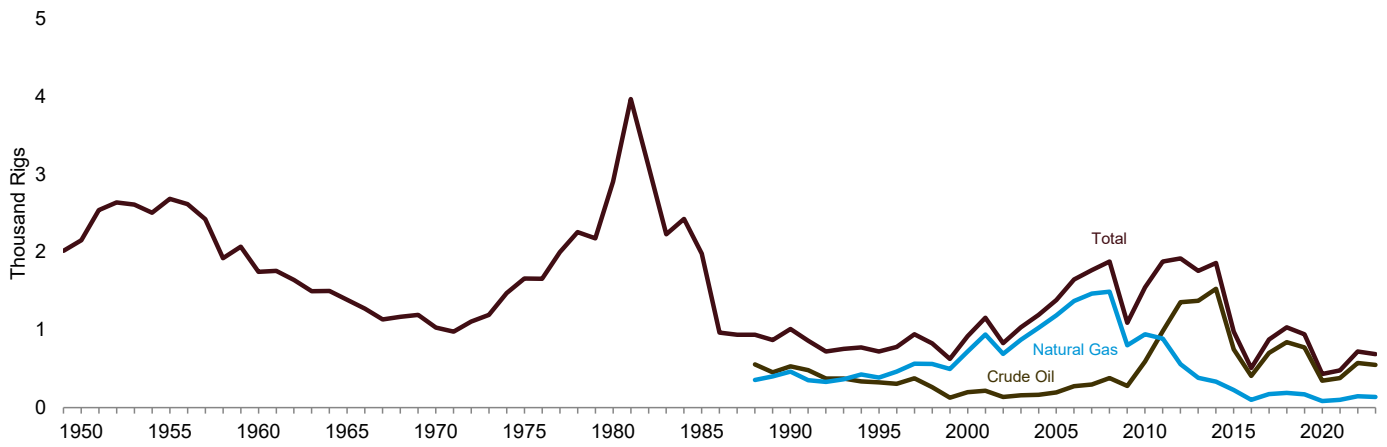


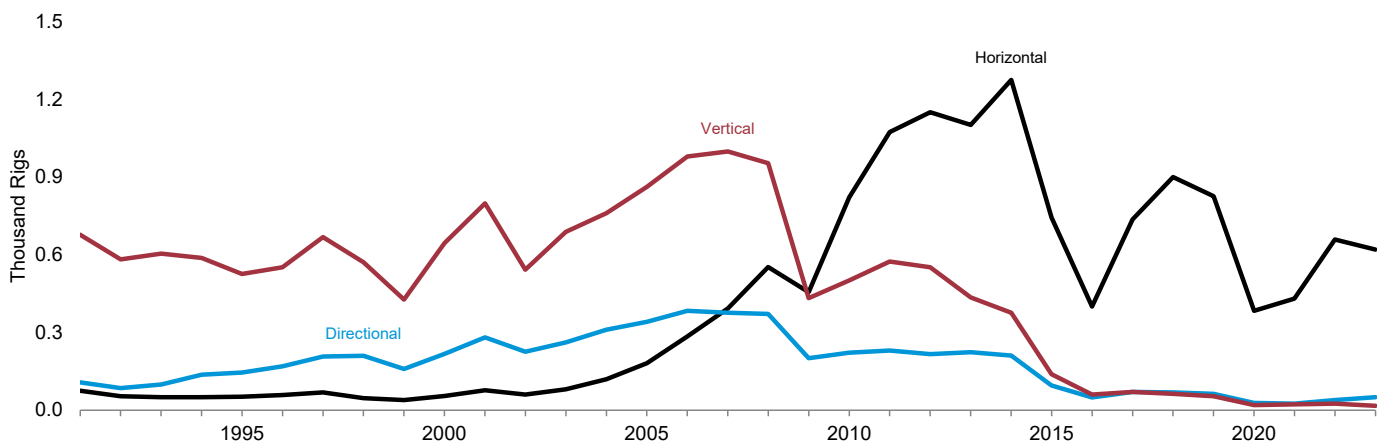
5. Crude Oil and Natural Gas Resource Development

Figure 5.1 Crude Oil and Natural Gas Drilling Activity Measurements

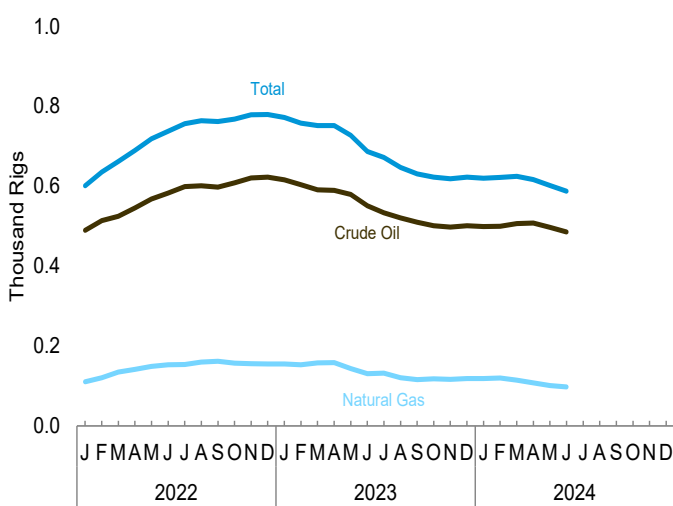
Rotary Rigs in Operation by Type, 1949–2023



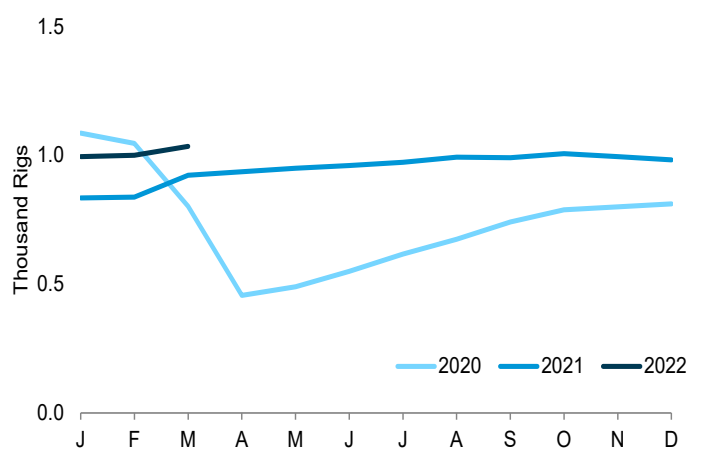
Rotary Rigs in Operation by Trajectory, 1991–2023



Rotary Rigs in Operation by Type, Monthly



Active Well Service Rig Count, Monthly



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#crude>.

Sources: Table 5.1.

Table 5.1 Crude Oil and Natural Gas Drilling Activity Measurements
(Number of Rigs)

	Rotary Rigs in Operation ^{a,b}							Active Well Service Rig Count ^d	
	By Location ^c		By Type ^c		By Trajectory ^c				
	Onshore	Offshore	Crude Oil	Natural Gas	Horizontal	Directional	Vertical		Total ^c
1950 Average	NA	NA	NA	NA	NA	NA	NA	2,154	NA
1955 Average	NA	NA	NA	NA	NA	NA	NA	2,686	NA
1960 Average	NA	NA	NA	NA	NA	NA	NA	1,748	NA
1965 Average	NA	NA	NA	NA	NA	NA	NA	1,388	NA
1970 Average	NA	NA	NA	NA	NA	NA	NA	1,028	NA
1975 Average	1,554	106	NA	NA	NA	NA	NA	1,660	2,486
1980 Average	2,678	231	NA	NA	NA	NA	NA	2,909	4,089
1985 Average	1,774	206	NA	NA	NA	NA	NA	1,980	4,716
1990 Average	902	108	532	464	NA	NA	NA	1,010	3,658
1995 Average	622	101	323	385	52	145	526	723	3,041
2000 Average	778	140	197	720	55	217	645	918	2,692
2005 Average	1,290	93	194	1,186	181	341	862	1,383	2,222
2010 Average	1,514	31	591	943	822	222	501	1,546	1,854
2011 Average	1,846	32	984	887	1,074	230	574	1,879	2,075
2012 Average	1,871	48	1,357	558	1,151	216	552	1,919	2,113
2013 Average	1,705	56	1,373	383	1,102	224	435	1,761	2,064
2014 Average	1,804	57	1,527	333	1,275	211	376	1,862	2,024
2015 Average	943	35	750	226	744	95	139	978	1,481
2016 Average	486	23	408	100	400	49	60	509	1,061
2017 Average	856	20	703	172	737	70	70	876	1,187
2018 Average	1,013	19	841	190	900	69	63	1,032	1,292
2019 Average	920	23	774	169	826	63	54	943	1,253
2020 Average	417	15	345	85	384	28	20	433	738
2021 Average	464	14	380	98	431	25	22	478	949
2022 January	583	18	490	111	543	35	23	601	995
February	622	14	514	121	578	32	26	636	1,000
March	649	12	525	135	605	34	24	662	1,035
April	677	13	546	142	632	32	25	690	NA
May	701	17	568	149	657	37	25	719	NA
June	723	16	583	153	673	39	27	738	NA
July	740	16	599	154	687	41	29	757	NA
August	746	18	601	160	695	39	30	764	NA
September	747	16	598	162	694	44	24	762	NA
October	754	14	609	157	704	42	23	768	NA
November	763	16	621	156	711	45	23	779	NA
December	763	16	623	155	708	45	26	780	NA
Average	708	15	574	147	659	39	25	723	NA
2023 January	756	16	616	155	701	47	24	772	NA
February	742	16	604	153	698	42	18	758	NA
March	736	17	591	158	691	47	14	752	NA
April	733	19	590	159	685	48	19	752	NA
May	707	21	580	144	657	52	19	728	NA
June	667	20	551	131	617	51	18	687	NA
July	654	19	534	132	602	52	18	672	NA
August	629	18	521	121	576	52	19	647	NA
September	613	19	510	116	561	55	15	631	NA
October	600	23	501	118	556	52	15	623	NA
November	599	20	498	117	552	54	13	619	NA
December	603	20	501	119	561	49	13	623	NA
Average	669	19	549	135	620	50	17	687	NA
2024 January	601	20	499	119	561	48	12	620	NA
February	603	20	500	120	560	50	13	622	NA
March	603	22	507	115	559	53	13	625	NA
April	598	19	508	108	555	50	13	617	NA
May	582	20	497	101	544	42	17	602	NA
June	567	21	486	98	525	44	19	588	NA
6-Month Average	592	20	500	110	551	48	15	613	NA
2023 6-Month Average	722	18	587	149	674	48	18	740	NA
2022 6-Month Average	660	15	538	135	615	35	25	675	NA

^a Data are for rigs drilling for crude oil, rigs drilling for natural gas, and other rigs (not shown separately) drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests.

^b Rotary rigs in operation are reported weekly on Fridays. Monthly data are averages of 4- or 5-week reporting periods. Multi-month data are averages of the reported weekly data over the covered months. Annual data are averages of 52- or 53-week reporting periods. Published data are rounded to the nearest whole number.

^c Not shown under "By Type" are other rigs drilling for miscellaneous purposes, such as service wells, injection wells, and stratigraphic tests. Therefore, the sum of "Crude Oil" and "Natural Gas" may not equal "Total" values. In addition, for "By Location," "By Type," and "By Trajectory," the sum of the components in each category may not equal "Total" values due to independent rounding.

^d The number of rigs doing true workovers (where tubing is pulled from the well), or doing rod string and pump repair operations, and that are, on average, crewed and working every day of the month.

NA=Not available.

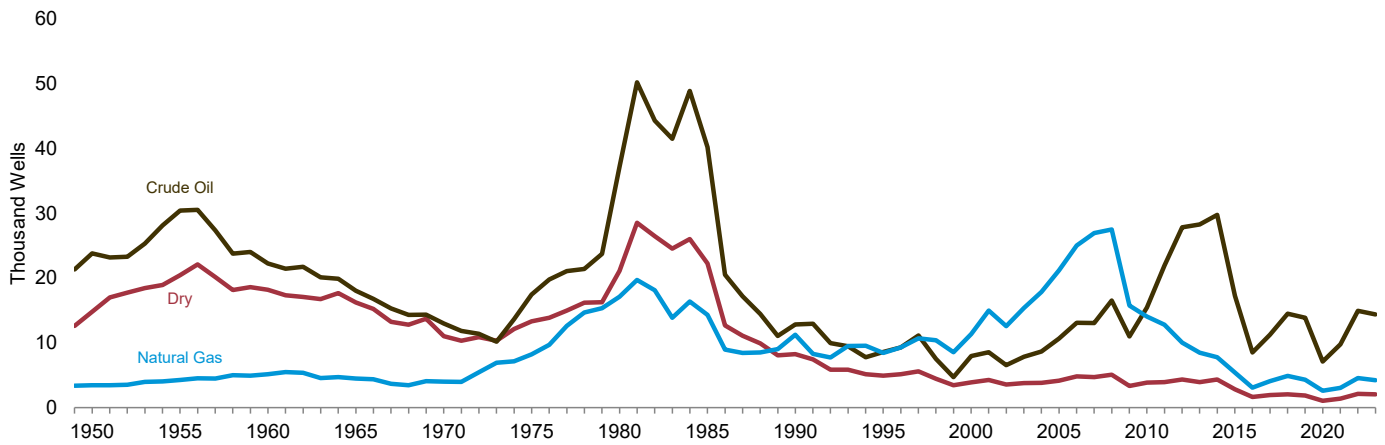
Note: Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#crude> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

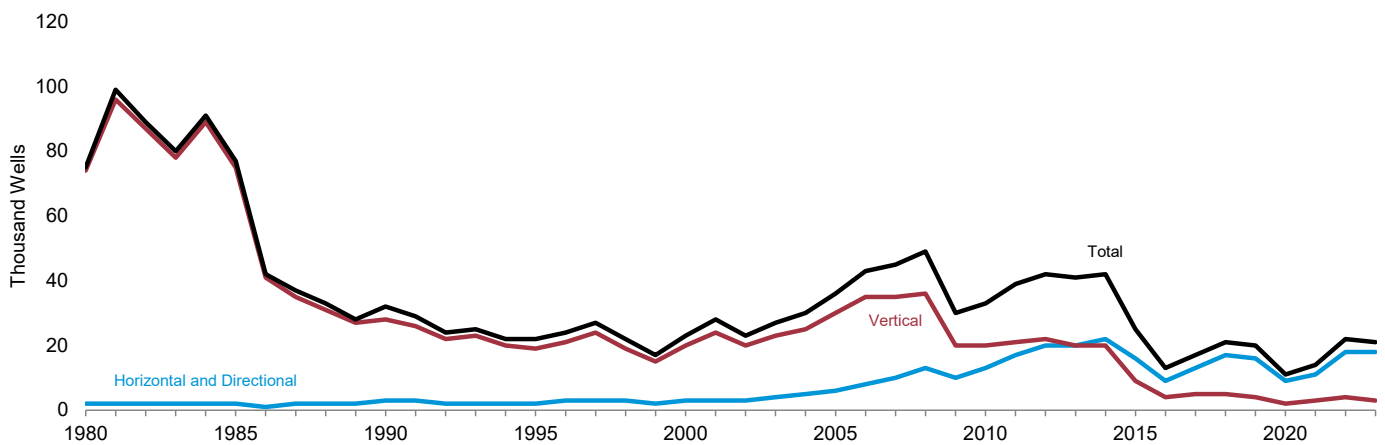
Sources: • **Rotary Rigs in Operation:** Baker Hughes, Inc., Houston, TX, "North America Rig Count," used with permission. See <http://phx.corporate-ir.net/phoenix.zhtml?c=79687&p=irol-reports>. • **Active Well Service Rig Count:** Energy Workforce & Technology Council, Houston, TX.

Figure 5.2 Crude Oil and Natural Gas Wells and Footage Drilled

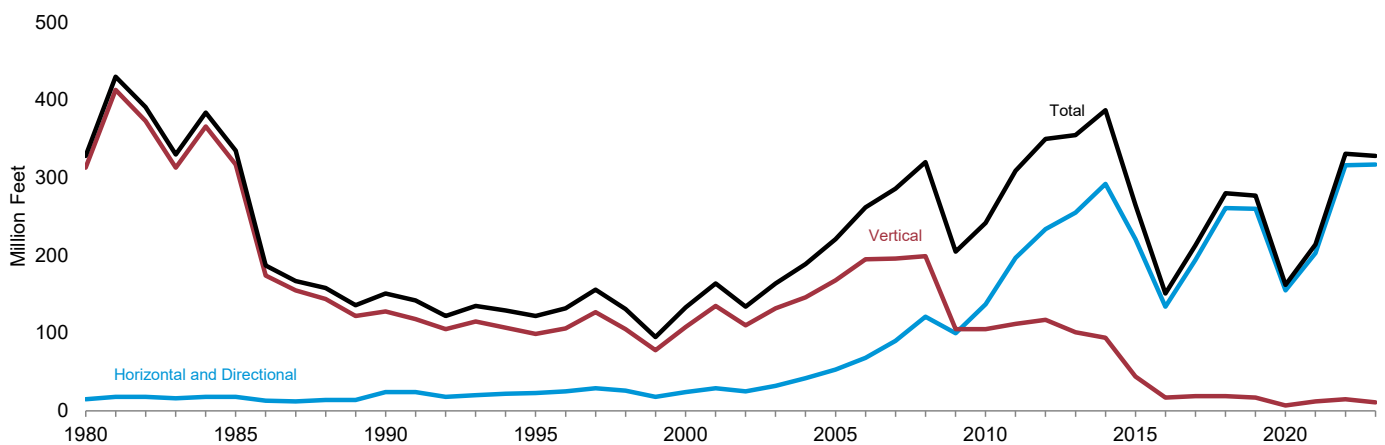
Wells Drilled by Type, 1949–2023



Wells Drilled by Trajectory, 1980–2023



Footage Drilled by Trajectory, 1980–2023



Web Page: <http://www.eia.gov/totalenergy/data/monthly/#crude>.

Sources: Table 5.2.

Table 5.2 Crude Oil and Natural Gas Wells and Footage Drilled

	Wells Drilled						Footage Drilled					
	By Type			By Trajectory			By Type			By Trajectory		
	Crude Oil	Natural Gas	Dry	Horizontal and Directional	Vertical	Total	Crude Oil	Natural Gas	Dry	Horizontal and Directional	Vertical	Total
	Number						Thousand Feet					
1950 Total	23,812	3,439	14,799	NA	NA	42,050	NA	NA	NA	NA	NA	157,358
1955 Total	30,432	4,266	20,452	NA	NA	55,150	NA	NA	NA	NA	NA	226,182
1960 Total	22,258	5,149	18,212	NA	NA	45,619	NA	NA	NA	NA	NA	192,176
1965 Total	18,065	4,482	16,226	NA	NA	38,773	NA	NA	NA	NA	NA	174,882
1970 Total	12,968	4,011	11,031	NA	NA	28,010	NA	NA	NA	NA	NA	138,556
1975 Total	17,449	8,200	13,321	NA	NA	38,970	NA	NA	NA	NA	NA	182,199
1980 Total	37,209	17,108	21,125	1,677	73,765	75,442	137,273	92,649	98,054	14,607	313,369	327,976
1985 Total	40,217	14,309	22,270	2,184	74,612	76,796	152,575	77,699	104,791	17,944	317,122	335,066
1990 Total	12,839	11,246	8,245	2,839	27,987	32,330	57,153	52,870	41,360	23,619	127,764	151,383
1995 Total	R 8,601	R 8,435	R 4,932	R 2,494	R 19,474	R 21,968	R 53,348	R 26,577	R 23,112	R 98,533	R 121,644	R 132,723
2000 Total	R 7,941	R 11,363	R 3,883	R 2,915	R 20,272	R 23,187	R 34,756	R 75,260	R 22,707	R 24,350	R 108,373	R 121,236
2005 Total	R 10,647	R 21,193	R 4,141	R 5,992	R 29,989	R 35,981	R 49,558	R 148,785	R 22,894	R 52,965	R 168,272	R 212,336
2010 Total	R 15,442	R 14,047	R 3,858	R 12,909	R 20,438	R 33,347	R 93,214	R 130,001	R 19,129	R 137,195	R 105,150	R 242,345
2011 Total	R 21,922	R 12,807	R 3,926	R 17,200	R 21,455	R 38,655	R 154,498	R 135,727	R 18,929	R 197,059	R 112,095	R 309,154
2012 Total	R 27,852	R 10,008	R 4,336	R 19,798	R 22,398	R 42,196	R 111,368	R 20,655	R 233,745	R 116,547	R 116,547	R 350,292
2013 Total	R 28,277	R 8,467	R 3,929	R 20,468	R 20,205	R 40,673	R 235,647	R 99,851	R 19,829	R 254,516	R 100,811	R 355,327
2014 Total	R 29,767	R 7,784	R 4,350	R 22,349	R 19,552	R 41,901	R 267,741	R 95,688	R 23,241	R 292,263	R 94,406	R 386,670
2015 Total	R 17,279	R 5,392	R 2,827	R 16,013	R 9,485	R 25,498	R 177,077	R 71,246	R 16,585	R 221,279	R 43,629	R 264,908
2016 Total	R 8,495	R 3,066	R 1,622	R 9,064	R 4,119	R 13,183	R 98,355	R 43,465	R 9,445	R 134,168	R 17,096	R 151,264
2017 Total	R 11,250	R 4,075	R 1,943	R 12,646	R 4,622	R 17,268	R 138,920	R 61,259	R 12,918	R 193,625	R 19,471	R 213,096
2018 Total	R 14,482	R 4,903	R 2,027	R 16,528	R 4,884	R 21,412	R 188,234	R 77,617	R 13,872	R 260,749	R 18,973	R 279,723
2019 Total	R 13,885	R 4,303	R 1,863	R 15,828	R 4,223	R 20,051	R 190,902	R 72,052	R 13,565	R 259,760	R 16,760	R 276,519
2020 Total	R 7,115	R 2,598	R 1,049	R 8,882	R 1,880	R 10,762	R 106,742	R 47,427	R 8,124	R 155,145	R 7,148	R 162,293
2021 Total	R 9,762	R 3,056	R 1,380	R 11,134	R 3,064	R 14,198	R 148,087	R 56,948	R 9,301	R 202,718	R 11,617	R 214,335
2022 January	R 1,071	R 289	R 148	R 1,196	312	R 1,508	R 16,212	R 5,375	R 1,122	R 21,551	R 1,158	R 22,709
February	R 1,118	R 314	R 156	R 1,263	R 325	R 1,588	R 17,028	R 5,875	R 1,008	R 22,707	R 1,204	R 23,911
March	R 1,142	R 349	R 162	R 1,350	R 303	R 1,653	R 17,652	R 6,627	R 1,062	R 24,193	R 1,148	R 25,341
April	R 1,186	R 367	R 169	R 1,399	R 323	R 1,722	R 18,231	R 6,931	R 1,102	R 25,071	R 1,192	R 26,263
May	R 1,234	R 386	R 176	R 1,473	R 323	R 1,796	R 19,114	R 7,345	R 1,156	R 26,397	R 1,218	R 27,615
June	R 1,268	R 397	R 181	R 1,505	R 341	R 1,846	R 19,533	R 7,514	R 1,183	R 26,971	R 1,259	R 28,229
July	R 1,302	R 399	R 185	R 1,517	R 369	R 1,886	R 19,869	R 7,481	R 1,197	R 27,186	R 1,362	R 28,548
August	R 1,307	R 413	R 187	R 1,527	R 380	R 1,907	R 19,855	R 7,708	R 1,205	R 27,365	R 1,403	R 28,767
September	R 1,301	R 419	R 186	R 1,578	R 328	R 1,906	R 20,249	R 8,012	R 1,228	R 28,279	R 1,211	R 29,489
October	R 1,323	R 406	R 188	R 1,568	R 349	R 1,917	R 20,496	R 7,727	R 1,235	R 28,100	R 1,359	R 29,458
November	R 1,351	R 403	R 191	R 1,639	R 306	R 1,945	R 21,390	R 7,839	R 1,283	R 29,372	R 1,139	R 30,511
December	R 1,355	R 400	R 191	R 1,605	R 341	R 1,946	R 21,105	R 7,654	R 1,262	R 28,763	R 1,259	R 30,021
Total	R 14,958	R 4,542	R 2,120	R 17,620	R 4,000	R 21,620	R 230,733	R 86,089	R 14,042	R 315,953	R 14,911	R 330,864
2023 January	R 1,339	R 400	R 189	R 1,615	R 313	R 1,928	R 21,093	R 7,741	R 1,263	R 28,942	R 1,155	R 30,097
February	R 1,313	R 395	R 186	R 1,647	R 247	R 1,894	R 21,282	R 7,866	R 1,279	R 29,515	R 912	R 30,427
March	R 1,285	R 409	R 184	R 1,620	R 258	R 1,878	R 20,717	R 8,101	R 1,258	R 29,031	R 1,044	R 30,076
April	R 1,283	R 411	R 184	R 1,628	R 250	R 1,878	R 20,694	R 8,145	R 1,259	R 29,175	R 923	R 30,098
May	R 1,261	R 373	R 178	R 1,557	R 255	R 1,812	R 20,266	R 7,365	R 1,213	R 27,902	R 941	R 28,844
June	R 1,202	R 341	R 168	R 1,465	R 246	R 1,711	R 19,293	R 6,725	R 1,144	R 26,254	R 908	R 27,162
July	R 1,167	R 342	R 165	R 1,439	R 235	R 1,674	R 18,771	R 6,758	R 1,126	R 25,788	R 867	R 26,655
August	R 1,138	R 314	R 159	R 1,360	R 251	R 1,611	R 18,139	R 6,149	R 1,075	R 24,372	R 991	R 25,363
September	R 1,115	R 303	R 155	R 1,343	R 230	R 1,573	R 17,889	R 5,973	R 1,055	R 24,067	R 849	R 24,916
October	R 1,089	R 338	R 152	R 1,349	R 230	R 1,579	R 17,358	R 6,638	R 1,028	R 24,175	R 849	R 25,024
November	R 1,086	R 303	R 152	R 1,330	R 211	R 1,541	R 17,554	R 6,017	R 1,042	R 23,834	R 779	R 24,613
December	R 1,092	R 308	R 152	R 1,347	R 205	R 1,552	R 17,712	R 6,138	R 1,046	R 24,139	R 757	R 24,896
Total	R 14,370	R 4,237	R 2,024	R 17,700	R 2,931	R 20,631	R 230,770	R 83,615	R 13,786	R 317,195	R 10,976	R 328,170
2024 January	R 1,086	R 307	R 152	R 1,386	R 159	R 1,545	R 18,075	R 6,277	R 1,073	R 24,838	R 587	R 25,425
February	R 1,087	R 311	R 152	R 1,369	R 181	R 1,550	R 17,863	R 6,279	R 1,059	R 24,533	R 668	R 25,201
March	R 1,106	R 298	R 153	R 1,374	R 183	R 1,557	R 18,204	R 6,026	R 1,068	R 24,623	R 675	R 25,298
April	R 1,108	R 279	R 151	R 1,360	R 178	R 1,538	R 18,307	R 5,664	R 1,058	R 24,372	R 657	R 25,029
May	R 1,089	R 264	R 148	R 1,273	R 228	R 1,501	R 17,451	R 5,198	R 1,006	R 22,813	R 842	R 23,655
June	R 1,065	R 255	R 145	R 1,214	R 251	R 1,465	R 16,778	R 4,935	R 969	R 21,756	R 926	R 22,682
6-Month Total	6,541	1,714	901	7,976	1,180	9,156	106,678	34,379	6,233	142,935	4,356	147,290
2023 6-Month Total	7,683	2,329	1,089	9,532	1,569	11,101	123,345	45,942	7,415	170,819	5,884	176,703
2022 6-Month Total	7,019	2,102	992	8,186	1,927	10,113	107,769	39,667	6,633	146,890	7,179	154,069

R=Revised. NA=Not available.

Notes: • Data are estimates. • For 1960–1969, data are for well completion reports received by the American Petroleum Institute during the reporting year; for all other years, data are for well completions in a given year. • Through 1989, these well counts include only the original drilling of a hole intended to discover or further develop already discovered crude oil or natural gas resources. Other drilling activities, such as drilling an old well deeper, drilling of laterals from the original well, drilling of service and injection wells, and drilling for resources other than crude oil or natural gas are excluded. Due to the methodology used to estimate ultimate well counts from the available partially reported data, the counts shown on this page are frequently revised. See Note, "Crude Oil and Natural Gas Wells," at

end of section. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#crude> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

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:** U.S. Energy Information Administration (EIA) computations based on well reports submitted to the API. • **1990 forward:** EIA computations based on well reports submitted to IHS Markit, Inc.

Crude Oil and Natural Gas Resource Development

Note. Crude Oil and Natural Gas Wells. The U.S. Energy Information Administration (EIA) considers six well types in the *Monthly Energy Review* (MER): “completed for crude oil,” “completed for natural gas,” “dry hole,” “vertical,” “horizontal and directional,” and “total.” Wells that produce both crude oil and natural gas are categorized by the state. EIA includes both developmental wells and exploratory wells in the six well types, but excludes all other classes of wells drilled in connection with the search for producible hydrocarbons. If a lateral well (such as a service well, stratigraphic test well, observation well, etc.) is drilled at the same time as the original hole, EIA does not separately count the lateral well. However, EIA includes all of the well footage. EIA counts only horizontal wells after the first lateral is drilled and does not count pilot holes.

Prior to the March 1985 MER, drilling statistics consisted of completion data for crude oil, natural gas, and dry wells as reported to the American Petroleum Institute (API) during a given month. Due to time lags between the date of well completion and the date of completion reporting to the API, as-reported well completions were an inaccurate indicator of drilling activity. For example, in 1982, as-reported well completions increased, while the number of actual completions decreased. As a result, for 1973 forward, the data shown in this section are revised estimates based on the partial data available from IHS Markit. EIA continuously revises these estimates as new data become available. Each month, EIA estimates the latest 36 months of wells using the rig count and a 3-month average wells per rig ratio. EIA applies three conditions to the result: 1) if the model result is less than the actual reported value, then EIA uses the reported value, and 2) the published total well count is the maximum of the modeled total, or the sum of modeled oil, gas, and dry, or the sum of modeled horizontal and vertical well counts, and 3) the modeled component well counts are prorated so that they add exactly to the total published well count. EIA uses a similar process to estimate drilled footage using a 6-month average footage-per-well ratio. Because there is no reported dry rig count data, EIA estimates the number of dry wells using a 6-month average dry-wells-to-total-wells ratio, which EIA then applies to the modeled total wells. In general, the most recent 12 months of estimated well counts will have the highest errors because they are the farthest from the average well-per-rig ratio used in the model (at least 25 months).