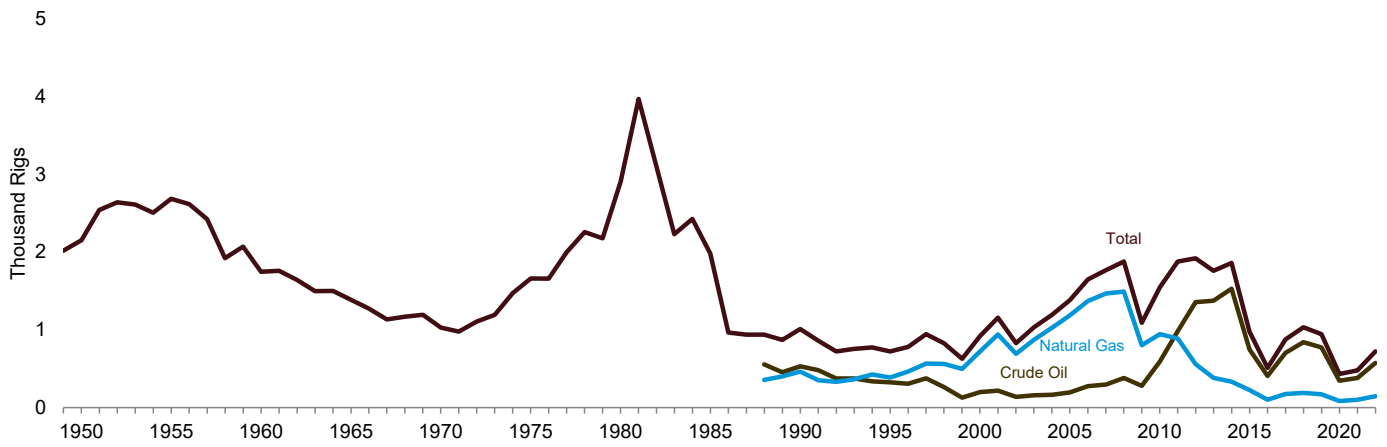


# **5. Crude Oil and Natural Gas Resource Development**

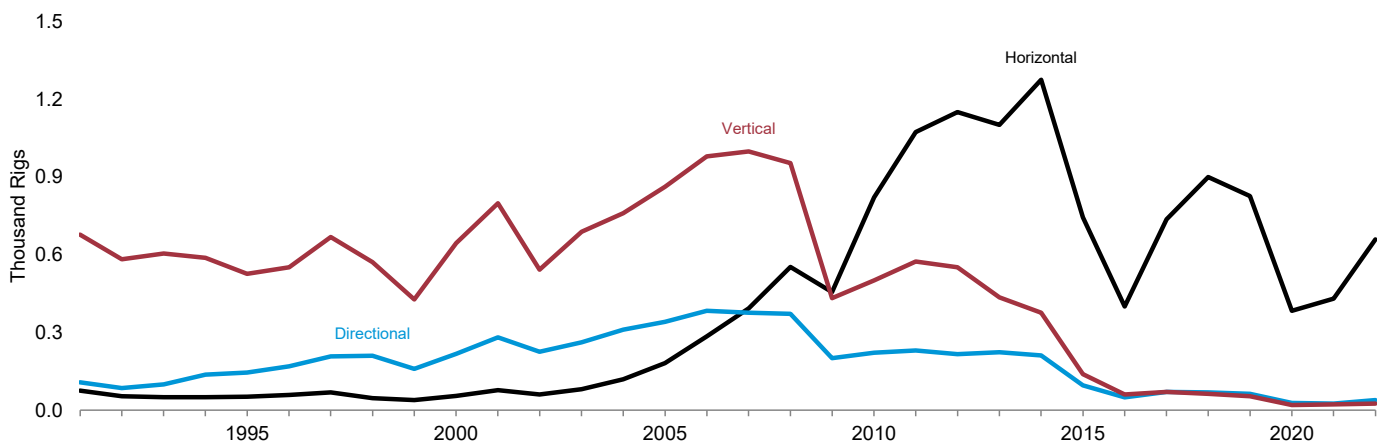
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# Figure 5.1 Crude Oil and Natural Gas Drilling Activity Measurements

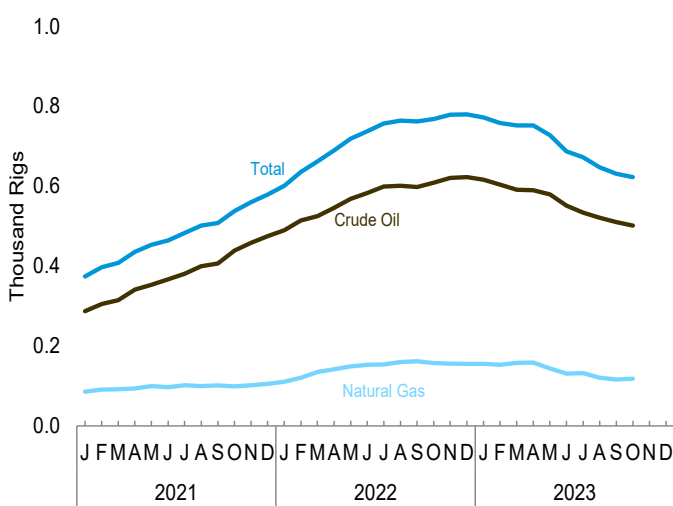
Rotary Rigs in Operation by Type, 1949–2022



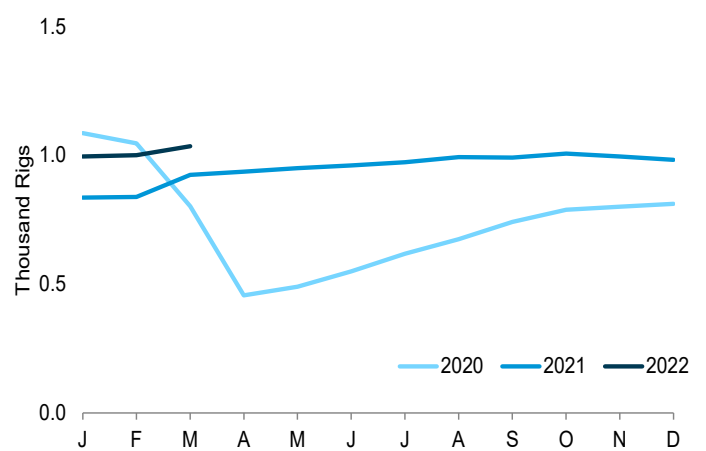
Rotary Rigs in Operation by Trajectory, 1991–2022



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 <sup>a,b</sup>							Total <sup>c</sup>	Active Well Service Rig Count <sup>d</sup>
	By Location <sup>c</sup>		By Type <sup>c</sup>		By Trajectory <sup>c</sup>				
	Onshore	Offshore	Crude Oil	Natural Gas	Horizontal	Directional	Vertical		
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
2006 Average	1,559	90	274	1,372	285	384	980	1,649	2,364
2007 Average	1,695	72	297	1,466	393	376	999	1,768	2,388
2008 Average	1,814	65	379	1,491	553	372	954	1,879	2,515
2009 Average	1,046	44	278	801	456	201	433	1,090	1,722
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 January	358	16	287	86	334	21	19	374	835
February	381	17	305	91	357	18	23	397	838
March	395	13	315	92	369	15	24	408	923
April	424	12	341	94	396	20	20	436	936
May	439	14	353	100	411	27	16	453	950
June	451	13	367	97	420	26	18	464	960
July	468	16	381	102	435	31	17	483	973
August	486	15	400	100	455	28	18	501	993
September	502	6	407	101	465	16	27	508	991
October	526	12	439	99	481	28	29	538	1,006
November	545	15	458	102	503	34	23	560	995
December	565	14	475	105	523	31	26	579	982
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
10-Month Average	683	19	559	138	634	50	18	701	NA
2022 10-Month Average	696	15	564	145	648	37	26	711	NA
2021 10-Month Average	445	13	361	96	414	23	21	458	941

<sup>a</sup> 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.

<sup>b</sup> 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.

<sup>c</sup> 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.

<sup>d</sup> 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.

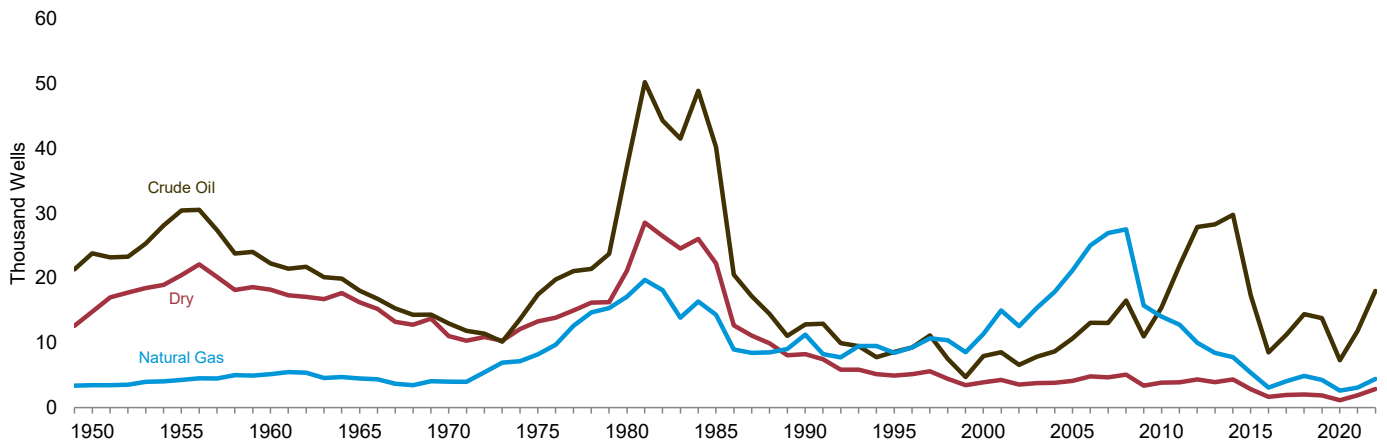
NA=Not available.  
Note: Geographic coverage is the 50 states and the District of Columbia.  
Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#crude> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

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-reportsother>. • **Active Well Service Rig Count:** Energy Workforce & Technology Council, Houston, TX.

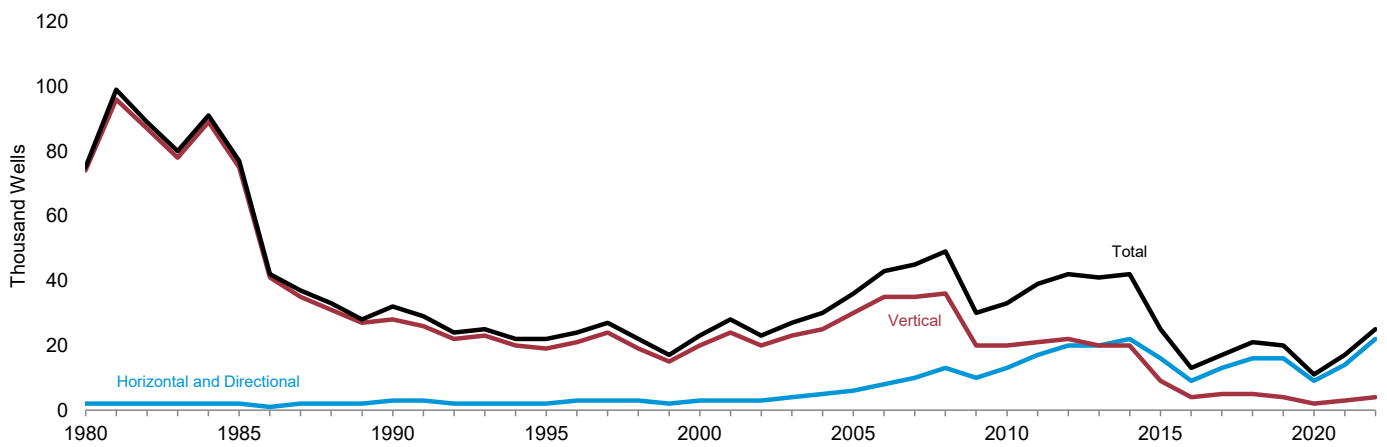
Data after March 2022 from the Energy Workforce & Technology Council were not available in time for this publication.

**Figure 5.2 Crude Oil and Natural Gas Wells and Footage Drilled**

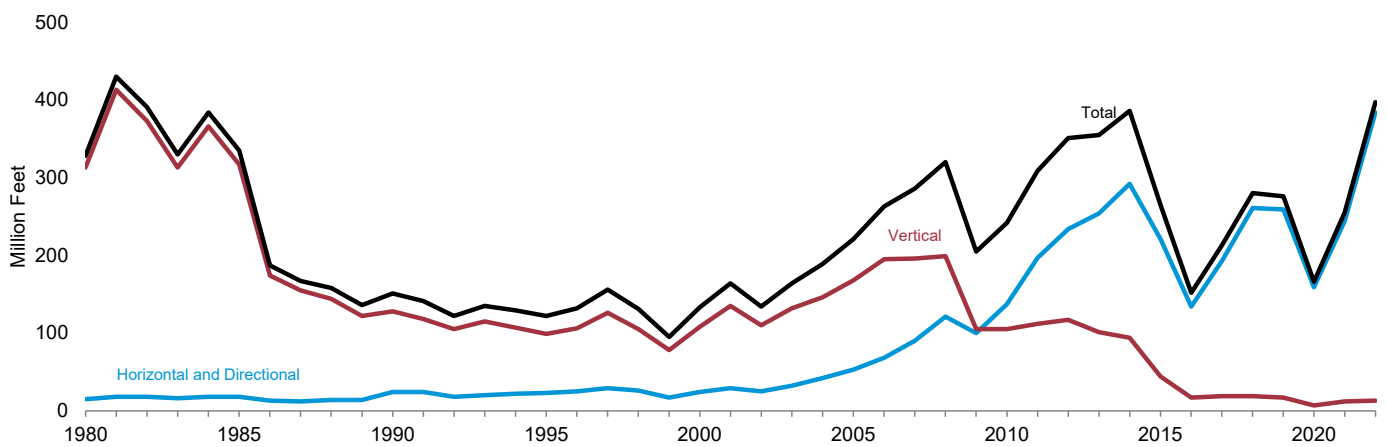
Wells Drilled by Type, 1949–2022



Wells Drilled by Trajectory, 1980–2022



Footage Drilled by Trajectory, 1980–2022



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
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 8,593	R 8,432	4,926	2,486	R 19,465	R 21,951	R 41,700	R 53,332	26,528	23,055	R 98,505	R 121,560
2000 Total	R 7,940	R 11,357	3,874	2,910	R 20,261	R 23,171	R 34,805	R 75,235	22,684	24,329	R 108,395	R 132,724
2005 Total	10,648	21,188	4,130	5,988	29,978	35,966	49,605	148,783	R 22,919	R 52,962	R 168,345	R 221,307
2006 Total	R 13,079	R 25,023	R 4,798	7,724	35,176	42,900	R 61,176	R 175,981	R 25,446	67,601	R 195,001	R 262,603
2007 Total	R 13,053	R 26,944	4,684	10,091	R 34,590	44,681	R 62,798	R 197,824	25,736	89,985	R 196,373	R 286,358
2008 Total	R 16,523	R 27,500	R 5,070	R 12,950	R 36,143	49,093	R 80,557	R 213,375	R 26,273	R 121,004	R 199,201	R 320,205
2009 Total	R 10,977	R 15,742	3,368	10,022	R 20,065	R 30,087	R 56,479	R 131,110	17,322	99,694	R 105,217	R 204,911
2010 Total	R 15,436	R 14,045	R 3,847	R 12,897	R 20,431	R 33,328	R 93,182	R 130,007	R 19,130	R 137,133	R 105,187	R 242,319
2011 Total	R 21,917	R 12,802	3,895	R 17,190	R 21,424	R 38,614	R 154,489	R 135,708	18,898	R 197,006	R 112,089	R 309,095
2012 Total	R 27,867	R 9,995	R 4,333	R 19,795	R 22,400	R 42,195	R 218,480	R 111,262	R 20,813	R 233,786	R 116,769	R 350,555
2013 Total	R 28,280	R 8,448	R 3,926	20,458	20,196	40,654	R 235,749	R 99,603	R 19,905	R 254,418	R 100,838	R 355,257
2014 Total	R 29,750	R 7,777	4,329	R 22,319	R 19,537	R 41,856	R 267,605	R 95,616	23,207	R 291,995	R 94,433	R 386,428
2015 Total	17,316	R 5,356	2,827	R 16,018	9,481	R 25,499	177,785	R 70,750	16,599	R 221,417	43,717	R 265,134
2016 Total	R 8,492	R 3,061	R 1,650	R 9,077	4,126	R 13,203	R 98,488	R 43,375	R 9,649	R 134,363	R 17,149	R 151,512
2017 Total	R 11,238	R 4,058	1,937	12,630	4,603	17,233	R 139,039	R 60,973	12,967	R 193,480	R 19,498	R 212,978
2018 Total	R 14,424	R 4,874	R 2,011	R 16,467	R 4,842	R 21,309	R 188,610	R 77,140	R 13,830	R 260,646	R 18,935	R 279,581
2019 Total	R 13,812	R 4,246	R 1,850	R 15,742	R 4,166	R 19,908	R 191,374	R 71,093	R 13,668	R 259,490	R 16,645	R 276,135
2020 Total	R 7,281	R 2,582	R 1,101	R 9,037	R 1,927	R 10,964	R 110,635	R 47,352	R 8,414	R 158,965	R 7,436	R 166,401
2021 January	R 751	R 217	R 124	R 864	R 228	R 1,092	R 11,487	R 4,047	R 835	R 15,465	R 903	R 16,368
February	R 798	229	R 132	R 927	R 232	R 1,159	R 12,211	R 4,272	R 889	R 16,507	R 866	R 17,373
March	R 825	230	R 135	R 946	R 244	R 1,190	R 12,633	R 4,294	R 910	R 16,922	R 915	R 17,837
April	R 892	234	R 144	R 1,058	R 212	R 1,270	R 14,029	R 4,487	R 997	R 18,726	R 787	R 19,513
May	R 923	R 269	R 150	R 1,120	R 222	R 1,342	R 14,466	R 5,146	R 1,035	R 19,824	R 824	R 20,647
June	R 961	245	R 154	R 1,113	R 247	R 1,360	R 14,833	R 4,778	R 1,047	R 19,700	R 958	R 20,658
July	R 998	R 256	R 160	R 1,180	R 234	R 1,414	R 15,806	R 4,943	R 1,116	R 20,886	R 979	R 21,865
August	R 1,047	R 250	R 166	R 1,193	R 270	R 1,463	R 16,279	R 4,739	R 1,136	R 21,116	R 1,039	R 22,155
September	R 1,065	R 292	R 168	R 1,204	R 321	R 1,525	R 16,284	R 5,444	R 1,131	R 21,649	R 1,210	R 22,859
October	R 1,148	305	R 178	R 1,320	R 311	R 1,631	R 17,555	R 5,764	R 1,198	R 23,364	R 1,154	R 24,518
November	R 1,199	R 282	R 185	R 1,375	R 291	R 1,666	R 18,762	R 5,380	R 1,275	R 24,337	R 1,080	R 25,417
December	R 1,242	270	R 192	R 1,424	R 280	R 1,704	R 19,686	R 5,218	R 1,340	R 25,204	R 1,039	R 26,243
Total	R 11,849	R 3,079	R 1,888	R 13,724	R 3,092	R 16,816	R 184,030	R 58,513	R 12,909	R 243,700	R 11,753	R 255,452
2022 January	R 1,282	278	R 199	R 1,482	R 277	R 1,759	R 20,482	R 5,415	R 1,400	R 26,231	R 1,066	R 27,297
February	R 1,345	304	R 211	R 1,587	R 273	R 1,860	R 21,643	R 5,964	R 1,495	R 28,090	R 1,013	R 29,102
March	R 1,375	338	R 219	R 1,651	R 281	R 1,932	R 22,035	R 6,737	R 1,545	R 29,222	R 1,095	R 30,317
April	R 1,428	R 356	R 229	R 1,713	R 300	R 2,013	R 22,867	R 6,951	R 1,615	R 30,320	R 1,113	R 31,433
May	R 1,486	R 373	R 238	R 1,802	R 295	R 2,097	R 23,971	R 7,336	R 1,690	R 31,895	R 1,103	R 32,998
June	R 1,526	R 384	R 245	R 1,848	R 307	R 2,155	R 24,572	R 7,539	R 1,737	R 32,709	R 1,139	R 33,848
July	R 1,568	R 386	R 251	R 1,897	R 308	R 2,205	R 25,331	R 7,603	R 1,785	R 33,576	R 1,143	R 34,719
August	R 1,574	R 400	R 253	R 1,905	R 322	R 2,227	R 25,288	R 7,835	R 1,790	R 33,718	R 1,195	R 34,913
September	R 1,567	R 405	R 253	R 1,912	R 313	R 2,225	R 25,251	R 7,957	R 1,795	R 33,842	R 1,161	R 35,003
October	R 1,593	R 393	R 254	R 1,904	R 336	R 2,240	R 25,524	R 7,678	R 1,792	R 33,700	R 1,293	R 34,993
November	R 1,626	R 390	R 258	R 1,983	R 291	R 2,274	R 26,560	R 7,767	R 1,855	R 35,099	R 1,084	R 36,183
December	R 1,631	R 387	R 258	R 1,994	R 282	R 2,276	R 26,741	R 7,736	R 1,862	R 35,293	R 1,046	R 36,340
Total	R 18,001	R 4,394	R 2,868	R 21,678	R 3,585	R 25,263	R 290,264	R 86,520	R 20,361	R 383,695	R 13,450	R 397,146
2023 January	R 1,612	R 387	R 256	R 1,997	R 258	R 2,255	R 26,642	R 7,799	R 1,863	R 35,346	R 957	R 36,304
February	R 1,581	R 382	R 251	R 2,012	R 202	R 2,214	R 26,648	R 7,851	R 1,863	R 35,612	R 749	R 36,361
March	R 1,548	396	R 249	R 1,964	R 229	R 2,193	R 25,804	R 8,049	R 1,827	R 34,762	918	R 35,680
April	R 1,545	398	R 249	R 1,987	R 205	R 2,192	R 25,941	R 8,148	R 1,841	R 35,169	R 761	R 35,930
May	R 1,518	R 361	R 241	R 1,911	R 209	R 2,120	R 25,444	R 7,378	R 1,779	R 33,824	R 775	R 34,600
June	R 1,442	R 329	R 228	R 1,797	R 202	R 1,999	R 24,155	R 6,719	R 1,682	R 31,806	R 749	R 32,556
July	R 1,398	R 330	R 223	R 1,759	R 192	R 1,951	R 23,450	R 6,749	R 1,647	R 31,134	R 712	R 31,846
August	R 1,363	R 303	R 214	R 1,673	R 207	R 1,880	R 22,668	R 6,144	R 1,567	R 29,612	R 768	R 30,380
September	R 1,335	R 292	R 209	R 1,668	R 168	R 1,836	R 22,571	R 6,019	R 1,556	R 29,523	R 623	R 30,146
October	1,312	294	206	1,644	168	1,812	22,142	6,050	1,531	29,098	623	29,722
10-Month Total	14,654	3,472	2,326	18,412	2,040	20,452	245,466	70,905	17,154	325,888	7,637	333,525
2022 10-Month Total	14,744	3,617	2,352	17,701	3,012	20,713	236,963	71,017	16,644	313,303	11,320	324,624
2021 10-Month Total	9,408	2,527	1,511	10,925	2,521	13,446	145,582	47,915	10,295	194,158	9,634	203,792

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

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**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).