	23.2	203.1	911.2	167.4	1,078.6
2000	182.1	23.5	205.6	930.4	177.4	1,107.8
2001	184.2	23.8	208.1	950.0	183.5	1,133.5
2002	186.3	24.0	210.4	968.9	186.9	1,155.9
2003	188.4	23.1	211.5	988.0	189.0	1,177.1
2004	190.4	22.6	213.0	1,006.6	192.5	1,199.1
2005	192.3	23.0	215.3	^R 1,024.7	204.4	^R 1,229.1
2006	194.1	^R 22.3	^R 216.4	^R 1,043.2	211.1	^R 1,254.3
2007	^R 196.0	22.8	^R 218.8	^R 1,062.4	237.7	^R 1,300.2
2008	^R 197.8	20.6	^R 218.3	^R 1,082.6	244.7	^R 1,327.3
2009	199.8	22.3	222.1	1,103.2	272.5	1,375.7

¹ Lease condensate is the portion of natural gas liquids that is separated from the wellhead gas stream at a lease or field separation facility.

² See "Proved Reserves, Crude Oil" and "Proved Reserves, Lease Condensate" in Glossary.

³ "Estimated ultimate recovery" (EUR) is the sum of the estimate of proved reserves at a specific time and cumulative production up to that time.

⁴ See "Proved Reserves, Natural Gas" in Glossary.

R=Revised.

Note: Data are at end of year.

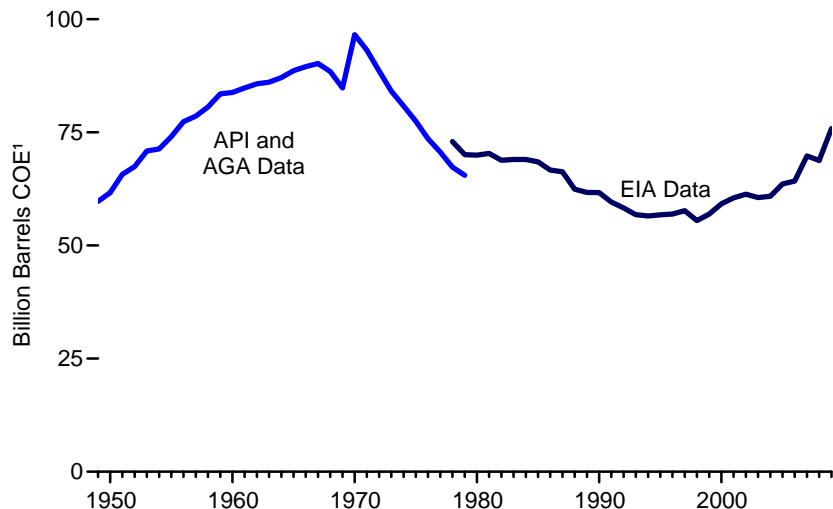
Web Pages: See <http://www.eia.gov/petroleum/> and <http://www.eia.gov/naturalgas/> for related information.

Sources: **Cumulative Production:** Calculated from U.S. Energy Information Administration (EIA), *Petroleum Supply Annual*, annual reports and *Natural Gas Annual*, annual reports. **Proved Reserves:**

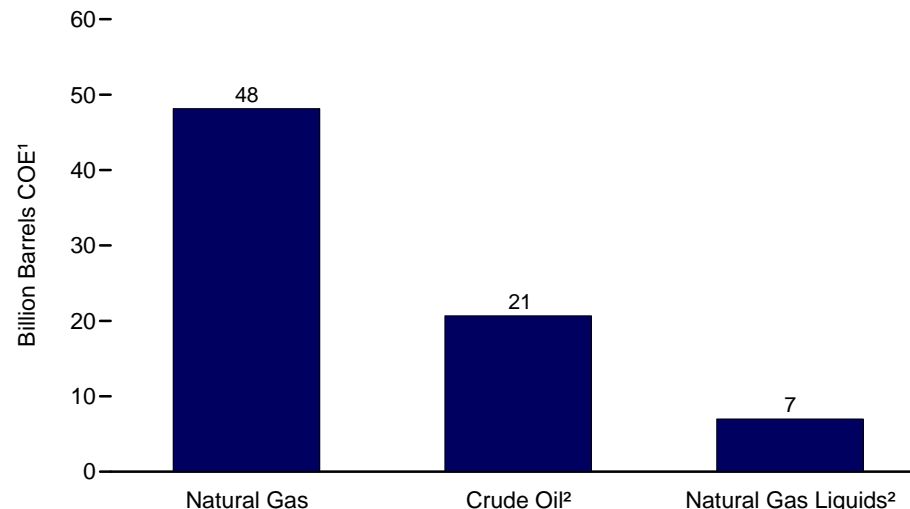
- 1977-2000—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, annual reports.
- 2001-2009—EIA, *Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves 2009* (November 2010), Table 7. **Estimated Ultimate Recovery:** Calculated as the sum of cumulative production and proved reserves.

Figure 4.3 Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves

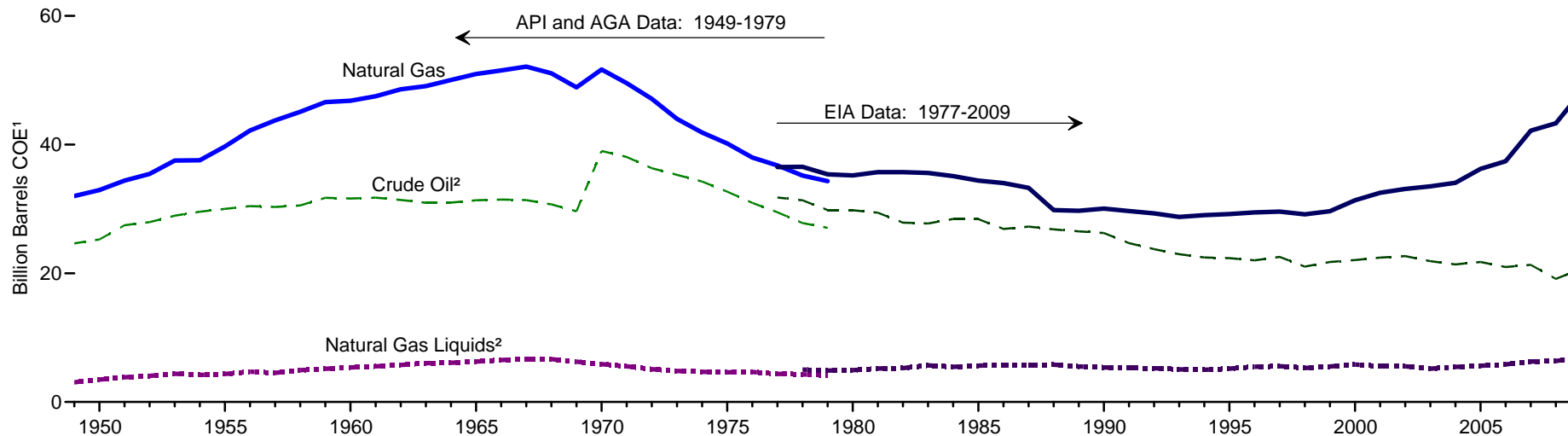
Total, 1949-2009



By Type, 2009



By Type, 1949-2009



¹ COE=crude oil equivalent.

² To the extent that lease condensate is measured or estimated it is included in "Natural Gas Liquids"; otherwise, lease condensate is included in "Crude Oil."

Notes: • Data are at end of year. • API=American Petroleum Institute. AGA=American Gas Association. EIA=U.S. Energy Information Administration. Source: Table 4.3.

Table 4.3 Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves, Selected Years, 1949-2009

Year	Crude Oil ¹	Natural Gas (Dry)		Natural Gas Liquids ¹		Total
	Billion Barrels	Trillion Cubic Feet ²	Billion Barrels COE ³	Billion Barrels	Billion Barrels COE ³	Billion Barrels COE ³
American Petroleum Institute and American Gas Association Data						
1949	24.6	179.4	32.0	3.7	3.1	59.7
1950	25.3	184.6	32.9	4.3	3.5	61.7
1955	30.0	222.5	39.7	5.4	4.4	74.1
1960	31.6	262.3	46.8	6.8	5.4	83.8
1965	31.4	286.5	51.0	8.0	6.3	88.6
1970	39.0	290.7	51.7	7.7	5.9	96.6
1971	38.1	278.8	49.6	7.3	5.5	93.2
1972	36.3	266.1	47.1	6.8	5.1	88.5
1973	35.3	250.0	44.0	6.5	4.8	84.1
1974	34.2	237.1	41.9	6.4	4.7	80.8
1975	32.7	228.2	40.2	6.3	4.6	77.5
1976	30.9	216.0	38.0	6.4	4.7	73.6
1977	29.5	208.9	36.8	6.0	4.4	70.6
1978	27.8	200.3	35.2	5.9	4.3	67.3
1979	27.1	194.9	34.3	5.7	4.1	65.5
U.S. Energy Information Administration Data						
1977	31.8	207.4	36.5	NA	NA	NA
1978	31.4	208.0	36.5	6.8	5.0	73.0
1979	29.8	201.0	35.4	6.6	4.9	70.1
1980	29.8	199.0	35.2	6.7	5.0	70.0
1981	29.4	201.7	35.7	7.1	5.2	70.4
1982	27.9	201.5	35.7	7.2	5.3	68.8
1983	27.7	200.2	35.6	7.9	5.7	69.0
1984	28.4	197.5	35.1	7.6	5.5	69.0
1985	28.4	193.4	34.4	7.9	5.6	68.5
1986	26.9	191.6	34.0	8.2	5.8	66.7
1987	27.3	187.2	33.3	8.1	5.8	66.3
1988	26.8	168.0	29.8	8.2	5.8	62.4
1989	26.5	167.1	29.7	7.8	5.5	61.7
1990	26.3	169.3	30.0	7.6	5.4	61.7
1991	24.7	167.1	29.7	7.5	5.3	59.6
1992	23.7	165.0	29.3	7.5	5.2	58.3
1993	23.0	162.4	28.8	7.2	5.1	56.8
1994	22.5	163.8	29.0	7.2	5.0	56.5
1995	22.4	165.1	29.2	7.4	5.2	56.8
1996	22.0	166.5	29.4	7.8	5.5	56.9
1997	22.5	167.2	29.6	8.0	5.6	57.7
1998	21.0	164.0	29.2	7.5	5.3	55.5
1999	21.8	167.4	29.6	7.9	5.5	56.9
2000	22.0	177.4	31.4	8.3	5.8	59.2
2001	22.4	183.5	32.5	8.0	5.6	60.5
2002	22.7	186.9	33.1	8.0	5.6	61.3
2003	21.9	189.0	33.5	7.5	5.2	60.6
2004	21.4	192.5	34.1	7.9	5.5	60.9
2005	21.8	204.4	36.2	8.2	5.6	63.6
2006	21.0	211.1	37.4	8.5	5.8	64.2
2007	21.3	237.7	42.2	9.1	6.3	69.8
2008	19.1	244.7	43.3	9.3	6.4	68.8
2009	20.7	272.5	48.2	10.2	7.0	75.8

¹ To the extent that lease condensate is measured or estimated it is included in "Natural Gas Liquids"; otherwise, lease condensate is included in "Crude Oil."

² The American Gas Association estimates of natural gas proved reserves include volumes of natural gas held in underground storage. In 1979, this volume amounted to 4.9 trillion cubic feet. U.S. Energy Information Administration (EIA) data do not include natural gas in underground storage.

³ Natural gas is converted to crude oil equivalent (COE) by multiplying by the natural gas dry production approximate heat content (see Table A4) and then dividing by the crude oil production approximate heat content (see Table A2). The lease condensate portion of natural gas liquids is converted to COE by multiplying by the lease condensate production approximate heat content (5.5 million Btu per barrel) and then dividing by the crude oil production approximate heat content. Other natural gas liquids are converted to COE by multiplying by the natural gas plant liquids production approximate heat content (see Table A2) and then dividing by the crude oil production approximate heat content.

NA=Not available.

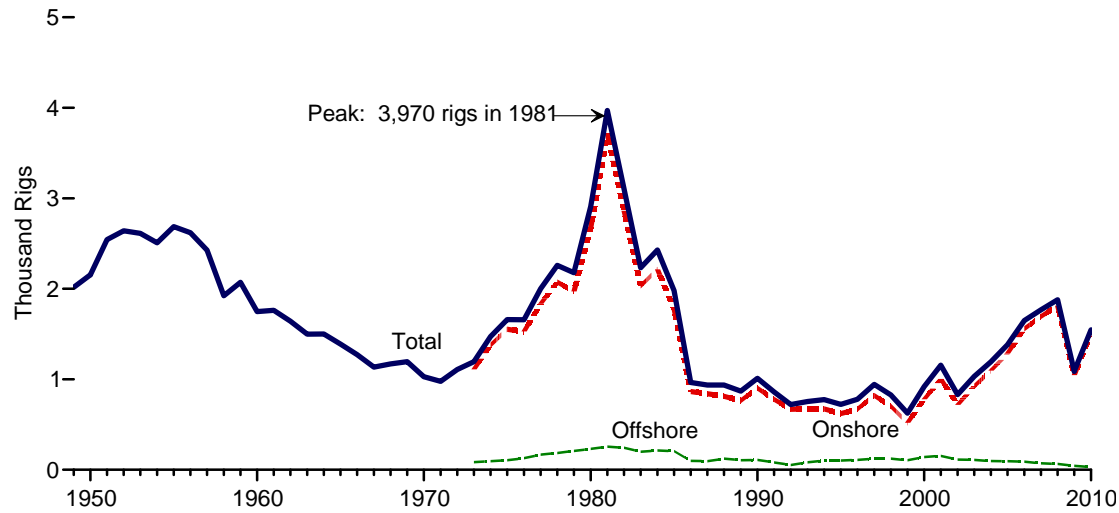
Notes: • Data are at end of year. • See "Proved Reserves, Crude Oil," "Proved Reserves, Natural Gas," and "Proved Reserves, Natural Gas Liquids" in Glossary.

Web Pages: • See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1949. • For related information, see <http://www.eia.gov/petroleum/>.

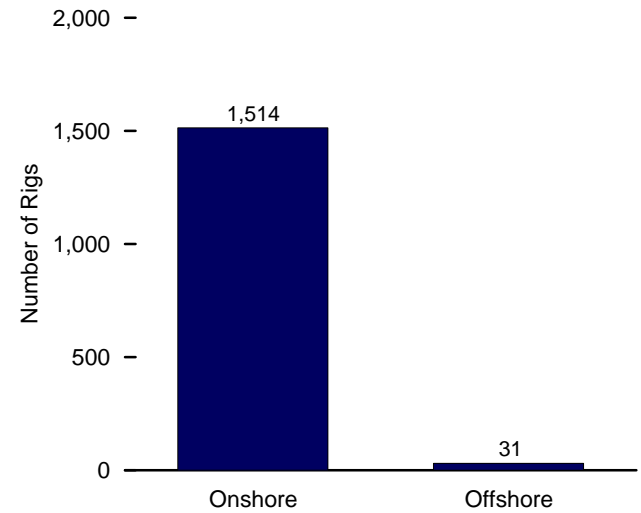
Sources: **American Petroleum Institute and American Gas Association Data:** American Petroleum Institute, American Gas Association, and Canadian Petroleum Association (published jointly), *Reserves of Crude Oil, Natural Gas Liquids and Natural Gas in the United States and Canada as of December 31, 1979*, Volume 34 (June 1980). **U.S. Energy Information Administration Data:** • 1977-2008—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, annual reports. • 2009—EIA, *Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2009* (November 2010), Tables 7 and 17.

Figure 4.4 Crude Oil and Natural Gas Rotary Rigs in Operation

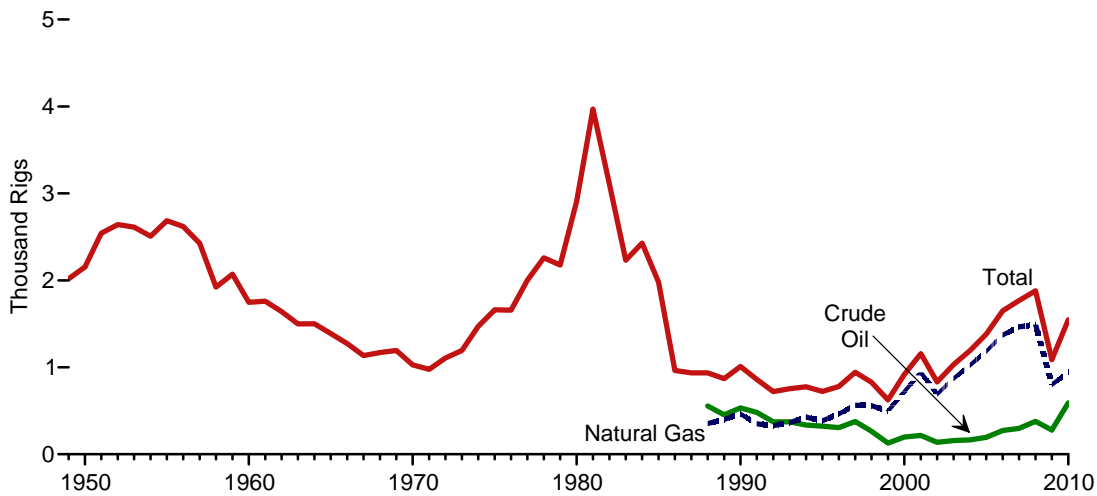
By Site, 1949-2010



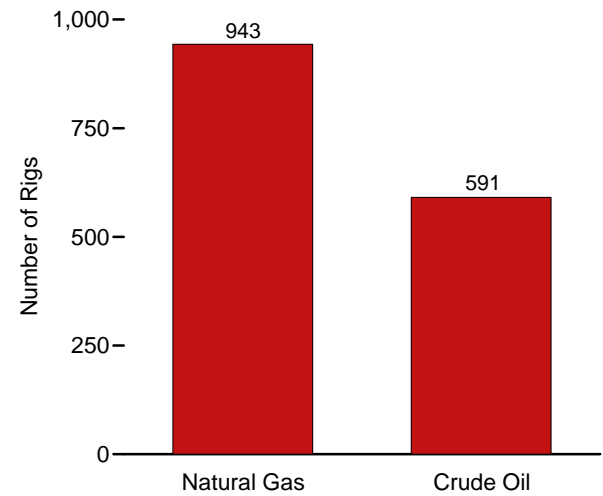
By Site, 2010



By Type, 1949-2010



By Type¹, 2010



¹ Rigs drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests, are not shown.

Source: Table 4.4.

Table 4.4 Crude Oil and Natural Gas Rotary Rigs in Operation, Selected Years, 1949-2010
(Number of Rigs)

Year	By Site		By Type		Total ¹
	Onshore	Offshore	Crude Oil	Natural Gas	
1949	NA	NA	NA	NA	2,017
1950	NA	NA	NA	NA	2,154
1955	NA	NA	NA	NA	2,686
1960	NA	NA	NA	NA	1,748
1965	NA	NA	NA	NA	1,388
1970	NA	NA	NA	NA	1,028
1975	1,554	106	NA	NA	1,660
1976	1,529	129	NA	NA	1,658
1977	1,834	167	NA	NA	2,001
1978	2,074	185	NA	NA	2,259
1979	1,970	207	NA	NA	2,177
1980	2,678	231	NA	NA	2,909
1981	3,714	256	NA	NA	3,970
1982	2,862	243	NA	NA	3,105
1983	2,033	199	NA	NA	2,232
1984	2,215	213	NA	NA	2,428
1985	1,774	206	NA	NA	1,980
1986	865	99	NA	NA	964
1987	841	95	NA	NA	936
1988	813	123	554	354	936
1989	764	105	453	401	869
1990	902	108	532	464	1,010
1991	779	81	482	351	860
1992	669	52	373	331	721
1993	672	82	373	364	754
1994	673	102	335	427	775
1995	622	101	323	385	723
1996	671	108	306	464	779
1997	821	122	376	564	943
1998	703	123	264	560	827
1999	519	106	128	496	625
2000	778	140	197	720	918
2001	1,003	153	217	939	1,156
2002	717	113	137	691	830
2003	924	108	157	872	1,032
2004	1,095	97	165	1,025	1,192
2005	1,287	94	194	1,184	1,381
2006	1,559	90	274	1,372	1,649
2007	1,695	72	297	1,466	1,768
2008	1,814	65	379	1,491	1,879
2009	1,046	44	278	801	1,089
2010	1,514	31	591	943	1,546

¹ Sum of rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown) drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests.

NA=Not available.

Notes: • Data are not for the exact calendar year but are an average for the 52 or 53 consecutive whole

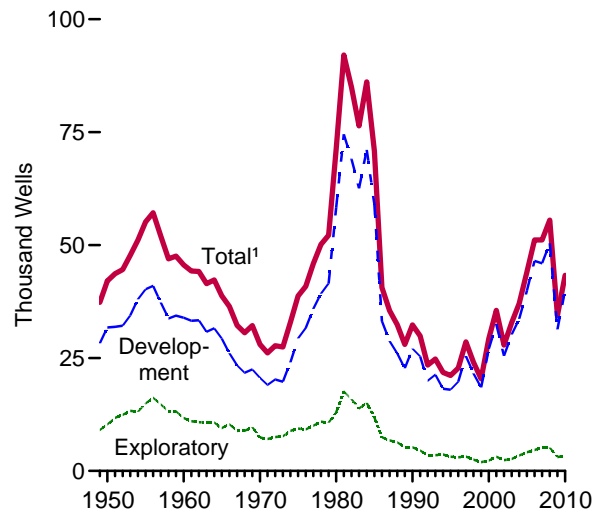
weeks that most nearly coincide with the calendar year. • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Web Page: See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1949.

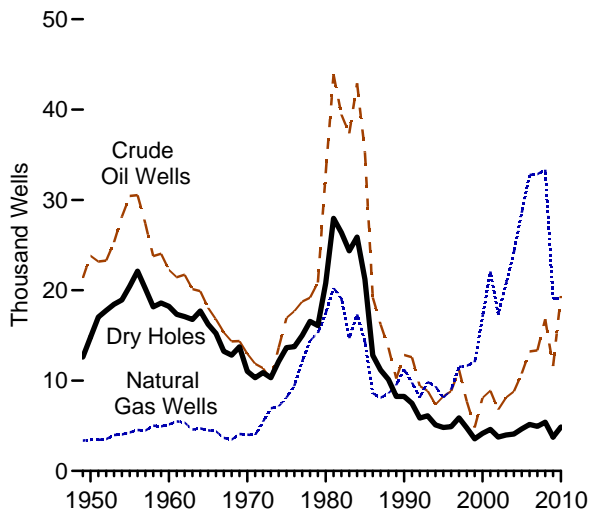
Source: Baker Hughes, Inc., Houston, Texas, *Rotary Rigs Running—By State*.

Figure 4.5 Crude Oil and Natural Gas Exploratory and Development Wells

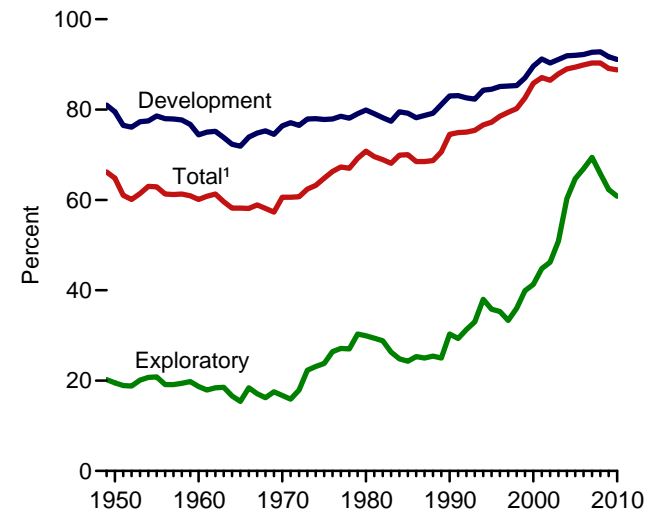
Total Wells Drilled, 1949-2010



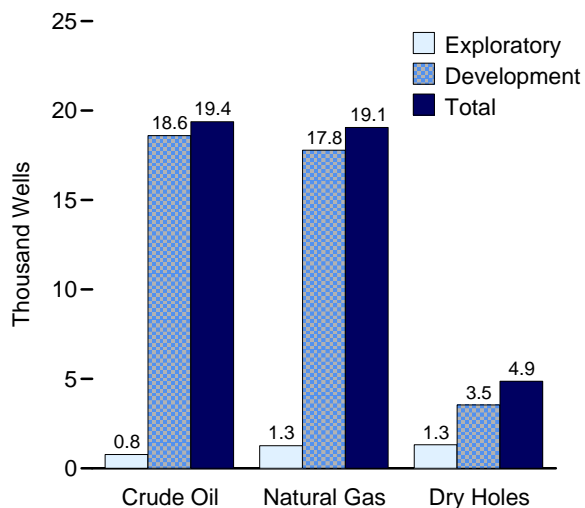
Total Wells Drilled by Type, 1949-2010



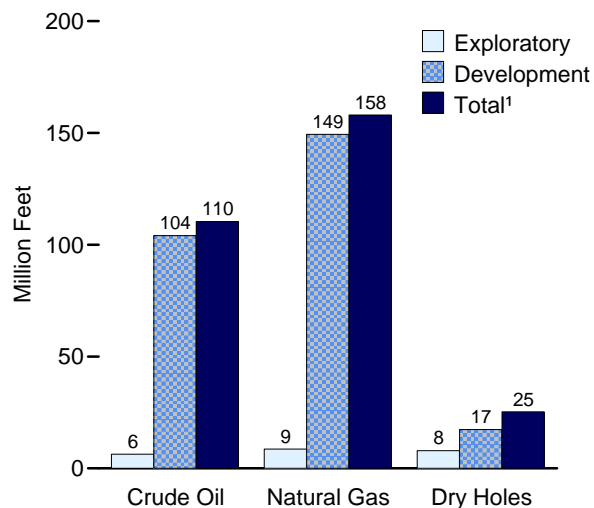
Successful Wells, 1949-2010



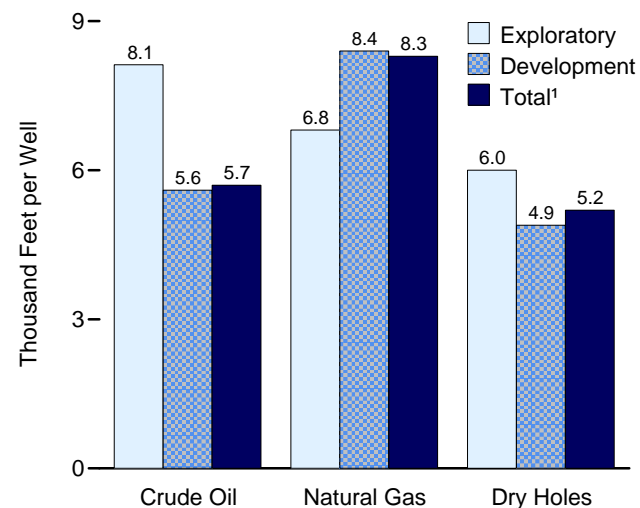
Wells Drilled, 2010



Footage Drilled, 2010



Average Depth, 2010



¹ Data are for exploratory and development wells combined.

Sources: Tables 4.5-4.7.

Table 4.5 Crude Oil and Natural Gas Exploratory and Development Wells, Selected Years, 1949-2010

Year	Wells Drilled				Successful Wells	Footage Drilled ¹				Average Footage Drilled			
	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total		Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total
	Number					Percent	Thousand Feet				Feet per Well		
1949	21,352	3,363	12,597	37,312	66.2	79,428	12,437	43,754	135,619	3,720	3,698	3,473	3,635
1950	23,812	3,439	14,799	42,050	64.8	92,695	13,685	50,977	157,358	3,893	3,979	3,445	3,742
1955	30,432	4,266	20,452	55,150	62.9	121,148	19,930	85,103	226,182	3,981	4,672	4,161	4,101
1960	22,258	5,149	18,212	45,619	60.1	86,568	28,246	77,361	192,176	3,889	5,486	4,248	4,213
1965	18,065	4,482	16,226	38,773	58.2	73,322	24,931	76,629	174,882	4,059	5,562	4,723	4,510
1970	12,968	4,011	11,031	28,010	60.6	56,859	23,623	58,074	138,556	4,385	5,860	5,265	4,943
1975	16,948	8,127	13,646	38,721	64.8	66,819	44,454	69,220	180,494	3,943	5,470	5,073	4,661
1976	17,688	9,409	13,758	40,855	66.3	68,892	49,113	68,977	186,982	3,895	5,220	5,014	4,577
1977	18,745	12,122	14,985	45,852	67.3	75,451	63,686	76,728	215,866	4,025	5,254	5,120	4,708
1978	19,181	14,413	16,551	50,145	67.0	77,041	75,841	85,788	238,669	4,017	5,262	5,183	4,760
1979	20,851	15,254	16,099	52,204	69.2	82,688	80,468	81,642	244,798	3,966	5,275	5,071	4,689
1980	32,959	17,461	20,785	71,205	70.8	125,262	92,106	99,575	316,943	3,801	5,275	4,791	4,451
1981	43,887	20,250	27,953	92,090	69.6	172,167	108,353	134,934	415,454	3,923	5,351	4,827	4,511
1982	39,459	19,076	26,379	84,914	68.9	149,674	107,149	123,746	380,569	3,793	5,617	4,691	4,482
1983	37,366	14,684	24,355	76,405	68.1	136,849	78,108	105,222	320,179	3,662	5,319	4,320	4,191
1984	42,906	17,338	25,884	86,128	69.9	162,653	91,480	119,860	373,993	3,791	5,276	4,631	4,342
1985	35,261	14,324	21,211	70,796	70.0	137,728	76,293	100,388	314,409	3,906	5,326	4,733	4,441
1986	19,213	8,599	12,799	40,611	68.5	76,825	45,039	60,961	182,825	3,999	5,238	4,763	4,502
1987	16,210	8,096	11,167	35,473	68.5	66,358	42,584	53,588	162,530	4,094	5,260	4,799	4,582
1988	13,646	8,578	10,119	32,343	68.7	58,639	45,363	52,517	156,519	4,297	5,288	5,190	4,839
1989	10,230	9,522	8,236	27,988	70.6	43,266	49,081	42,099	134,446	4,229	5,154	5,112	4,804
1990	R12,839	R11,246	R8,245	R32,330	74.5	R56,611	R57,075	R42,538	R156,224	R4,409	R5,075	R5,159	R4,832
1991	R12,588	R9,793	R7,481	R29,862	74.9	R56,259	R51,081	R37,857	R145,197	R4,469	R5,216	R5,060	R4,862
1992	R9,402	R8,163	R5,862	R23,427	75.0	R45,817	R44,813	R29,477	R120,107	R4,873	R5,490	R5,028	R5,127
1993	R8,856	R9,839	R6,096	R24,791	75.4	R44,324	R58,384	R31,117	R133,825	R5,005	R5,934	R5,104	R5,398
1994	R7,348	R9,375	R5,096	R21,819	76.6	R38,675	R58,439	R27,828	R124,942	R5,263	R6,233	R5,461	R5,726
1995	R8,248	R8,082	R4,814	R21,144	77.2	R41,146	R49,840	R26,397	R117,383	R4,989	R6,167	5,483	R5,552
1996	R8,836	R9,027	4,890	R22,753	78.5	R42,517	R56,250	R27,884	R126,651	R4,812	R6,231	R5,702	R5,566
1997	R11,206	R11,498	5,874	R28,578	79.4	R56,451	R71,551	R33,741	R161,743	R5,038	R6,223	R5,744	R5,660
1998	R7,682	R11,639	R4,761	R24,082	80.2	R38,683	R70,375	R28,585	R137,643	R5,036	R6,046	R6,004	R5,716
1999	R4,805	R12,027	R3,550	R20,382	R82.6	R22,025	R60,382	R20,659	R103,066	R4,584	R5,021	R5,819	R5,057
2000	R8,090	R17,051	R4,146	R29,287	85.8	R36,798	R83,697	R24,101	R144,596	R4,549	R4,909	R5,813	R4,937
2001	R8,888	R22,072	R4,598	R35,558	87.1	R43,213	R110,787	R26,279	R180,279	R4,862	R5,019	R5,715	R5,070
2002	R6,775	R17,342	R3,754	R27,871	R86.5	R30,981	R93,174	R21,221	R145,376	R4,573	R5,373	R5,653	R5,216
2003	R8,129	R20,722	R3,982	R32,833	87.9	R38,690	R116,140	R22,762	R177,592	R4,760	R5,605	R5,716	R5,409
2004	R8,789	R24,186	R4,082	R37,057	89.0	R42,290	R138,774	R23,761	R204,825	R4,812	R5,738	R5,821	R5,527
2005	R10,779	R28,584	R4,653	R44,016	89.4	R51,681	R164,184	R25,070	R240,935	R4,795	R5,744	R5,388	R5,474
2006 ^E	R13,224	R32,760	R5,138	R51,122	89.9	R63,085	R191,716	R27,531	R282,332	R4,770	R5,852	R5,358	R5,523
2007 ^E	R13,341	R32,852	R4,940	R51,133	R90.3	R65,305	R210,318	R27,632	R303,255	R4,895	R6,402	R5,594	R5,931
2008 ^E	R16,791	R33,339	R5,398	R55,528	R90.3	R85,143	R231,847	R28,858	R345,848	R5,071	R6,954	R5,346	R6,228
2009 ^E	R11,610	R19,054	R3,748	R34,412	R89.1	R61,851	R147,505	R20,015	R229,371	R5,327	R7,741	R5,340	R6,665
2010 ^E	19,375	19,059	4,870	43,304	88.8	110,406	158,045	25,296	293,747	5,698	8,292	5,194	6,783

¹ See "Footage Drilled" in Glossary.

² See "Crude Oil Well" in Glossary.

³ See "Natural Gas Well" in Glossary.

⁴ See "Dry Hole" in Glossary.

R=Revised, E=Estimate.

Notes: • Data are for exploratory and development wells combined; see Table 4.6 for exploratory wells only, and Table 4.7 for development wells only. • Service wells, stratigraphic tests, and core tests are excluded. • For 1949-1959, data represent wells completed in a given year. For 1960-1969, data are for well completion reports received by the American Petroleum Institute during the reporting year. For 1970 forward, the data represent wells completed in a given year. The as-received well completion data for recent years are incomplete due to delays in the reporting of wells drilled. The U.S. Energy Information

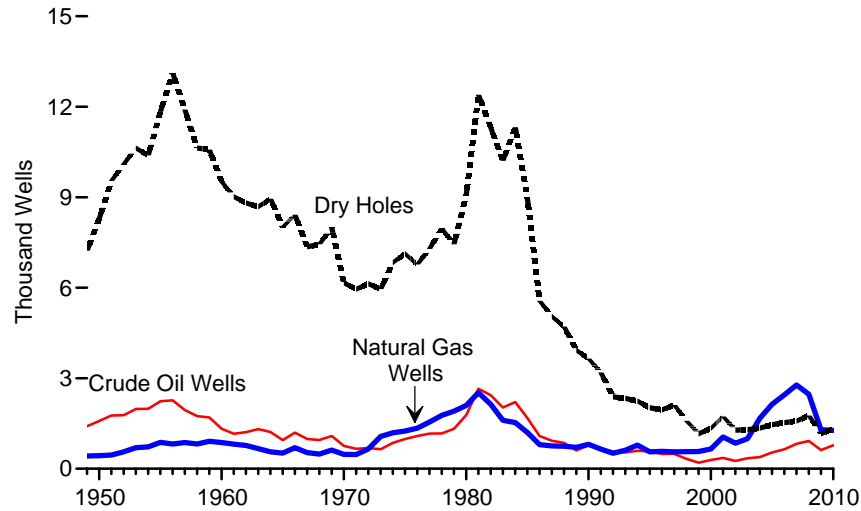
Administration (EIA) therefore statistically imputes the missing data. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

Web Pages: • See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1949. • For related information, see <http://www.eia.gov/petroleum/>.

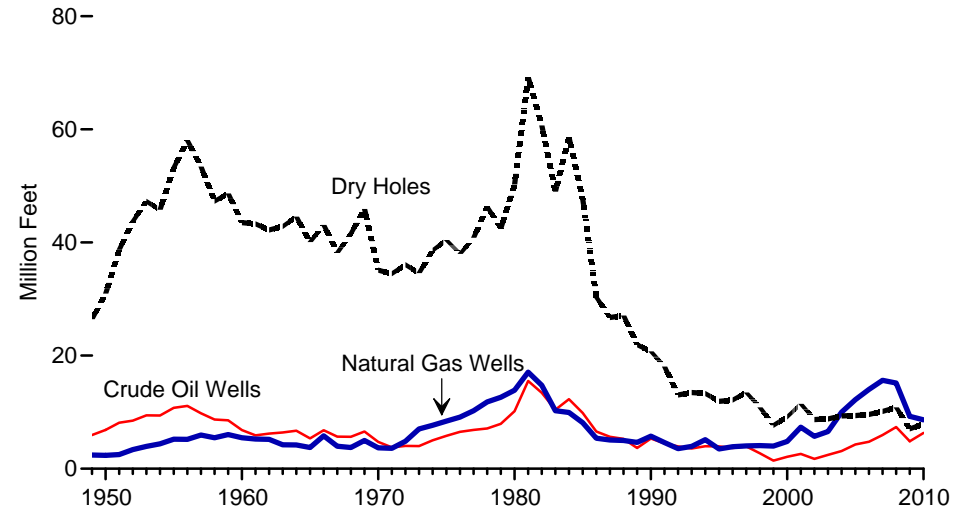
Sources: • 1949-1965—Gulf Publishing Company, *World Oil*, "Forecast-Review" issue. • 1966-1969—American Petroleum Institute (API), *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports. • 1970-1989—EIA computations based on well reports submitted to the API. • 1990 forward—EIA computations based on well reports submitted to IHS, Inc., Denver, CO. For current data see the EIA, *Monthly Energy Review*, Table 5.2.

Figure 4.6 Crude Oil and Natural Gas Exploratory Wells, 1949-2010

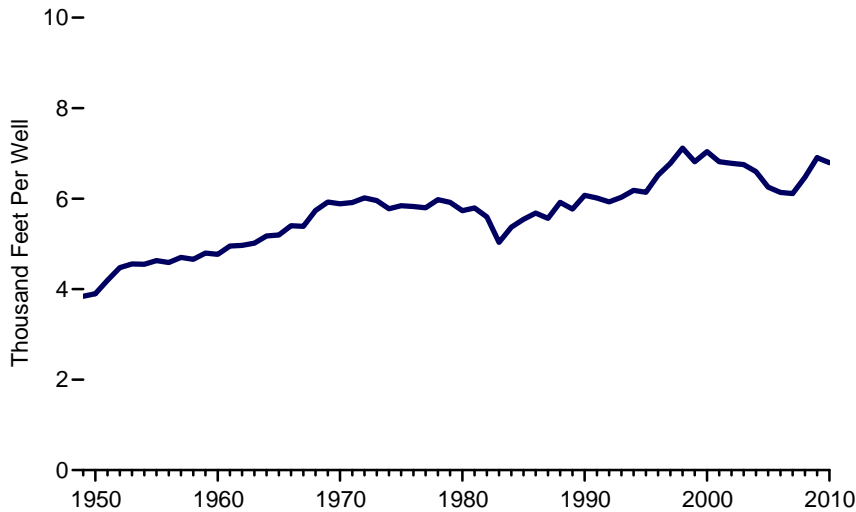
Exploratory Wells Drilled by Well Type



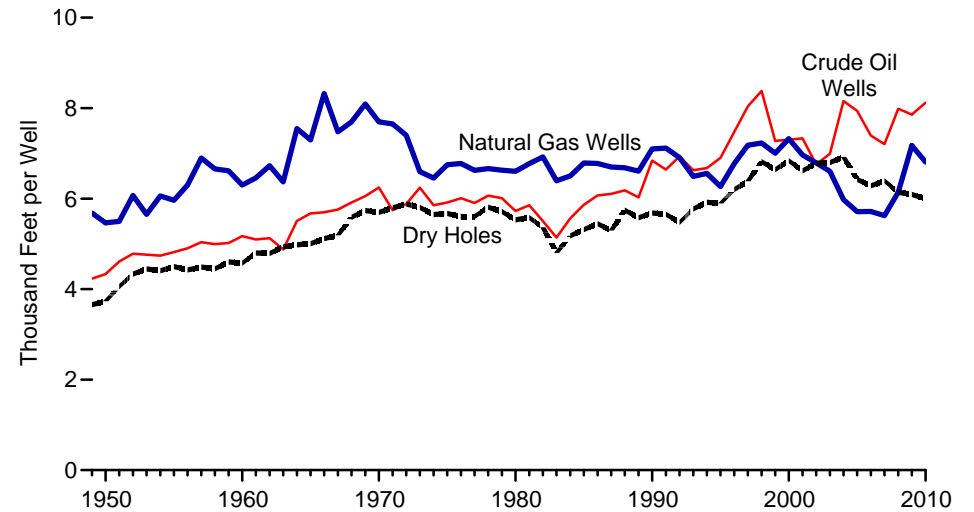
Exploratory Footage Drilled by Well Type



Exploratory Wells Average Depth, All Wells



Exploratory Wells Average Depth by Well Type



Note: These graphs depict exploratory wells only; see Figure 4.5 for all wells and Figure 4.7 for development wells only.

Source: Table 4.6.

Table 4.6 Crude Oil and Natural Gas Exploratory Wells, Selected Years, 1949-2010

Year	Wells Drilled				Successful Wells Percent	Footage Drilled ¹				Average Footage Drilled			
	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total		Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total
	Number					Thousand Feet				Feet per Well			
1949	1,406	424	7,228	9,058	20.2	5,950	2,409	26,439	34,798	4,232	5,682	3,658	3,842
1950	1,583	431	8,292	10,306	19.5	6,862	2,356	30,957	40,175	4,335	5,466	3,733	3,898
1955	2,236	874	11,832	14,942	20.8	10,774	5,212	53,220	69,206	4,819	5,964	4,498	4,632
1960	1,321	868	9,515	11,704	18.7	6,829	5,466	43,535	55,831	5,170	6,298	4,575	4,770
1965	946	515	8,005	9,466	15.4	5,366	3,757	40,081	49,204	5,672	7,295	5,007	5,198
1970	757	477	6,162	7,396	16.7	4,729	3,678	35,123	43,530	6,247	7,695	5,700	5,885
1975	982	1,248	7,129	9,359	23.8	5,806	8,422	40,448	54,677	5,913	6,748	5,674	5,842
1976	1,086	1,346	6,772	9,204	26.4	6,527	9,121	37,969	53,617	6,010	6,777	5,607	5,825
1977	1,164	1,548	7,283	9,995	27.1	6,870	10,255	40,823	57,949	5,902	6,625	5,605	5,798
1978	1,171	1,771	7,965	10,907	27.0	7,105	11,798	46,295	65,197	6,067	6,662	5,812	5,978
1979	1,321	1,907	7,437	10,665	30.3	7,941	12,643	42,512	63,096	6,011	6,630	5,716	5,916
1980	1,777	2,099	9,081	12,957	29.9	10,177	13,862	50,249	74,288	5,727	6,604	5,533	5,733
1981	2,651	2,522	12,400	17,573	29.4	15,515	17,079	69,214	101,808	5,853	6,772	5,582	5,793
1982	2,437	2,133	11,307	15,877	28.8	13,413	14,763	60,680	88,856	5,504	6,921	5,367	5,597
1983	2,030	1,605	10,206	13,841	26.3	10,437	10,264	48,989	69,690	5,141	6,395	4,800	5,035
1984	2,209	1,528	11,321	15,058	24.8	12,294	9,935	58,624	80,853	5,565	6,502	5,178	5,369
1985	1,680	1,200	8,954	11,834	24.3	9,854	8,144	47,604	65,602	5,865	6,787	5,317	5,544
1986	1,084	797	5,567	7,448	25.3	6,579	5,401	30,325	42,305	6,069	6,777	5,447	5,680
1987	926	756	5,052	6,734	25.0	5,652	5,064	26,746	37,462	6,104	6,698	5,294	5,563
1988	855	747	4,711	6,313	25.4	5,286	4,992	27,079	37,357	6,182	6,683	5,748	5,917
1989	607	706	3,934	5,247	25.0	3,659	4,664	21,947	30,270	6,028	6,606	5,579	5,769
1990	778	811	R3,652	R5,241	30.3	R5,321	R5,758	R20,757	R31,836	R6,839	R7,100	R5,684	6,074
1991	673	R649	R3,191	R4,513	29.3	R4,470	R4,620	R18,049	R27,139	R6,642	R7,118	R5,656	R6,013
1992	571	513	R2,384	R3,468	31.3	R3,958	R3,544	R13,058	R20,560	R6,932	R6,908	R5,477	R5,928
1993	539	610	R2,334	R3,483	33.0	R3,573	R3,960	R13,472	R21,005	R6,629	R6,491	R5,772	R6,031
1994	595	R782	2,247	R3,624	38.0	R3,971	R5,129	R13,307	R22,407	R6,674	R6,559	R5,922	R6,183
1995	570	R558	R2,024	R3,152	35.8	R3,933	R3,497	R11,928	R19,358	6,900	R6,266	5,893	R6,141
1996	489	576	1,956	3,021	35.3	3,654	3,901	R12,137	R19,692	7,472	R6,773	R6,205	6,518
1997	491	R562	2,113	R3,166	R33.3	R3,947	R4,036	R13,490	R21,473	R8,039	R7,181	R6,384	R6,782
1998	327	566	1,590	2,483	36.0	R2,740	R4,093	R10,842	R17,675	R8,379	R7,231	6,819	7,118
1999	197	R570	1,157	R1,924	R39.9	R1,433	R3,992	R7,687	R13,112	R7,274	R7,003	6,644	6,815
2000	R288	R657	R1,341	R2,286	41.3	R2,103	R4,812	R9,173	R16,088	R7,302	R7,325	R6,840	R7,038
2001	357	1,052	R1,733	R3,142	R44.8	R2,618	R7,327	R11,470	R21,415	R7,333	R6,965	R6,619	R6,816
2002	R258	R844	R1,282	R2,384	46.2	R1,743	R5,731	R8,695	R16,169	R6,756	R6,791	R6,782	R6,782
2003	R350	R997	R1,297	R2,644	R50.9	R2,448	R6,584	R8,817	R17,849	R6,994	R6,604	6,798	R6,751
2004	R383	R1,671	R1,350	R3,404	R60.3	R3,124	R9,989	R9,345	R22,458	R8,157	R5,978	R6,922	R6,598
2005	R539	R2,135	R1,462	R4,136	R64.7	R4,279	R12,198	R9,396	R25,873	R7,939	R5,713	R6,427	R6,255
2006 ^E	R644	R2,450	R1,529	R4,623	R66.9	R4,760	R14,003	R9,609	R28,372	R7,391	R5,716	R6,284	R6,137
2007 ^E	R825	R2,777	R1,585	R5,187	R69.4	R5,944	R15,616	R10,136	R31,696	R7,205	R5,623	R6,395	R6,111
2008 ^E	R921	R2,467	R1,764	R5,152	R65.8	R7,356	R15,152	R10,835	R33,343	R7,987	R6,142	R6,142	R6,472
2009 ^E	R618	R1,290	R1,157	R3,065	R62.3	R4,856	R9,254	R7,053	R21,163	R7,858	R7,173	R6,096	R6,905
2010 ^E	778	1,269	1,322	3,369	60.8	6,319	8,639	7,932	22,890	8,122	6,808	6,000	6,794

¹ See "Footage Drilled" in Glossary.

² See "Crude Oil Well" in Glossary.

³ See "Natural Gas Well" in Glossary.

⁴ See "Dry Hole" in Glossary.

R=Revised. E=Estimate.

Notes: • Data are for exploratory wells only; see Table 4.5 for exploratory and development wells combined, and Table 4.7 for development wells only. • For 1949-1959, data represent wells completed in a given year. For 1960-1969, data are for well completion reports received by the American Petroleum Institute (API) during the reporting year. For 1970 forward, the data represent wells completed in a given year. The as-received well completion data for recent years are incomplete due to delays in the reporting

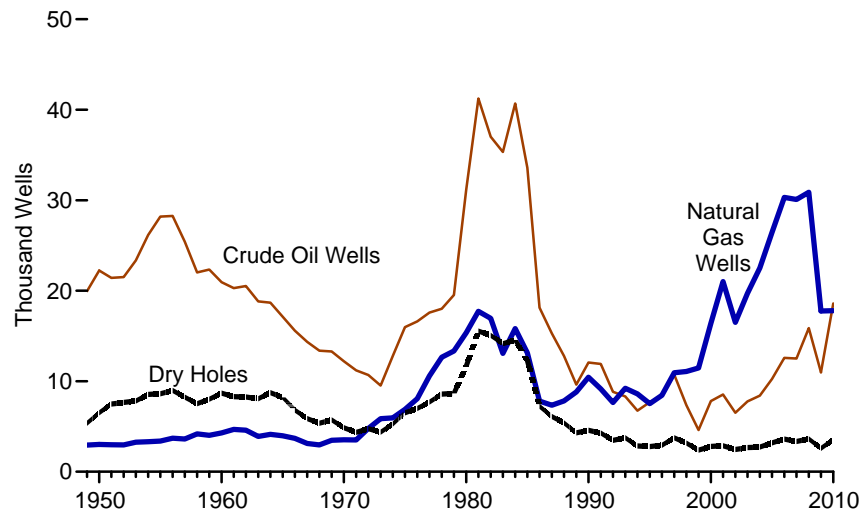
of wells drilled. The U.S. Energy Information Administration (EIA) therefore statistically imputes the missing data. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

Web Pages: • See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1949. • For related information, see <http://www.eia.gov/petroleum/>.

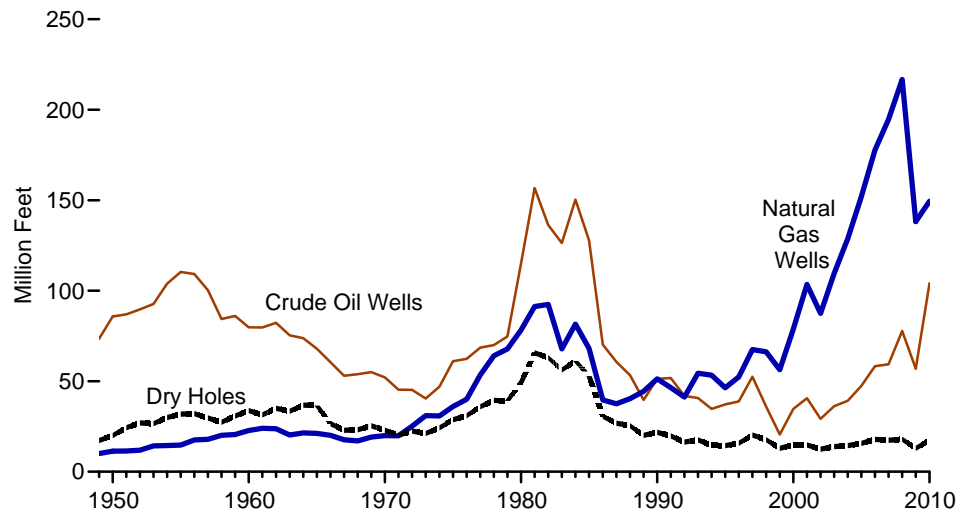
Sources: • 1949-1965—Gulf Publishing Company, *World Oil*, "Forecast-Review" issue. • 1966-1969—American Petroleum Institute (API), *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports. • 1970-1989—EIA computations based on well reports submitted to the API. • 1990 forward—EIA computations based on well reports submitted to IHS, Inc., Denver, CO. For current data see the EIA, *Monthly Energy Review*, Table 5.2.

Figure 4.7 Crude Oil and Natural Gas Development Wells, 1949-2010

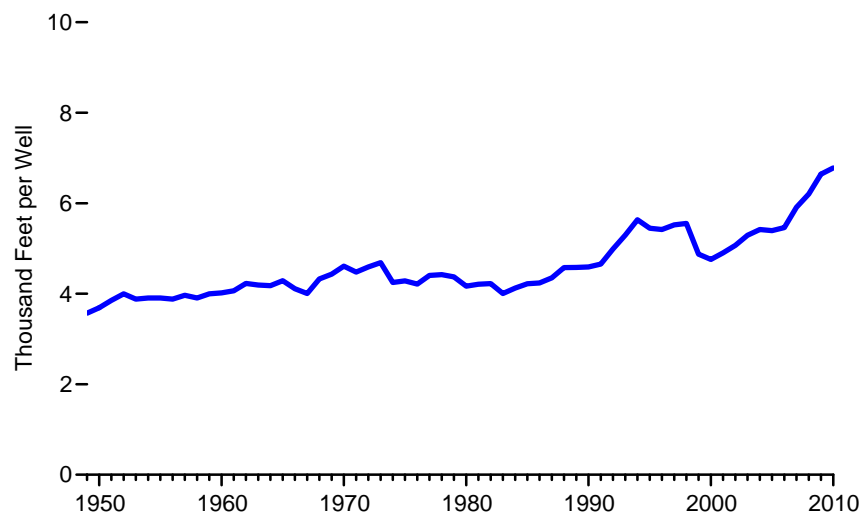
Development Wells Drilled by Well Type



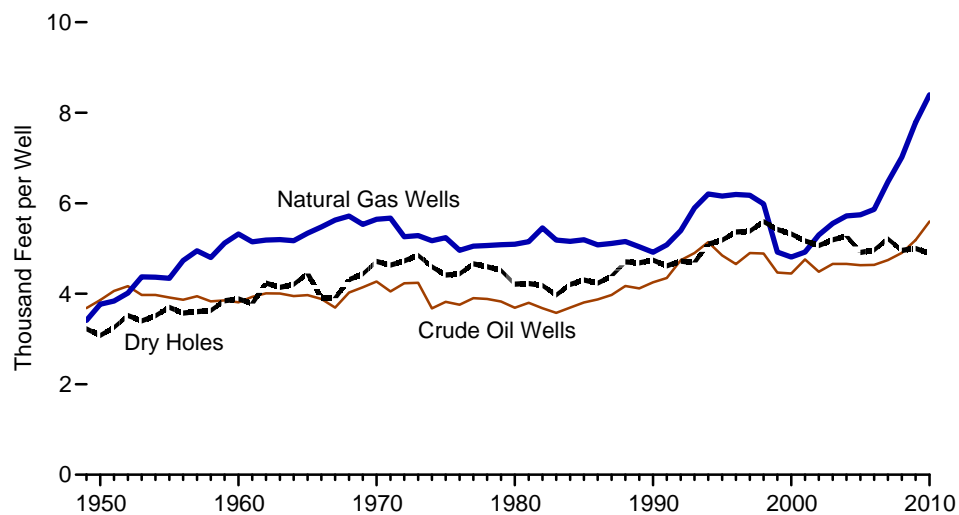
Development Footage Drilled by Well Type



Development Wells Average Depth, All Wells



Development Wells Average Depth by Well Type



Note: These graphs depict development wells only; see Figure 4.5 for all wells and Figure 4.6 for exploratory wells only.

Source: Table 4.7.

Table 4.7 Crude Oil and Natural Gas Development Wells, Selected Years, 1949-2010

Year	Wells Drilled				Successful Wells	Footage Drilled ¹				Average Footage Drilled			
	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total		Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total	Crude Oil ²	Natural Gas ³	Dry Holes ⁴	Total
	Number					Percent	Thousand Feet				Feet per Well		
1949	19,946	2,939	5,369	28,254	81.0	73,478	10,028	17,315	100,821	3,684	3,412	3,225	3,568
1950	22,229	3,008	6,507	31,744	79.5	85,833	11,329	20,020	117,183	3,861	3,766	3,077	3,691
1955	28,196	3,392	8,620	40,208	78.6	110,374	14,718	31,883	156,976	3,915	4,339	3,699	3,904
1960	20,937	4,281	8,697	33,915	74.4	79,739	22,780	33,826	136,345	3,809	5,321	3,889	4,020
1965	17,119	3,967	8,221	29,307	71.9	67,956	21,174	36,548	125,678	3,970	5,337	4,446	4,288
1970	12,211	3,534	4,869	20,614	76.4	52,130	19,945	22,951	95,026	4,269	5,644	4,714	4,610
1975	15,966	6,879	6,517	29,362	77.8	61,013	36,032	28,772	125,817	3,821	5,238	4,415	4,285
1976	16,602	8,063	6,986	31,651	77.9	62,365	39,992	31,008	133,365	3,756	4,960	4,439	4,214
1977	17,581	10,574	7,702	35,857	78.5	68,581	53,431	35,905	157,917	3,901	5,053	4,662	4,404
1978	18,010	12,642	8,586	39,238	78.1	69,936	64,043	39,493	173,472	3,883	5,066	4,600	4,421
1979	19,530	13,347	8,662	41,539	79.1	74,747	67,825	39,130	181,702	3,827	5,082	4,517	4,374
1980	31,182	15,362	11,704	58,248	79.9	115,085	78,244	49,326	242,655	3,691	5,093	4,214	4,166
1981	41,236	17,728	15,553	74,517	79.1	156,652	91,274	65,720	313,646	3,799	5,149	4,226	4,209
1982	37,022	16,943	15,072	69,037	78.2	136,261	92,386	63,066	291,713	3,681	5,453	4,184	4,225
1983	35,336	13,079	14,149	62,564	77.4	126,412	67,844	56,233	250,489	3,577	5,187	3,974	4,004
1984	40,697	15,810	14,563	71,070	79.5	150,359	81,545	61,236	293,140	3,695	5,158	4,205	4,125
1985	33,581	13,124	12,257	58,962	79.2	127,874	68,149	52,784	248,807	3,808	5,193	4,306	4,220
1986	18,129	7,802	7,232	33,163	78.2	70,246	39,638	30,636	140,520	3,875	5,080	4,236	4,237
1987	15,284	7,340	6,115	28,739	78.7	60,706	37,520	26,842	125,068	3,972	5,112	4,390	4,352
1988	12,791	7,831	5,408	26,030	79.2	53,353	40,371	25,438	119,162	4,171	5,155	4,704	4,578
1989	9,623	8,816	4,302	22,741	81.1	39,607	44,417	20,152	104,176	4,116	5,038	4,684	4,581
1990	R12,061	R10,435	R4,593	R27,089	83.0	R51,290	R51,317	R21,781	R124,388	R4,253	R4,918	R4,742	R4,592
1991	R11,915	R9,144	R4,290	R25,349	R83.1	R51,789	R46,461	R19,808	R118,058	R4,347	R5,081	R4,617	R4,657
1992	R8,831	R7,650	R3,478	R19,959	82.6	R41,859	R41,269	R16,419	R99,547	R4,740	R5,395	R4,721	R4,987
1993	R8,317	R9,229	R3,762	R21,308	82.3	R40,751	R54,424	R17,645	R112,820	R4,900	5,897	R4,690	R5,294
1994	R6,753	R8,593	R2,849	R18,195	84.3	R34,704	R53,310	R14,521	R102,535	R5,139	R6,204	5,097	R5,635
1995	R7,678	R7,524	2,790	R17,992	84.5	R37,213	R46,343	R14,469	R98,025	R4,847	R6,159	R5,186	R5,448
1996	R8,347	R8,451	2,934	R19,732	85.1	R38,863	R52,349	R15,747	R106,959	R4,656	R6,194	R5,367	R5,420
1997	R10,715	R10,936	3,761	R25,412	85.2	R52,504	R67,515	R20,251	R140,270	R4,900	R6,174	R5,384	R5,520
1998	R7,355	R11,073	R3,171	R21,599	85.3	R35,943	R66,282	R17,743	R119,968	R4,887	R5,986	R5,595	R5,554
1999	R4,608	R11,457	R2,393	R18,458	87.0	R20,592	R56,390	R12,972	R89,954	R4,469	R4,922	R5,421	R4,873
2000	7,802	R16,394	R2,805	R27,001	89.6	R34,695	R78,885	R14,928	R128,508	R4,447	R4,812	R5,322	R4,759
2001	R8,531	R21,020	R2,865	R32,416	91.2	R40,595	R103,460	R14,809	R158,864	R4,759	R4,922	R5,169	R4,901
2002	R6,517	R16,498	R2,472	R25,487	R90.3	R29,238	R87,443	R12,526	R129,207	R4,486	R5,300	R5,067	R5,069
2003	R7,779	R19,725	R2,685	R30,189	91.1	R36,242	R109,556	R13,945	R159,743	R4,659	R5,554	R5,194	R5,291
2004	R8,406	R22,515	R2,732	R33,653	91.9	R39,166	R128,785	R14,416	R182,367	R4,659	R5,720	R5,277	R5,419
2005	R10,240	R26,449	R3,191	R39,880	92.0	R47,402	R151,986	R15,674	R215,062	R4,629	R5,746	R4,912	R5,393
2006 ^E	R12,580	R30,310	R3,609	R46,499	92.2	R58,325	R177,713	R17,922	R253,960	R4,636	R5,863	R4,966	R5,461
2007 ^E	R12,516	R30,075	R3,355	R45,946	R92.7	R59,361	R194,702	R17,496	R271,559	R4,743	R6,474	R5,215	R5,910
2008 ^E	R15,870	R30,872	R3,634	R50,376	R92.8	R77,787	R216,695	R18,023	R312,505	R4,902	R7,019	R4,960	R6,203
2009 ^E	R10,992	R17,764	R2,591	R31,347	R91.7	R56,995	R138,251	R12,962	R208,208	R5,185	R7,783	R5,003	R6,642
2010 ^E	18,597	17,790	3,548	39,935	91.1	104,087	149,406	17,364	270,857	5,597	8,398	4,894	6,782

¹ See "Footage Drilled" in Glossary.

² See "Crude Oil Well" in Glossary.

³ See "Natural Gas Well" in Glossary.

⁴ See "Dry Hole" in Glossary.

R=Revised. E=Estimate.

Notes: • Data are for development wells only; see Table 4.5 for exploratory and development wells combined, and Table 4.6 for exploratory wells only. • Service wells, stratigraphic tests, and core tests are excluded. • For 1949-1959, data represent wells completed in a given year. For 1960-1969, data are for well completion reports received by the American Petroleum Institute during the reporting year. For 1970 forward, the data represent wells completed in a given year. The as-received well completion data for recent years are incomplete due to delays in the reporting of wells drilled. The U.S. Energy Information

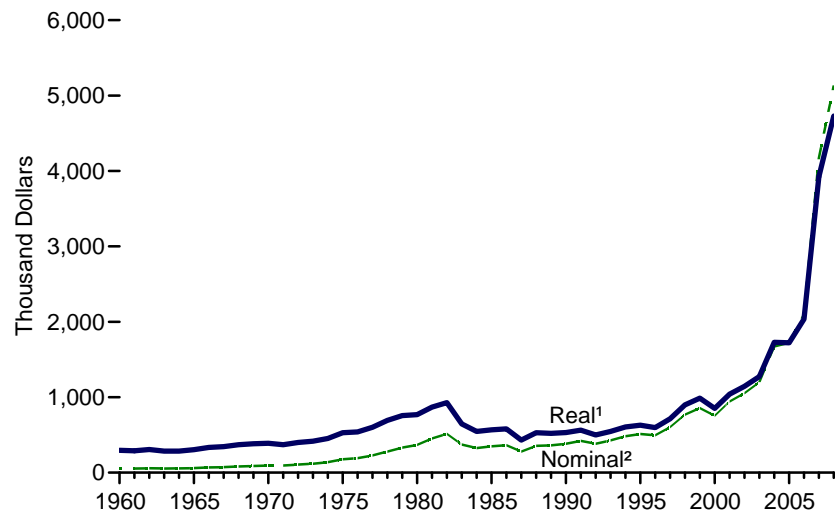
Administration (EIA) therefore statistically imputes the missing data. • Totals may not equal sum of components due to independent rounding. Average depth may not equal average of components due to independent rounding.

Web Pages: • See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1949. • For related information, see <http://www.eia.gov/petroleum/>.

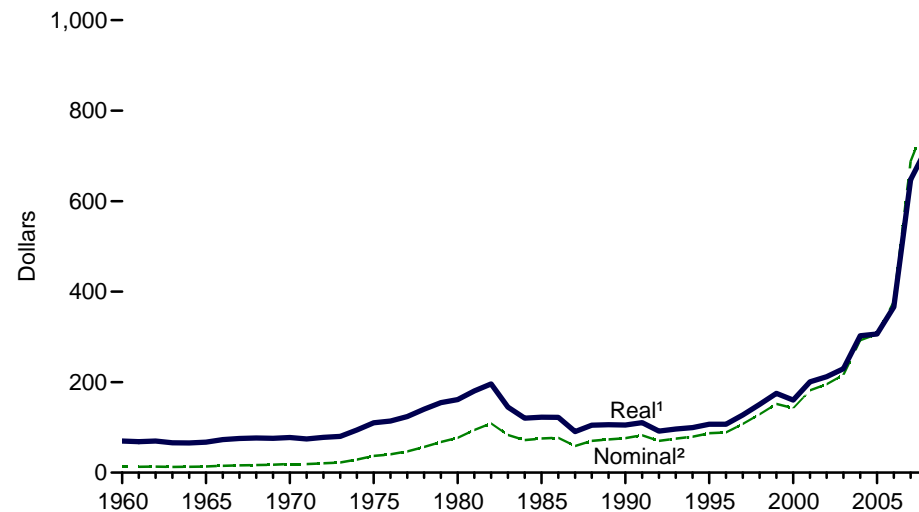
Sources: • 1949-1965—Gulf Publishing Company, *World Oil*, "Forecast-Review" issue. • 1966-1969—American Petroleum Institute (API), *Quarterly Review of Drilling Statistics for the United States*, annual summaries and monthly reports. • 1970-1989—EIA computations based on well reports submitted to the API. • 1990 forward—EIA computations based on well reports submitted to IHS, Inc., Denver, CO. For current data see the EIA, *Monthly Energy Review*, Table 5.2.

Figure 4.8 Costs of Crude Oil and Natural Gas Wells Drilled

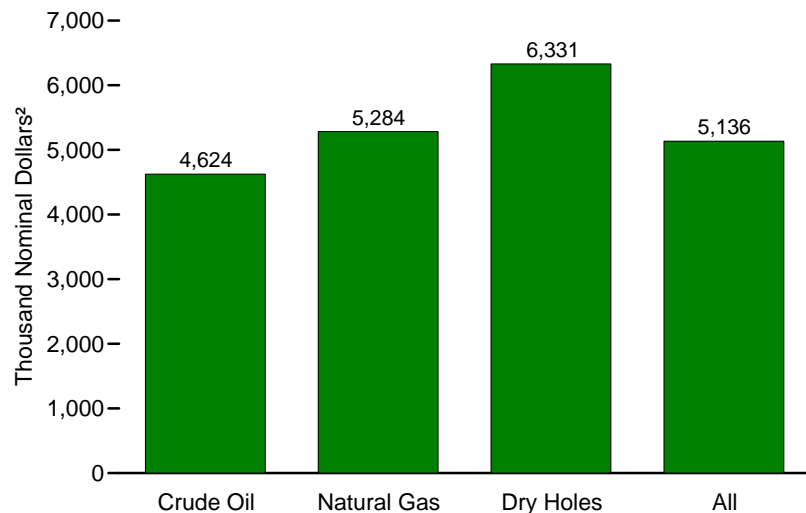
Costs per Well, All Wells, 1960-2008



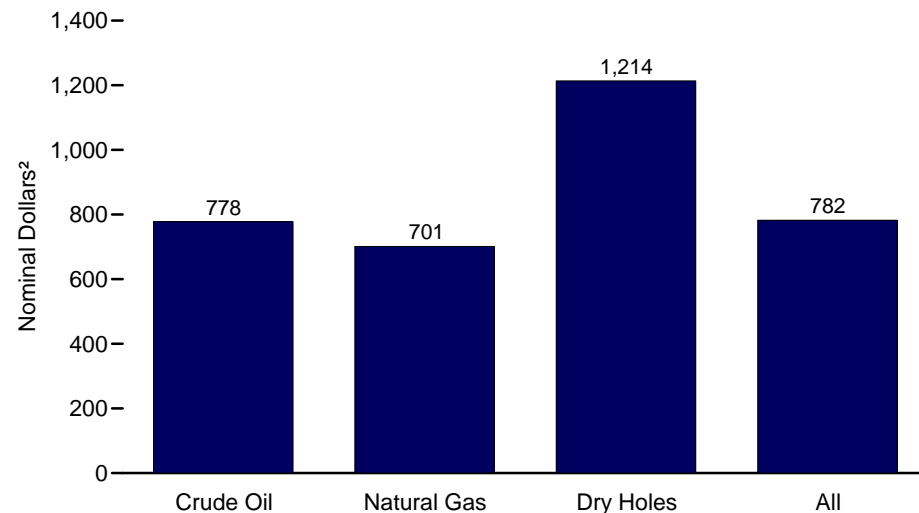
Costs per Foot, All Wells, 1960-2008



Costs per Well by Well Type, 2008



Costs per Foot by Well Type, 2008



¹ In chained (2005) dollars, calculated by using gross domestic product implicit price deflators. See Table D1.

² See "Nominal Dollars" in Glossary. Source: Table 4.8.

Table 4.8 Costs of Crude Oil and Natural Gas Wells Drilled, Selected Years, 1960-2008

Year	Thousand Dollars per Well					Dollars per Foot				
	Crude Oil ¹	Natural Gas ²	Dry Holes ³	All		Crude Oil ¹	Natural Gas ²	Dry Holes ³	All	
	Nominal ⁴	Nominal ⁴	Nominal ⁴	Nominal ⁴	Real ⁵	Nominal ⁴	Nominal ⁴	Nominal ⁴	Nominal ⁴	Real ⁵
1960	52.2	102.7	44.0	54.9	295.4	13.22	18.57	10.56	13.01	69.96
1965	56.6	101.9	53.1	60.6	304.5	13.94	18.35	11.21	13.44	67.47
1966	62.2	133.8	56.9	68.4	333.9	15.04	21.75	12.34	14.95	72.98
1967	66.6	141.0	61.5	72.9	345.3	16.61	23.05	12.87	15.97	75.63
1968	79.1	148.5	66.2	81.5	370.1	18.63	24.05	12.88	16.83	76.46
1969	86.5	154.3	70.2	88.6	383.4	19.28	25.58	13.23	17.56	76.02
1970	86.7	160.7	80.9	94.9	390.2	19.29	26.75	15.21	18.84	77.48
1971	78.4	166.6	86.8	94.7	370.9	18.41	27.70	16.02	19.03	74.53
1972	93.5	157.8	94.9	106.4	399.6	20.77	27.78	17.28	20.76	77.95
1973	103.8	155.3	105.8	117.2	416.7	22.54	27.46	19.22	22.50	80.04
1974	110.2	189.2	141.7	138.7	452.4	27.82	34.11	26.76	28.93	94.35
1975	138.6	262.0	177.2	177.8	529.7	34.17	46.23	33.86	36.99	110.21
1976	151.1	270.4	190.3	191.6	539.9	37.35	49.78	36.94	40.46	114.01
1977	170.0	313.5	230.2	227.2	601.8	41.16	57.57	43.49	46.81	124.00
1978	208.0	374.2	281.7	280.0	692.9	49.72	68.37	52.55	56.63	140.17
1979	243.1	443.1	339.6	331.4	757.2	58.29	80.66	64.60	67.70	154.70
1980	272.1	536.4	376.5	367.7	770.0	66.36	95.16	73.70	77.02	161.30
1981	336.3	698.6	464.0	453.7	868.7	80.40	122.17	90.03	94.30	180.56
1982	347.4	864.3	515.4	514.4	928.3	86.34	146.20	104.09	108.73	196.22
1983	283.8	608.1	366.5	371.7	645.3	72.65	108.37	79.10	83.34	144.68
1984	262.1	489.8	329.2	326.5	546.2	66.32	88.80	67.18	71.90	120.30
1985	270.4	508.7	372.3	349.4	567.4	66.78	93.09	73.69	75.35	122.37
1986	284.9	522.9	389.2	364.6	579.3	68.35	93.02	76.53	76.88	122.15
1987	246.0	380.4	259.1	279.6	431.7	58.35	69.55	51.05	58.71	90.65
1988	279.4	460.3	366.4	354.7	529.5	62.28	84.65	66.96	70.23	104.84
1989	282.3	457.8	355.4	362.2	521.1	64.92	86.86	67.61	73.55	105.80
1990	321.8	471.3	367.5	383.6	531.3	69.17	90.73	67.49	76.07	105.36
1991	346.9	506.6	441.2	421.5	563.7	73.75	93.10	83.05	82.64	110.54
1992	362.3	426.1	357.6	382.6	499.9	69.50	72.83	67.82	70.27	91.82
1993	356.6	521.2	387.7	426.8	545.6	67.52	83.15	72.56	75.30	96.26
1994	409.5	535.1	491.5	483.2	605.0	70.57	81.90	86.60	79.49	99.52
1995	415.8	629.7	481.2	513.4	629.7	78.09	95.97	84.60	87.22	106.97
1996	341.0	616.0	541.0	496.1	597.1	70.60	98.67	95.74	88.92	107.02
1997	445.6	728.6	655.6	603.9	714.2	90.48	117.55	115.09	107.83	127.53
1998	566.0	815.6	973.2	769.1	899.4	108.88	127.94	157.79	128.97	150.82
1999	783.0	798.4	1,115.5	856.1	986.7	156.45	138.42	182.99	152.02	175.20
2000	593.4	756.9	1,075.4	754.6	851.2	125.96	138.39	181.83	142.16	160.37
2001	729.1	896.5	1,620.4	943.2	1,040.4	153.72	172.05	271.63	181.94	200.71
2002	882.8	991.9	1,673.4	1,054.2	1,144.4	194.55	175.78	284.17	195.31	212.02
2003	1,037.3	1,106.0	2,065.1	1,199.5	1,274.8	221.13	189.95	345.94	216.27	229.83
2004	1,441.8	1,716.4	1,977.3	1,673.1	1,729.0	298.45	284.78	327.91	292.57	302.34
2005	1,920.4	1,497.6	2,392.9	1,720.7	1,720.7	314.36	280.03	429.92	306.50	306.50
2006	2,238.6	1,936.2	2,664.6	2,101.7	2,035.4	402.45	348.36	479.33	378.03	366.11
2007	4,000.4	3,906.9	6,131.2	4,171.7	^R 3,924.6	717.13	604.06	1,132.09	688.30	^R 647.53
2008	4,623.7	5,283.8	6,331.2	5,135.9	^R 4,728.3	778.14	701.42	1,213.81	782.31	^R 720.23

¹ See "Crude Oil Well" in Glossary.

² See "Natural Gas Well" in Glossary.

³ See "Dry Hole" in Glossary.

⁴ See "Nominal Dollars" in Glossary.

⁵ In chained (2005) dollars, calculated by using gross domestic product implicit price deflators in Table

D1. See "Chained Dollars" in Glossary.

R=Revised.

Notes: • The information reported for 1965 and prior years is not strictly comparable to that in more

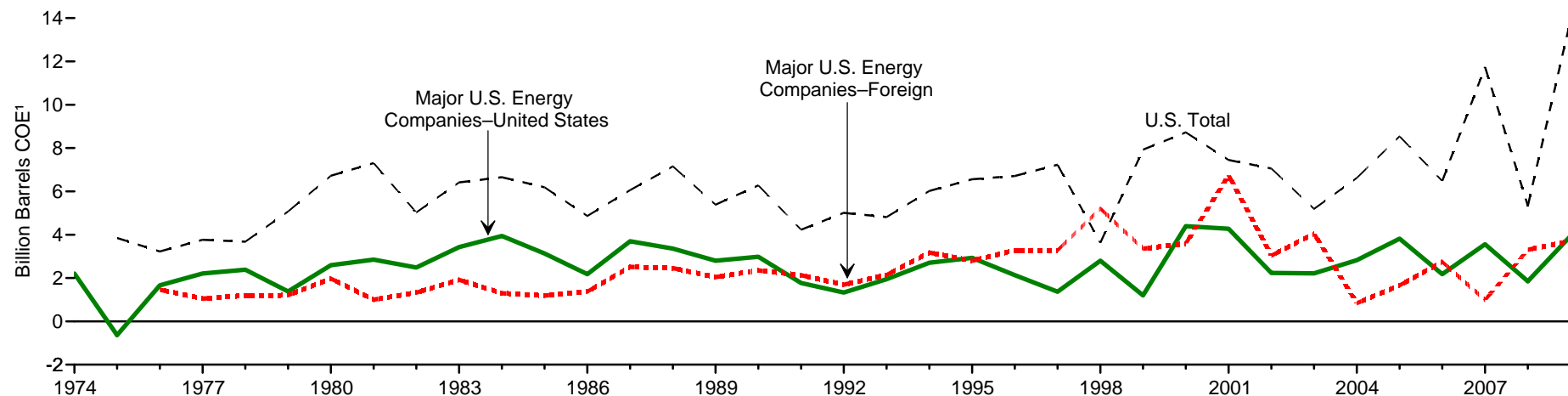
recent surveys. • Average cost is the arithmetic mean and includes all costs for drilling and equipping wells and for surface-producing facilities. Wells drilled include exploratory and development wells; excludes service wells, stratigraphic tests, and core tests. See "Development Well" and "Exploratory Well" in Glossary.

Web Pages: • See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1960. • For related information, see <http://www.api.org/statistics/accessapi/surveys/index.cfm>.

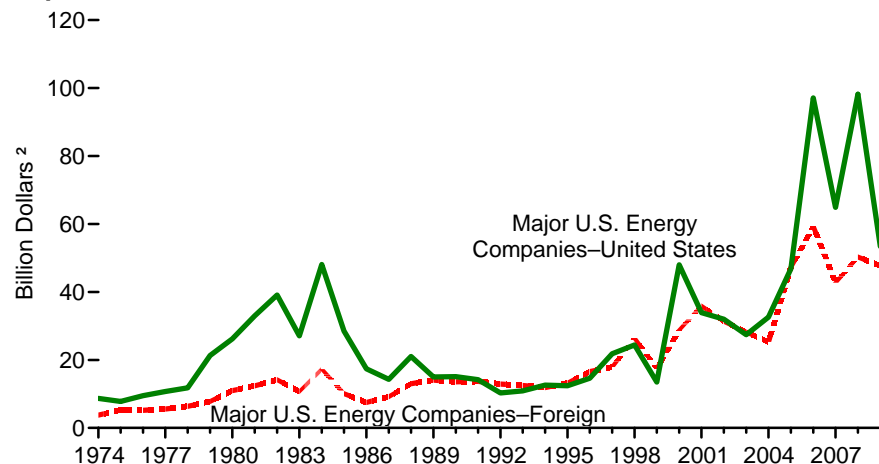
Source: American Petroleum Institute, 2008 Joint Association Survey on Drilling Costs (January 2010).

Figure 4.9 Crude Oil, Natural Gas, and Natural Gas Liquids Gross Additions to Proved Reserves, and Exploration and Development Expenditures

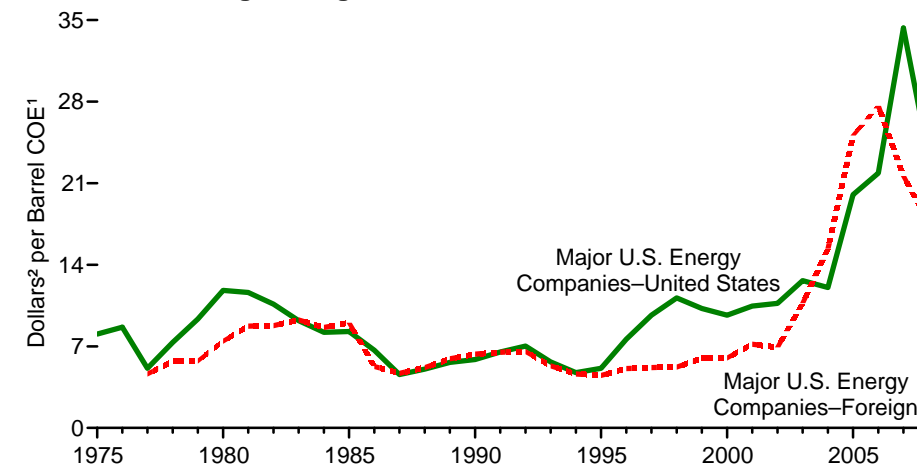
Gross Additions to Proved Reserves of Crude Oil, Natural Gas, and Natural Gas Liquids, 1974-2009



Crude Oil and Natural Gas Exploration and Development Expenditures, 1974-2009



**Expenditures per Barrel of Reserve Additions, 1975-2008
Three-Year Moving Average**



¹ Crude oil equivalent.

² Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

Note: "Major U.S. Energy Companies" are the top publicly-owned crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See <http://www.eia.gov/finance/performanceprofiles/CoList.html>.

Source: Table 4.9.

Table 4.9 Crude Oil, Natural Gas, and Natural Gas Liquids Gross Additions to Proved Reserves, and Exploration and Development Expenditures, 1974-2009

Year	Gross Additions to Proved Reserves ¹ of Crude Oil, Natural Gas, and Natural Gas Liquids			Crude Oil and Natural Gas Exploration and Development Expenditures		Expenditures per Barrel of Reserve Additions, Three-Year Moving Average	
	U.S. Total	Major U.S. Energy Companies ²		Major U.S. Energy Companies ²		Major U.S. Energy Companies ²	
		United States	Foreign	United States	Foreign	United States	Foreign
	Million Barrels COE ³			Billion Dollars ⁴		Dollars ⁴ per Barrel COE ³	
1974	NA	2,205	NA	8.7	3.8	NA	NA
1975	3,846	-634	NA	7.8	5.3	8.05	NA
1976	3,224	1,663	1,459	9.5	5.2	8.64	NA
1977	3,765	2,210	1,055	10.7	5.6	5.12	4.64
1978	3,679	2,383	1,191	11.8	6.4	7.34	5.73
1979	5,071	1,378	⁵ 1,208	21.3	7.8	9.34	⁵ 5.75
1980	6,723	2,590	1,977	26.2	11.0	11.80	7.45
1981	7,304	2,848	1,006	33.0	12.4	11.63	8.74
1982	5,030	2,482	1,332	39.1	14.2	⁶ 10.62	⁶ 8.78
1983	6,412	3,427	1,918	27.1	10.7	9.20	9.28
1984	6,653	3,941	1,298	48.1	17.3	⁶ 8.21	⁶ 8.63
1985	6,190	⁷ 3,129	1,192	28.5	10.1	⁷ 8.27	9.03
1986	4,866	2,178	⁵ 1,375	17.4	7.5	6.67	⁵ 5.28
1987	6,059	⁷ 3,698	2,516	14.3	9.2	⁷ 4.58	4.69
1988	7,156	3,359	2,460	21.0	13.0	5.05	5.18
1989	5,385	2,798	2,043	15.0	14.1	5.62	5.94
1990	6,275	2,979	2,355	15.1	13.6	5.87	6.34
1991	4,227	1,772	2,135	14.2	13.7	6.52	6.50
1992	5,006	1,332	1,694	10.3	12.9	7.02	6.55
1993	4,814	1,945	2,147	10.9	12.5	5.66	5.33
1994	6,021	2,703	3,173	12.6	11.9	4.74	4.63
1995	6,558	2,929	2,799	12.4	13.2	5.11	4.51
1996	6,707	2,131	3,280	14.6	16.6	7.61	5.10
1997	7,233	1,367	3,279	21.8	17.9	9.67	5.18
1998	3,628	2,798	5,206	24.4	26.4	11.15	5.22
1999	7,929	1,197	3,360	13.5	17.5	10.25	5.98
2000	8,725	4,392	3,593	48.0	28.8	9.67	6.01
2001	7,449	4,271	6,744	33.9	35.9	^R 10.45	7.19
2002	7,056	2,232	3,036	^R 32.0	31.4	^R 10.69	6.91
2003	5,189	2,216	4,047	27.4	28.2	^R 12.64	10.71
2004	6,624	2,825	841	32.6	25.3	12.05	15.38
2005	8,543	3,818	1,664	46.8	47.3	20.01	25.09
2006	6,479	2,175	2,747	97.1	59.2	21.86	27.64
2007	11,745	3,560	985	64.9	42.7	^R 34.32	21.62
2008	5,335	1,848	3,309	^R 98.2	50.3	^R 23.17	^R 17.58
2009	13,921	3,939	3,709	53.4	47.7	NA	NA

¹ Gross additions to proved reserves equal annual change in proved reserves plus annual production. See "Proved Reserves, Crude Oil," "Proved Reserves, Natural Gas," and "Proved Reserves, Natural Gas Liquids" in Glossary.

² "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See <http://www.eia.gov/finance/performanceprofiles/CoList.html>.

³ Crude oil equivalent: converted to Btu on the basis of annual average conversion factors. See Appendix A.

⁴ Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

⁵ Data for 1979 exclude downward revisions of 1,225 million barrels COE due to Iranian policies. Data for 1986 exclude downward revisions due to Libyan sanctions.

⁶ Data for 1982 and 1984 are adjusted to exclude purchases of proved reserves associated with

mergers among the FRS companies.

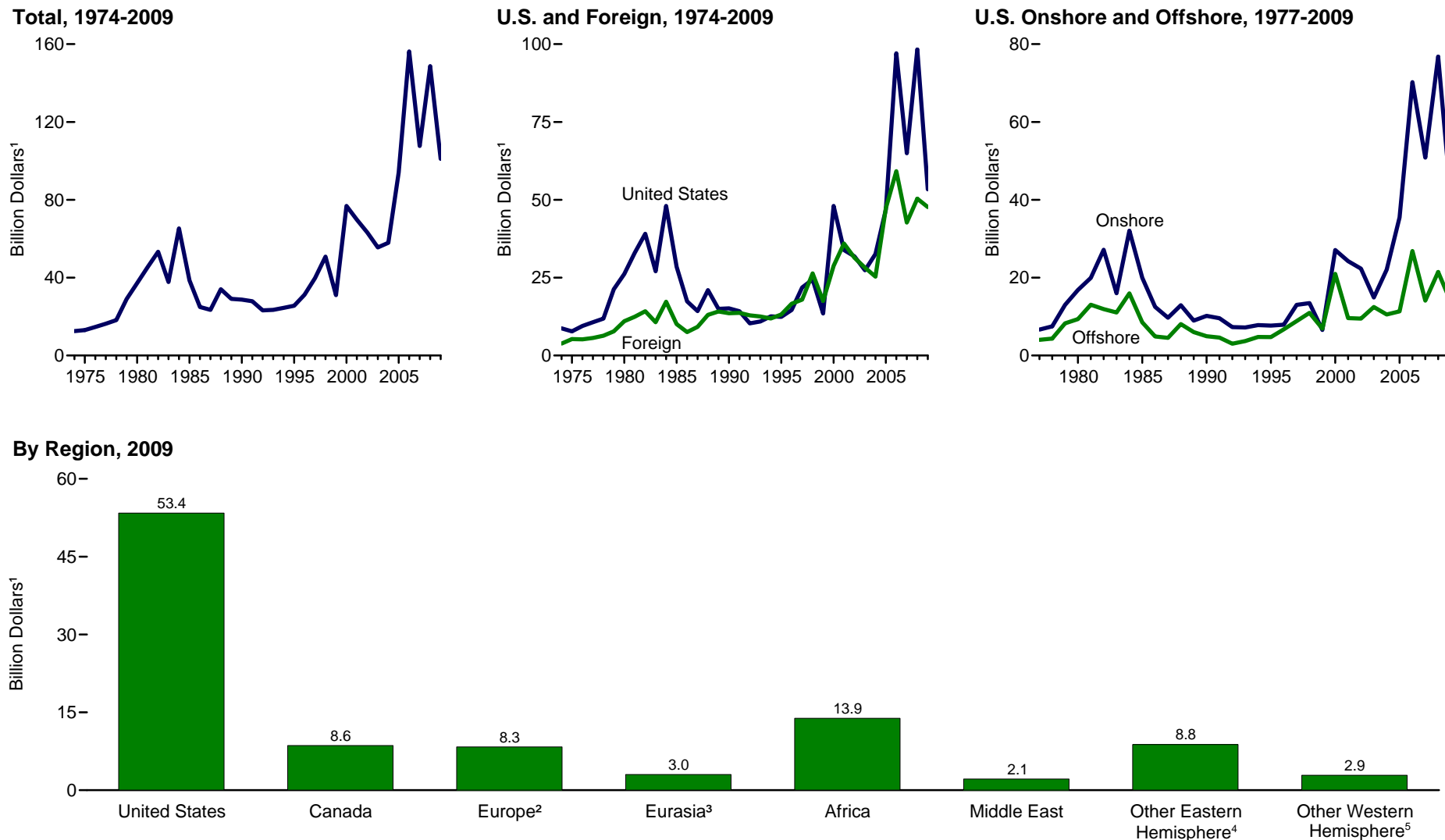
⁷ Data for 1985 and 1987 exclude downward revisions of 1,477 million barrels COE and 2,396 million barrels COE, respectively, of Alaska North Slope natural gas reserves.

R=Revised. NA=Not available.

Web Page: For related information, see <http://www.eia.gov/finance/>.

Sources: **Major U.S. Energy Companies:** • 1974-1976—U.S. Energy Information Administration (EIA), Form EIA-28, "Financial Reporting System" database, November 1997. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports. **U.S. Total, Gross Additions to Proved Reserves:** • 1975-1979—American Gas Association, American Petroleum Institute, and Canadian Petroleum Association (published jointly), *Reserves of Crude Oil, Natural Gas Liquids, and Natural Gas in the United States and Canada as of December 31, 1979*, Volume 34 (June 1980). • 1980 forward—EIA, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves*, annual reports.

Figure 4.10 Major U.S. Energy Companies' Expenditures for Crude Oil and Natural Gas Exploration and Development by Region



¹ Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

² Includes all Europe except countries that were part of the former U.S.S.R. See "Union of Soviet Socialist Republics (U.S.S.R.)" in Glossary.

³ Includes only countries that were part of the former U.S.S.R. See "Eurasia" and "Union of Soviet Socialist Republics (U.S.S.R.)" in Glossary.

⁴ This region includes areas that are eastward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

⁵ This region includes areas that are westward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

Note: "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See <http://www.eia.gov/finance/performanceprofiles/CoList.html>.

Source: Table 4.10.

Table 4.10 Major U.S. Energy Companies' Expenditures for Crude Oil and Natural Gas Exploration and Development by Region, 1974-2009 (Billion Dollars ¹)

Year	United States			Foreign								Total
	Onshore	Offshore	Total	Canada	Europe ²	Eurasia ³	Africa	Middle East	Other Eastern Hemisphere ⁴	Other Western Hemisphere ⁵	Total	
1974	NA	NA	8.7	NA	NA	--	NA	NA	NA	NA	3.8	12.5
1975	NA	NA	7.8	NA	NA	--	NA	NA	NA	NA	5.3	13.1
1976	NA	NA	9.5	NA	NA	--	NA	NA	NA	NA	5.2	14.7
1977	6.7	4.0	10.7	1.5	2.5	--	.7	.2	.3	.4	5.6	16.3
1978	7.5	4.3	11.8	1.6	2.6	--	.8	.3	.4	.6	6.4	18.2
1979	13.0	8.3	21.3	2.3	3.0	--	.8	.2	.5	.8	7.8	29.1
1980	16.8	9.4	26.2	3.1	4.3	--	1.4	.2	.8	1.0	11.0	37.2
1981	19.9	13.0	33.0	1.8	5.0	--	2.1	.3	1.9	1.3	12.4	45.4
1982	27.2	11.9	39.1	1.9	6.3	--	2.1	.4	2.4	1.1	14.2	53.3
1983	16.0	11.1	27.1	1.6	4.3	--	1.7	.5	2.0	.6	10.7	37.7
1984	32.1	16.0	48.1	5.4	5.5	--	3.4	.5	2.0	.5	17.3	65.3
1985	20.0	8.5	28.5	1.9	3.7	--	1.6	.9	1.3	.7	10.1	38.6
1986	12.5	4.9	17.4	1.1	3.2	--	1.1	.3	1.2	.6	7.5	24.9
1987	9.7	4.5	14.3	1.9	3.0	--	.8	.4	2.8	.5	9.2	23.5
1988	12.9	8.1	21.0	5.4	4.3	--	.8	.4	1.4	.7	13.0	34.1
1989	9.0	6.0	15.0	6.3	3.5	--	1.0	.4	2.3	.6	14.1	29.1
1990	10.2	4.9	15.1	1.8	6.6	--	1.4	.6	2.4	.7	13.6	28.7
1991	9.6	4.6	14.2	1.7	6.8	--	1.5	.5	2.4	.7	13.7	27.9
1992	7.3	3.0	10.3	1.1	6.8	--	1.4	.6	2.4	.6	12.9	23.2
1993	7.2	3.7	10.9	1.6	5.5	.3	1.5	.7	2.5	.6	12.5	23.5
1994	7.8	4.8	12.6	1.8	4.4	.3	1.4	.4	2.8	.7	11.9	24.5
1995	7.7	4.7	12.4	1.9	5.2	.4	2.0	.4	2.4	.9	13.2	25.6
1996	7.9	6.7	14.6	1.6	5.6	.5	2.8	.5	4.1	1.6	16.6	31.3
1997	13.0	8.8	21.8	2.0	7.1	.6	3.0	.6	3.0	1.6	17.9	39.8
1998	13.5	11.0	24.4	4.8	8.6	1.3	3.1	.9	3.9	3.7	26.4	50.8
1999	6.6	6.9	13.5	2.1	4.1	.6	3.1	.4	3.4	3.8	17.5	31.0
2000	27.1	21.0	48.0	4.9	7.5	.9	2.7	.6	6.8	5.4	28.8	76.8
2001	24.2	9.6	33.9	15.3	5.4	.9	5.5	.7	5.0	3.1	35.9	69.8
2002	22.3	9.5	31.8	6.7	9.8	1.3	5.1	.8	6.2	1.6	31.4	63.2
2003	14.9	12.5	27.4	4.9	5.7	2.1	9.2	1.0	4.2	1.1	28.2	55.6
2004	22.1	10.5	32.6	5.3	4.4	2.0	6.9	1.3	3.8	1.6	25.3	57.9
2005	35.5	11.3	46.8	9.1	6.1	6.3	10.7	1.5	12.0	1.7	47.3	94.1
2006	70.2	26.8	97.1	17.0	² 9.0	³ 2.4	12.9	3.1	6.6	8.2	59.2	156.2
2007	50.8	14.1	64.9	5.8	8.1	2.9	12.5	3.2	6.8	3.4	42.7	107.6
2008	^R 76.8	21.5	^R 98.2	6.4	8.4	3.2	14.2	4.5	9.6	4.1	50.3	^R 148.6
2009	39.8	13.6	53.4	8.6	8.3	3.0	13.9	2.1	8.8	2.9	47.7	101.0

¹ Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

² Through 2005, includes Austria, Belgium, Denmark, Finland, France, Germany (the Federal Republic of), Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom. Beginning in 2006, includes all Europe except countries that were part of the former U.S.S.R. See "Union of Soviet Socialist Republics (U.S.S.R.)" in Glossary.

³ Through 2005, includes countries that were part of the former U.S.S.R. as well as Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Macedonia, Serbia and Montenegro, Slovakia, and Slovenia. Beginning in 2006, includes only countries that were part of the former U.S.S.R. See "Eurasia" and "Union of Soviet Socialist Republics (U.S.S.R.)" in Glossary.

⁴ This region includes areas that are eastward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

⁵ This region includes areas that are westward of the Greenwich prime meridian to 180° longitude and that are not included in other domestic or foreign classifications.

R=Revised. NA=Not available. -- =Not applicable.

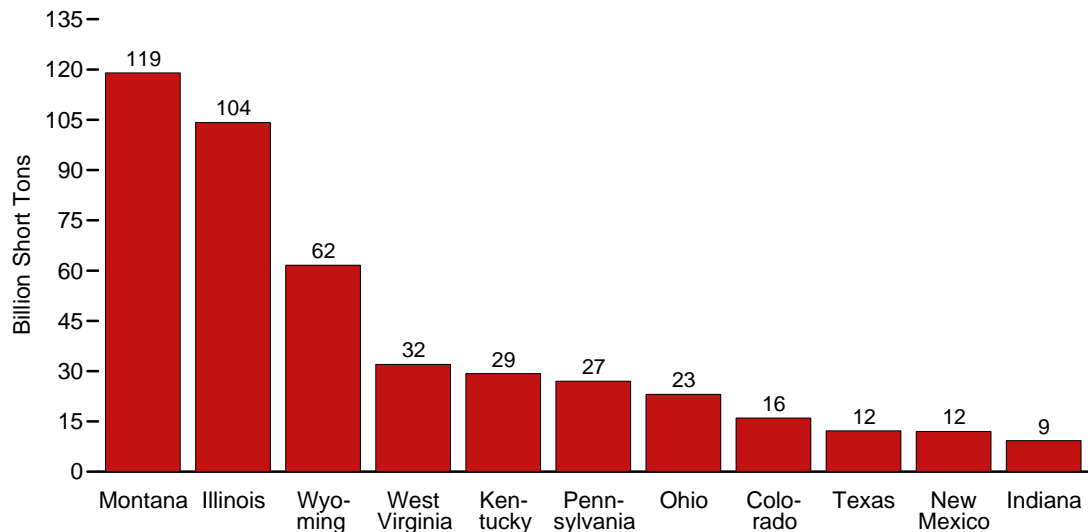
Notes: • "Major U.S. Energy Companies" are the top publicly-owned, U.S.-based crude oil and natural gas producers and petroleum refiners that form the Financial Reporting System (FRS). See <http://www.eia.gov/finance/performanceprofiles/CoList.html>. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.gov/finance/>.

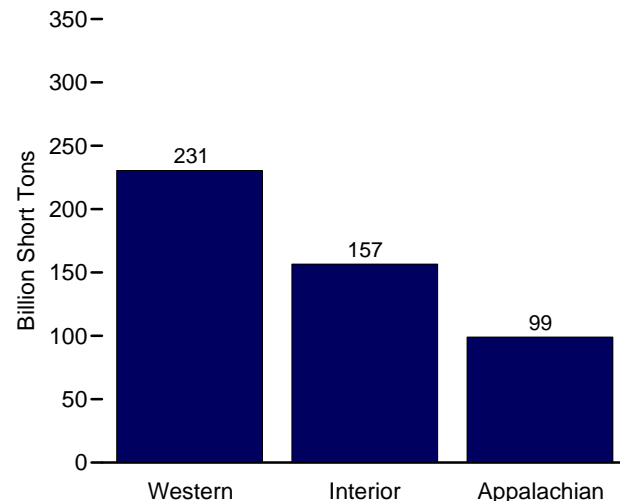
Sources: • 1974-1976—U.S. Energy Information Administration (EIA), Office of Energy Markets and End Use, FRS Database, November 1997. • 1977 forward—EIA, *Performance Profiles of Major Energy Producers*, annual reports.

Figure 4.11 Coal Demonstrated Reserve Base, January 1, 2010

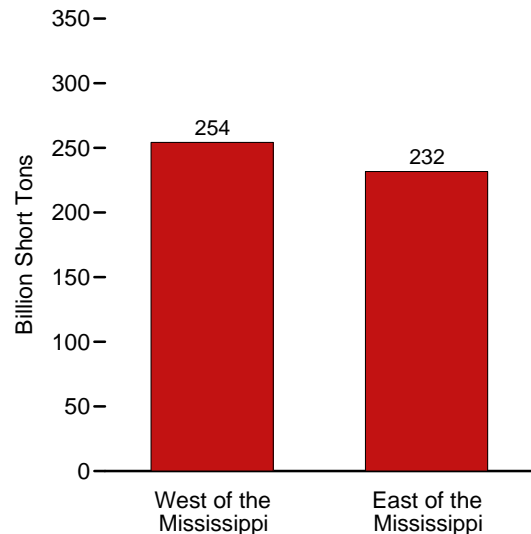
By Key State



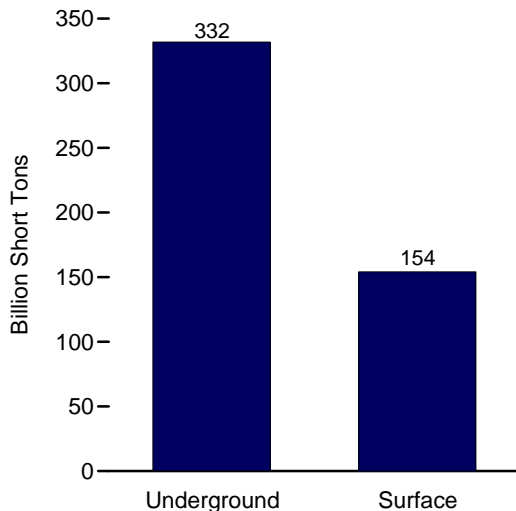
By Region



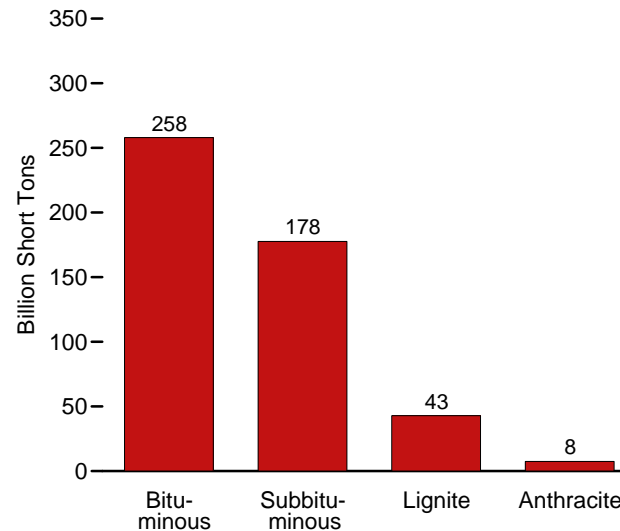
West and East of the Mississippi



By Mining Method



By Rank



Source: Table 4.11.

Table 4.11 Coal Demonstrated Reserve Base, January 1, 2010
(Billion Short Tons)

Region and State	Anthracite		Bituminous Coal		Subbituminous Coal		Lignite	Total		
	Underground	Surface	Underground	Surface	Underground	Surface	Surface ¹	Underground	Surface	Total
Appalachian	4.0	3.3	68.6	22.0	0.0	0.0	1.1	72.6	26.5	99.0
Alabama .....	.0	.0	.9	2.1	.0	.0	1.1	.9	3.2	4.1
Kentucky, Eastern .....	.0	.0	.8	9.1	.0	.0	.0	.8	9.1	10.0
Ohio .....	.0	.0	17.4	5.7	.0	.0	.0	17.4	5.7	23.1
Pennsylvania	3.8	3.3	19.0	.8	.0	.0	.0	22.8	4.2	27.0
Virginia .....	.1	.0	.9	.5	.0	.0	.0	1.0	.5	1.5
West Virginia .....	.0	.0	28.5	3.4	.0	.0	.0	28.5	3.4	32.0
Other ² .....	.0	.0	1.1	.3	.0	.0	.0	1.1	.3	1.4
Interior .....	.1	(s)	116.8	27.1	.0	.0	12.6	116.9	39.7	156.6
Illinois .....	.0	.0	87.7	16.5	.0	.0	.0	87.7	16.5	104.2
Indiana .....	.0	.0	8.6	.6	.0	.0	.0	8.6	.6	9.3
Iowa .....	.0	.0	1.7	.5	.0	.0	.0	1.7	.5	2.2
Kentucky, Western .....	.0	.0	15.7	3.6	.0	.0	.0	15.7	3.6	19.3
Missouri .....	.0	.0	1.5	4.5	.0	.0	.0	1.5	4.5	6.0
Oklahoma .....	.0	.0	1.2	.3	.0	.0	.0	1.2	.3	1.5
Texas .....	.0	.0	.0	.0	.0	.0	12.2	.0	12.2	12.2
Other ³ .....	.1	(s)	.3	1.1	.0	.0	0.4	.4	1.5	1.9
Western	(s)	.0	21.2	2.3	121.2	56.5	29.2	142.5	88.0	230.5
Alaska .....	.0	.0	.6	.1	4.8	.6	(s)	5.4	.7	6.1
Colorado	(s)	.0	7.5	.6	3.7	.0	4.2	11.2	4.8	16.0
Montana .....	.0	.0	1.4	.0	69.6	32.3	15.8	71.0	48.1	119.0
New Mexico	(s)	.0	2.7	.9	3.4	5.0	.0	6.1	5.9	12.0
North Dakota .....	.0	.0	.0	.0	.0	.0	8.9	.0	8.9	8.9
Utah .....	.0	.0	4.9	.3	(s)	.0	.0	4.9	.3	5.2
Washington .....	.0	.0	.3	.0	1.0	.0	(s)	1.3	(s)	1.3
Wyoming .....	.0	.0	3.8	.5	38.6	18.6	.0	42.5	19.1	61.6
Other ⁴ .....	.0	.0	(s)	.0	(s)	(s)	.4	(s)	.4	.4
U.S. Total	4.1	3.4	206.6	51.4	121.2	56.5	42.9	331.9	154.2	486.1
States East of the Mississippi River	4.0	3.3	180.6	42.8	.0	.0	1.1	184.6	47.2	231.8
States West of the Mississippi River .....	.1	(s)	26.0	8.6	121.2	56.5	41.8	147.3	107.0	254.3

¹ Lignite resources are not mined underground in the United States.

² Georgia, Maryland, North Carolina, and Tennessee.

³ Arkansas, Kansas, Louisiana, and Michigan.

⁴ Arizona, Idaho, Oregon, and South Dakota.

(s)=Less than 0.05 billion short tons.

Notes: • See *U.S. Coal Reserves: 1997 Update* on the Web Page for a description of the methodology used to produce these data. • Data represent remaining measured and indicated coal resources, analyzed

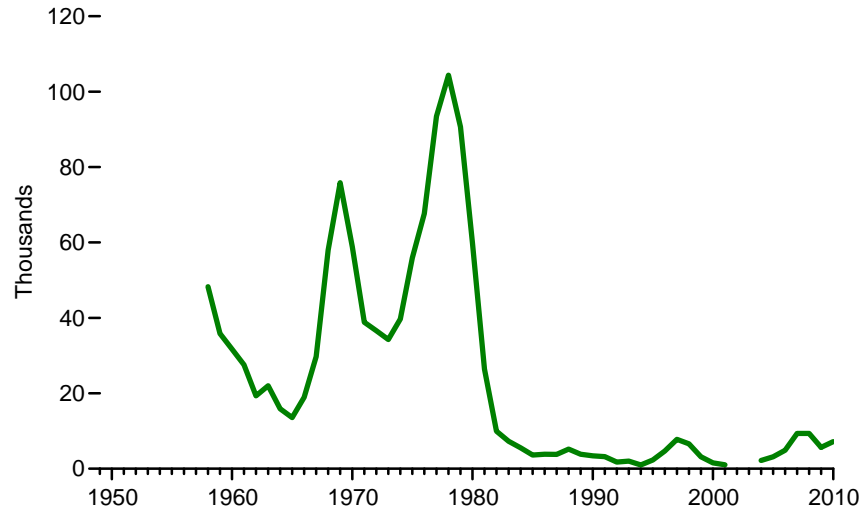
and on file, meeting minimum seam and depth criteria, and in the ground as of January 1, 2010. These coal resources are not totally recoverable. Net recoverability with current mining technologies ranges from 0 percent (in far northern Alaska) to more than 90 percent. Fifty-four percent of the demonstrated reserve base of coal in the United States is estimated to be recoverable. • Totals may not equal sum of components due to independent rounding.

Web Page: For related information, see <http://www.eia.gov/coal/>.

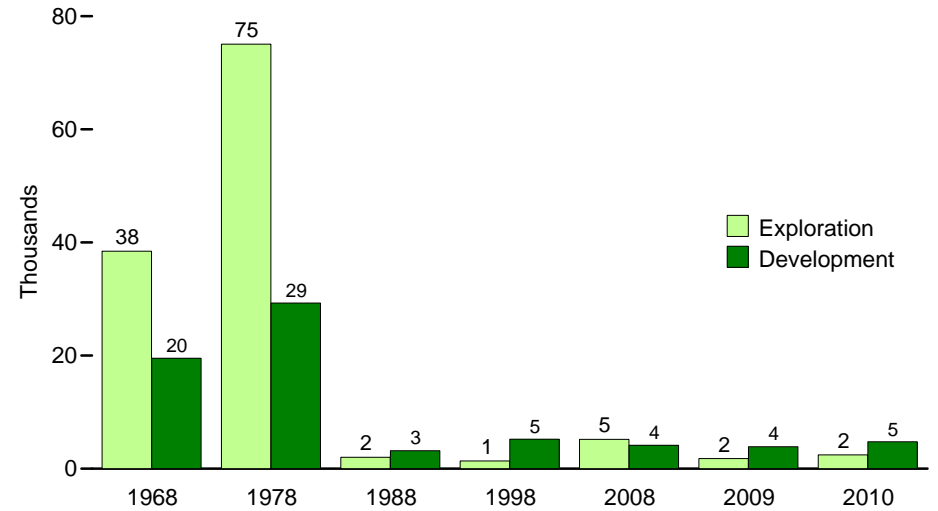
Source: U.S. Energy Information Administration, Coal Reserves Database.

Figure 4.12 Uranium Exploration and Development Drilling

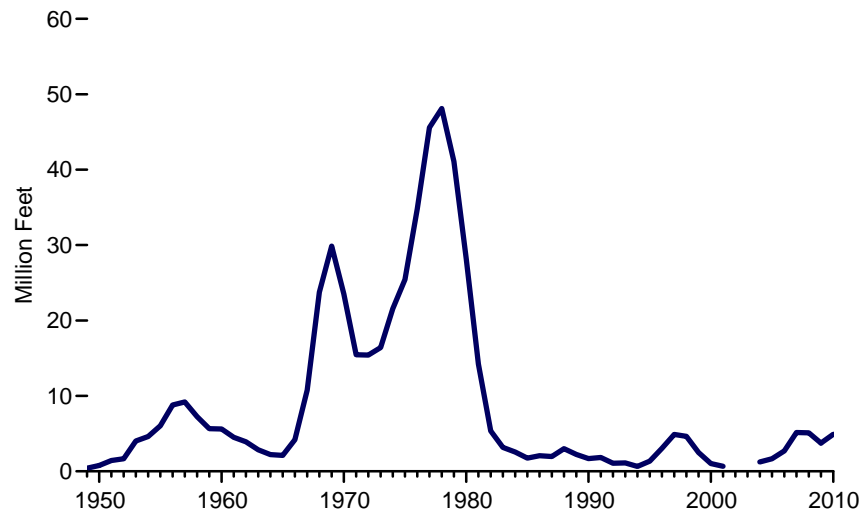
Total Holes Drilled, 1958-2010¹



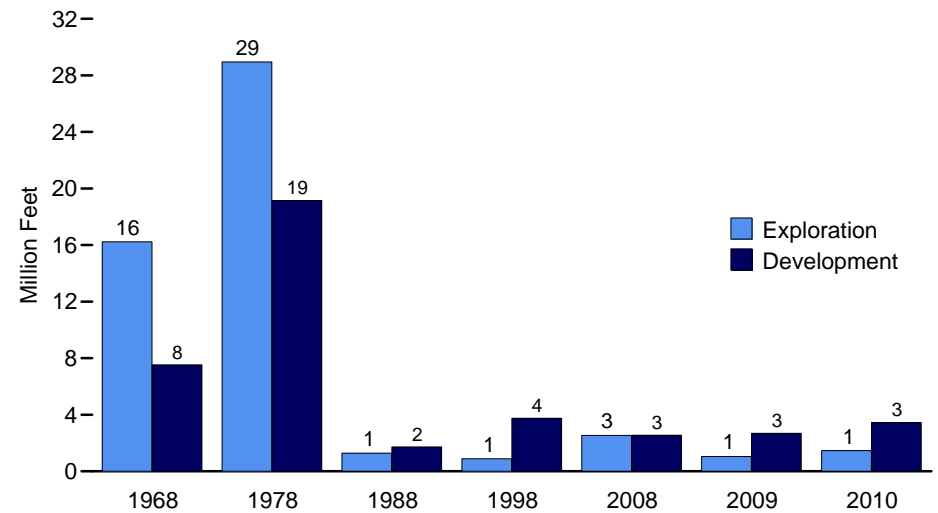
Holes Drilled, Selected Years



Total Footage Drilled, 1949-2010¹



Footage Drilled, Selected Years



¹ In 2002 and 2003, data are withheld to avoid disclosure.

Source: Table 4.12.

Table 4.12 Uranium Exploration and Development Drilling, Selected Years, 1949-2010

Year	Exploration ¹		Development ²		Total	
	Holes Drilled	Footage Drilled	Holes Drilled	Footage Drilled	Holes Drilled	Footage Drilled
	Thousands	Million Feet	Thousands	Million Feet	Thousands	Million Feet
1949	NA	0.36	NA	0.05	NA	0.41
1950	NA	.57	NA	.21	NA	.78
1955	NA	5.27	NA	.76	NA	6.03
1960	7.34	1.40	24.40	4.21	31.73	5.61
1965	6.23	1.16	7.33	.95	13.56	2.11
1970	43.98	17.98	14.87	5.55	58.85	23.53
1975	34.29	15.69	21.60	9.73	55.89	25.42
1976	40.41	20.36	27.23	14.44	67.64	34.80
1977	62.60	27.96	30.86	17.62	93.45	45.58
1978	75.07	28.95	29.29	19.15	104.35	48.10
1979	60.46	28.07	30.19	13.01	90.65	41.08
1980	39.61	19.60	20.19	8.59	59.80	28.19
1981	17.75	10.87	8.67	3.35	26.42	14.22
1982	6.97	4.23	3.00	1.13	9.97	5.36
1983	4.29	2.09	3.01	1.08	7.30	3.17
1984	4.80	2.26	.72	.29	5.52	2.55
1985	2.88	1.42	.77	.34	3.65	1.76
1986	1.99	1.10	1.85	.97	3.83	2.07
1987	1.82	1.11	1.99	.86	3.81	1.97
1988	2.03	1.28	3.18	1.73	5.21	3.01
1989	2.09	1.43	1.75	.80	3.84	2.23
1990	1.51	.87	1.91	.81	3.42	1.68
1991	1.62	.97	1.57	.87	3.20	1.84
1992	.94	.56	.83	.50	1.77	1.06
1993	.36	.22	1.67	.89	2.02	1.11
1994	.52	.34	.48	.32	1.00	.66
1995	.58	.40	1.73	.95	2.31	1.35
1996	1.12	.88	3.58	2.16	4.70	3.05
1997	1.94	1.33	5.86	3.56	7.79	4.88
1998	1.37	.89	5.23	3.75	6.60	4.64
1999	.27	.18	2.91	2.33	3.18	2.50
2000	W	W	W	W	1.55	1.02
2001	.00	.00	1.02	.66	1.02	.66
2002	W	W	W	W	W	W
2003	NA	NA	NA	NA	W	W
2004	W	W	W	W	2.19	1.25
2005	W	W	W	W	3.14	1.67
2006	1.47	.82	3.43	1.89	4.90	2.71
2007	4.35	2.20	5.00	2.95	9.35	5.15
2008	5.20	2.54	4.16	2.55	9.36	5.09
2009	1.79	1.05	3.89	2.69	5.68	3.74
2010	2.44	1.46	4.77	3.44	7.21	4.90

¹ Includes surface drilling in search of new ore deposits or extensions of known deposits and drilling at the location of a discovery up to the time the company decides sufficient ore reserves are present to justify commercial exploitation.

² Includes all surface drilling on an ore deposit to determine more precisely size, grade, and configuration subsequent to the time that commercial exploitation is deemed feasible.

NA=Not available. W=Value withheld to avoid disclosure of individual company data.

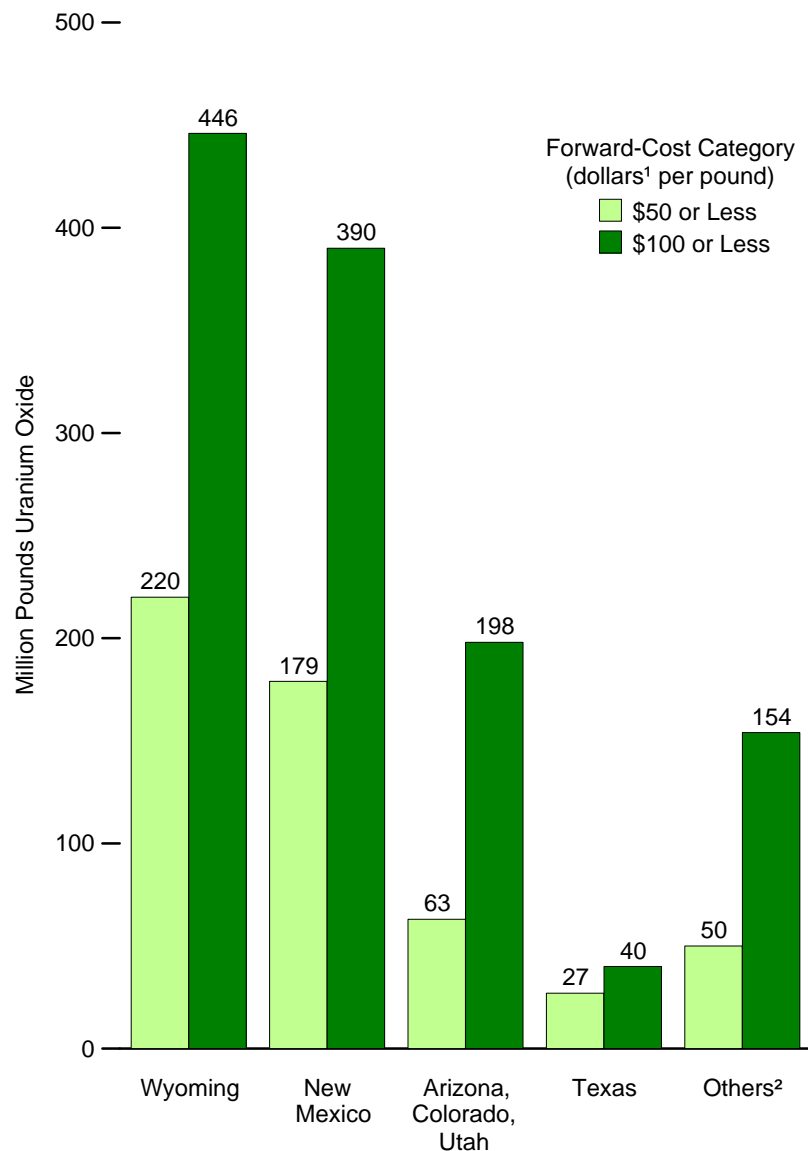
Note: Totals may not equal sum of components due to independent rounding.

Web Pages: • See <http://www.eia.gov/totalenergy/data/annual/#resources> for all data beginning in 1949. • For related information, see <http://www.eia.gov/nuclear/>.

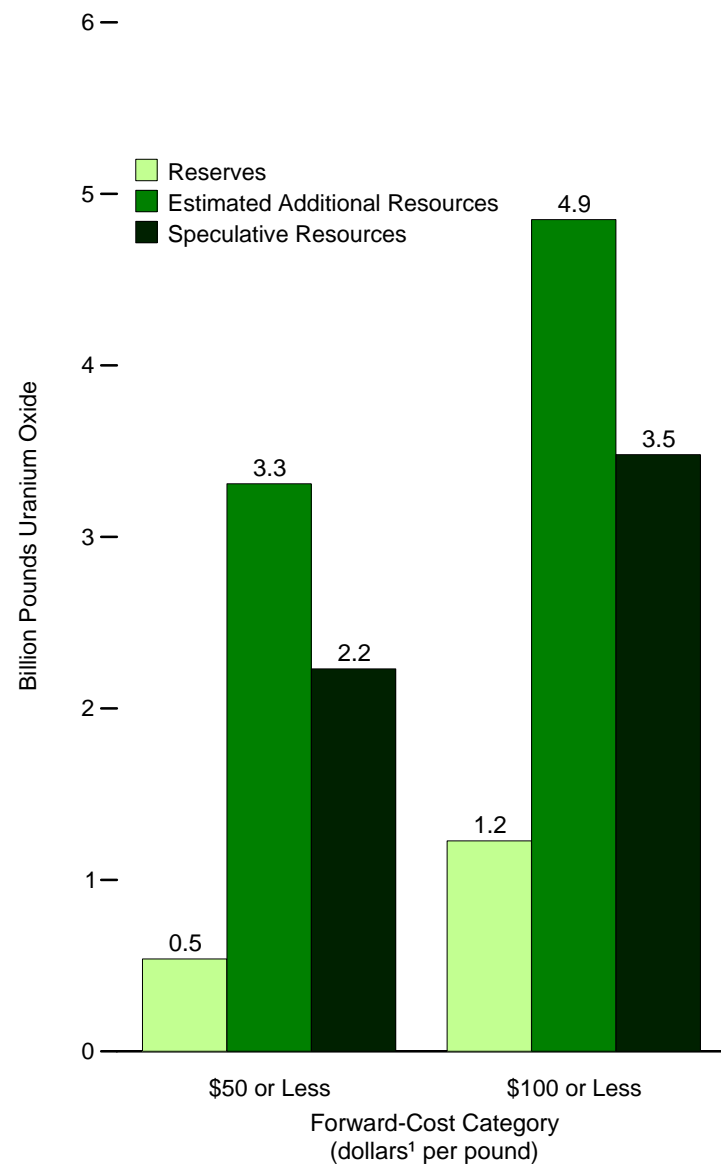
Sources: • 1949-1981—U.S. Department of Energy, Grand Junction Office, *Statistical Data of the Uranium Industry, January 1, 1983*, Report No. GJO-100 (1983), Table VIII-5. • 1982-2002—U.S. Energy Information Administration (EIA), *Uranium Industry Annual*, annual reports. • 2003-2005—EIA, "Domestic Uranium Production Report," annual reports. • 2006 forward—EIA, "2010 Domestic Uranium Production Report" (June 2011), Table 1.

Figure 4.13 Uranium Reserves and Resources, 2008

Reserves



Reserves and Resources



¹ Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

² Alaska, California, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Virginia, and Washington.

Notes: • See "Uranium Oxide" in Glossary. • Data are at end of year.

Source: Table 4.13.

Table 4.13 Uranium Reserves and Resources, 2008
(Million Pounds Uranium Oxide)

Resource Category and State	Forward-Cost ¹ Category (dollars ² per pound)	
	\$50 or Less	\$100 or Less
Reserves ³	539	1,227
Wyoming	220	446
New Mexico	179	390
Arizona, Colorado, Utah	63	198
Texas	27	40
Others ⁴	50	154
Potential Resources ⁵		
Estimated Additional Resources	3,310	4,850
Speculative Resources	2,230	3,480

¹ Forward costs include the costs for power and fuel, labor, materials, insurance, severance and ad valorem taxes, and applicable administrative costs. Past capital costs are considered "sunk" costs and mining of the individual deposits may or may not return such costs to investors. Sunk costs for such items as exploration and land acquisition are excluded as are the costs for income taxes, profit, and the cost of money. The forward costs used to estimate U.S. uranium ore reserves are independent of the price at which uranium produced from the estimated reserves might be sold in the commercial market. Resource values in forward-cost categories are cumulative; that is, the quantity at each level of forward cost includes all reserves/resources at the lower cost in that category.

² Prices are not adjusted for inflation. See "Nominal Dollars" in Glossary.

³ The U.S. Energy Information Administration (EIA) category of uranium reserves is equivalent to the internationally reported category of "Reasonably Assured Resources" (RAR).

⁴ Alaska, California, Idaho, Montana, Nebraska, Nevada, North Dakota, Oregon, South Dakota, Virginia,

and Washington.

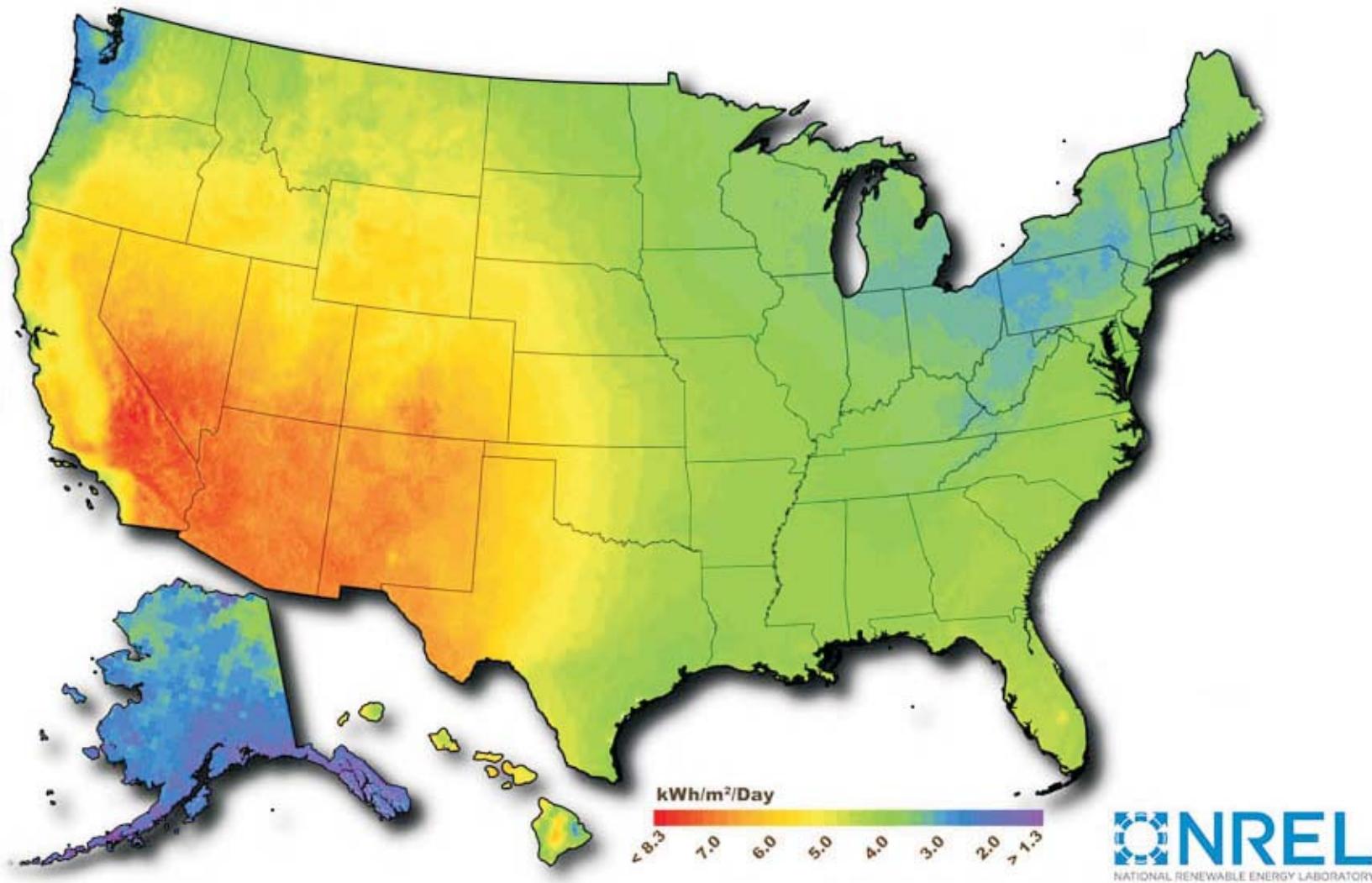
⁵ Shown are the mean values for the distribution of estimates for each forward-cost category, rounded to the nearest million pounds uranium oxide.

Notes: • Estimates are at end of year. • See "Uranium Oxide" in Glossary. • For updates, see <http://www.eia.gov/cneaf/nuclear/page/reserves/ures.html>.

Web Page: For related information, see <http://www.eia.gov/nuclear/>.

Sources: **Reserves:** EIA, *U.S. Uranium Reserves Estimates* (July 2010), Table 1. **Potential Resources:** EIA estimates based on uranium resources data developed under the National Uranium Resource Evaluation program and U.S. Geological Survey Uranium Resource Assessment Project using methodology described in *Uranium Resource Assessment by the Geological Survey: Methodology and Plan to Update the National Resource Base*, U.S. Geological Survey Circular 994 (1987).

Figure 4.14 Concentrating Solar Resources



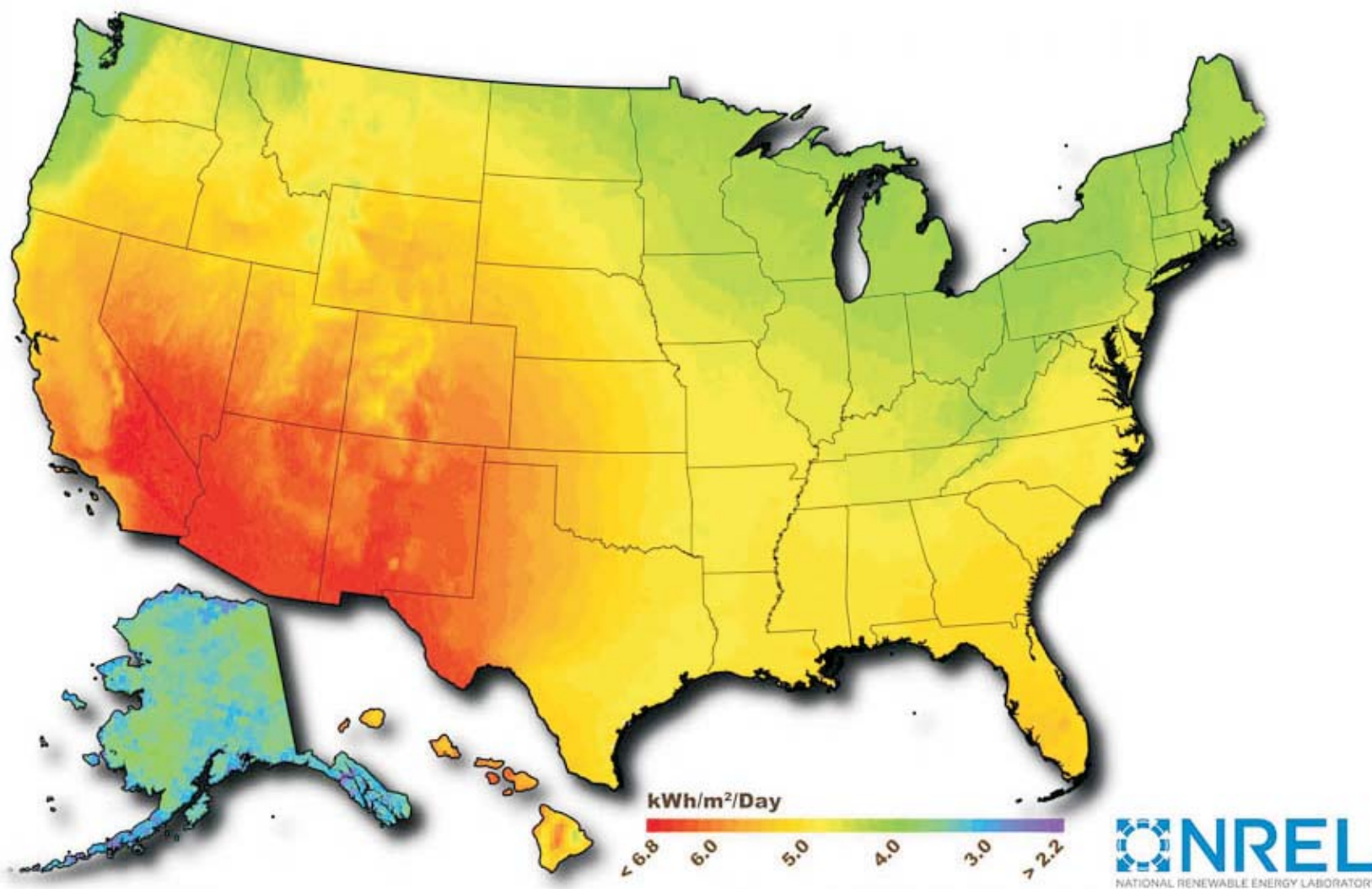
Notes: • Annual average direct normal solar resource data are shown. • kWh/m²/Day = kilowatthours per square meter per day.

Web Page: For related information, see <http://www.nrel.gov/gis/maps.html>.

Sources: This map was created by the National Renewable Energy Laboratory for the

Department of Energy. The data for Hawaii and the 48 contiguous States are a 10-kilometer (km) satellite modeled dataset (SUNY/NREL, 2007) representing data from 1998-2005. The data for Alaska are a 40-km dataset produced by the Climatological Solar Radiation Model (NREL, 2003).

Figure 4.15 Photovoltaic Solar Resources

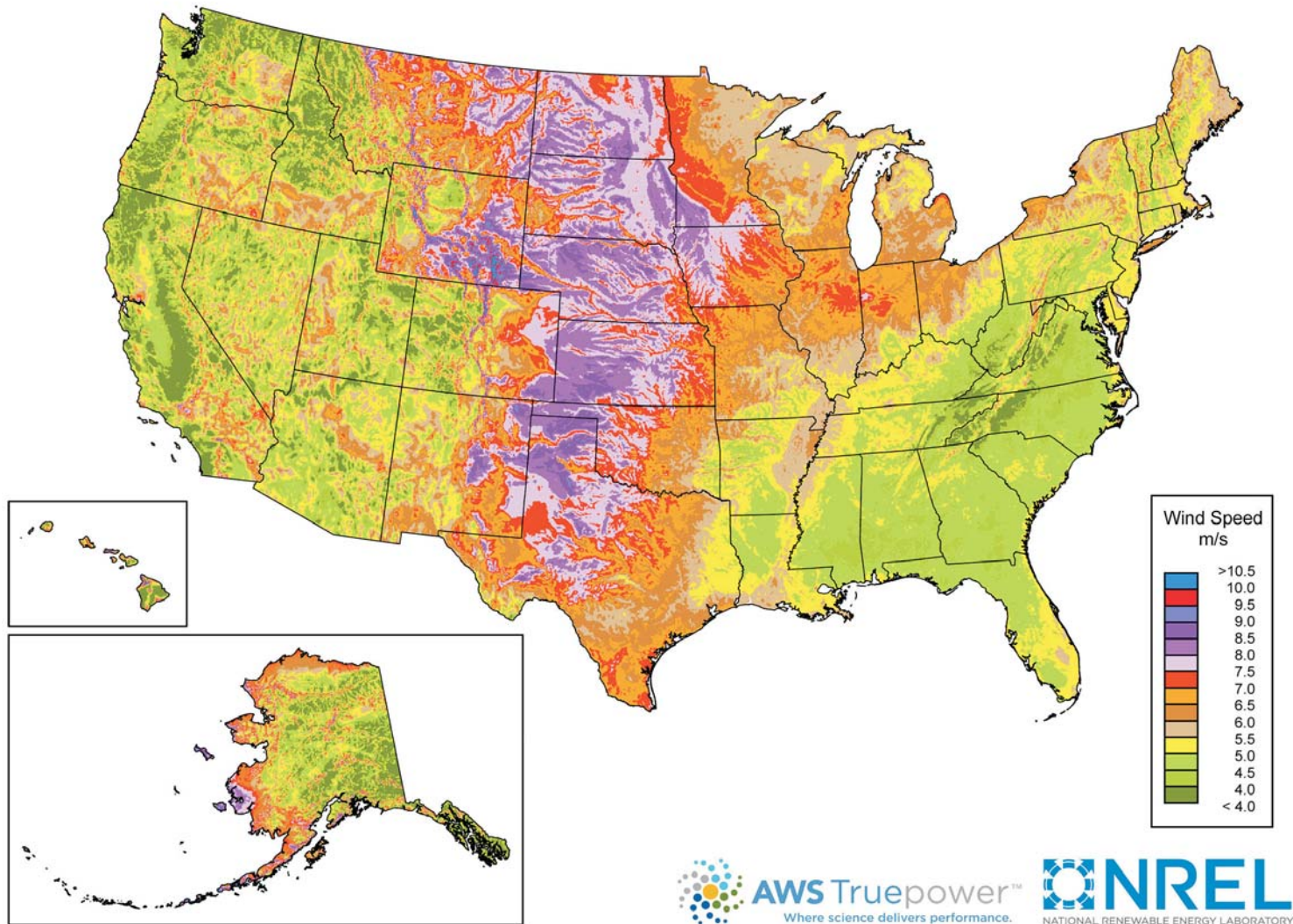


Notes: • Annual average solar resource data are shown for a tilt=latitude collector. • kWh/m²/Day = kilowatt-hours per square meter per day.

Web Page: For related information, see <http://www.nrel.gov/gis/maps.html>.

Sources: This map was created by the National Renewable Energy Laboratory for the Department of Energy. The data for Hawaii and the 48 contiguous States are a 10-kilometer (km) satellite modeled dataset (SUNY/NREL, 2007) representing data from 1998-2005. The data for Alaska are a 40-km dataset produced by the Climatological Solar Radiation Model (NREL, 2003).

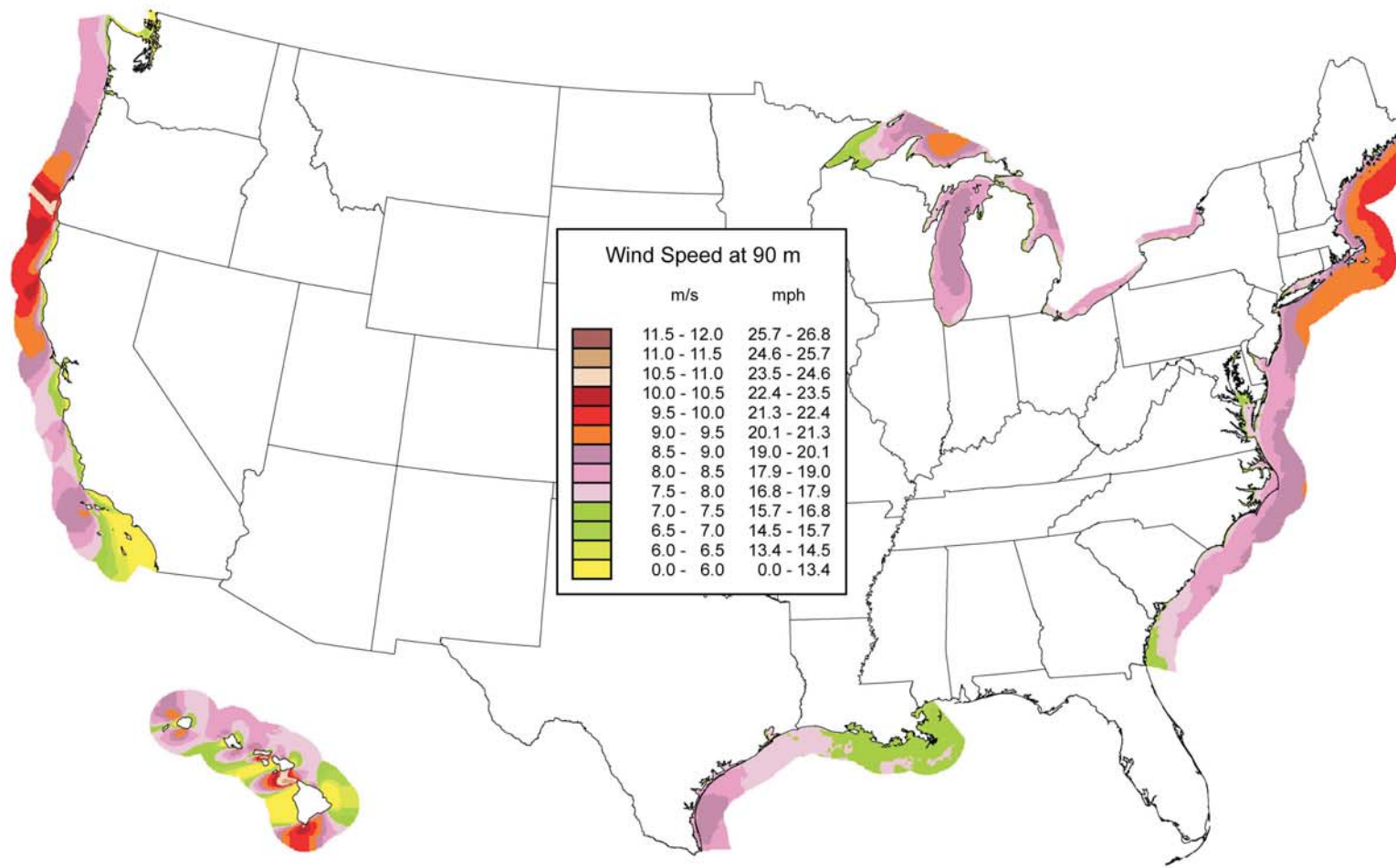
Figure 4.16 Onshore Wind Resources



Notes: • Data are annual average wind speed at 80 meters. • m/s = meters per second.
Web Page: For related information, see <http://www.nrel.gov/gis/maps.html>.
Sources: This map was created by the National Renewable Energy Laboratory for the Department of Energy. Wind resource estimates developed by AWS Truepower, LLC for

windNavigator®. See <http://www.windnavigator.com> and <http://www.awstruepower.com>.
Spatial resolution of wind resource data: 2.5 kilometers. Projection: Albers Equal Area WGS84.

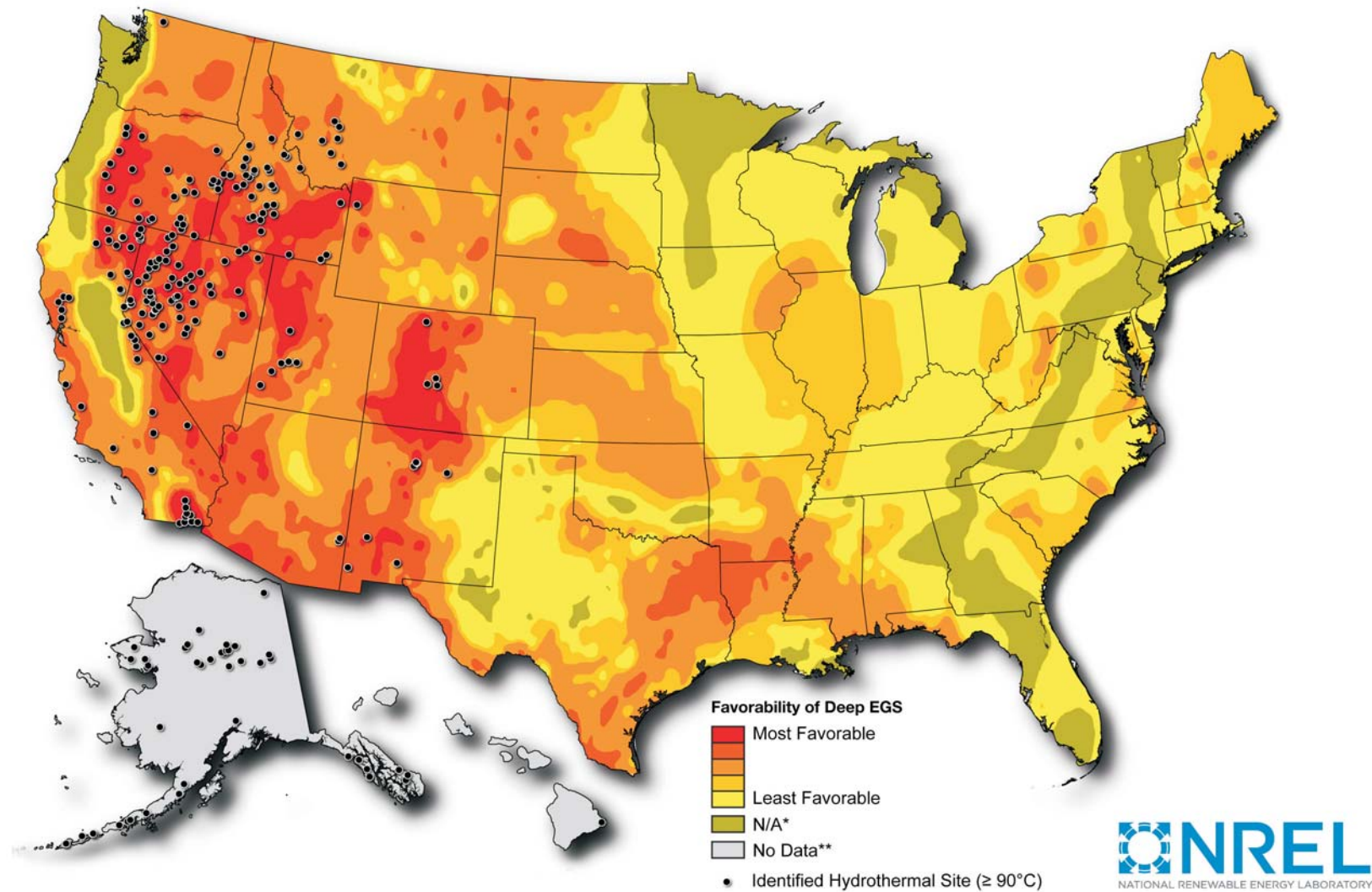
Figure 4.17 Offshore Wind Resources



Notes: • Data are annual average wind speed at 90 meters. • m/s = meters per second.
 • mph = miles per hour.

Web Page: For related information, see <http://www.nrel.gov/gis/maps.html>.
 Source: This map was created by the National Renewable Energy Laboratory for the Department of Energy.

Figure 4.18 Geothermal Resources

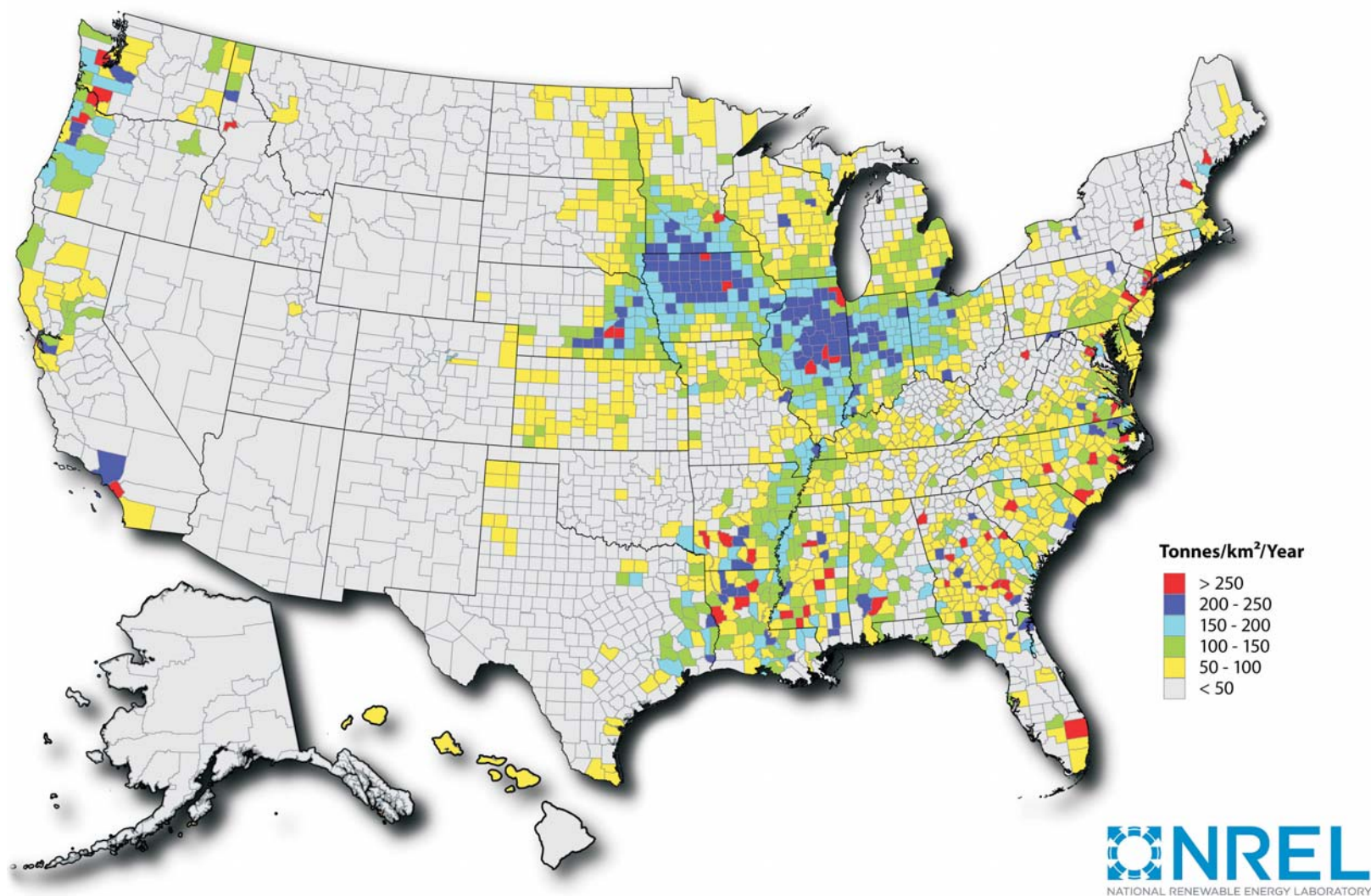


Notes: • Data are for locations of identified hydrothermal sites and favorability of deep enhanced geothermal systems (EGS). • Map does not include shallow EGS resources located near hydrothermal sites or USGS assessment of undiscovered hydrothermal resources. • **N/A" regions have temperatures less than 150°C at 10 kilometers (km) depth and were not assessed for deep EGS potential. • **Temperature at depth data for deep EGS in Alaska and Hawaii not available.

Web Page: For related information, see <http://www.nrel.gov/gis/maps.html>.

Sources: This map was created by the National Renewable Energy Laboratory for the Department of Energy. Source data for deep EGS includes temperature at depth from 3 to 10 km provided by Southern Methodist University Geothermal Laboratory (Blackwell & Richards, 2009) and analyses (for regions with temperatures $\geq 150^{\circ}\text{C}$) performed by NREL (2009). Source data for identified hydrothermal sites from USGS Assessment of Moderate- and High-Temperature Geothermal Resources of the United States (2008).

Figure 4.19 Biomass Resources



Notes: • Data are for total biomass per square kilometer. • km² = square kilometer. • This study estimates the biomass resources currently available in the United States by county. It includes the following feedstock categories: crop residues (5 year average: 2003-2007), forest and primary mill residues (2007), secondary mill and urban wood waste (2002), methane emissions from landfills (2008), domestic wastewater treatment (2007), and animal manure (2002). For more information on the data development, please refer to <http://www.nrel.gov/docs/fy06osti/39181.pdf>.

Although, the document contains the methodology for the development of an older assessment, the information is applicable to this assessment as well. The difference is only in the data's time period.

Web Page: For related information, see <http://www.nrel.gov/gis/maps.html>.

Source: This map was created by the National Renewable Energy Laboratory for the Department of Energy.

