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### U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2023

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### Terminology:

**Crude oil and lease condensate:** **Crude oil** is a mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs, produced by oil wells, and remains liquid at atmospheric pressure after passing through surface separating facilities. Depending upon the characteristics of the crude stream, it may also include: Small amounts of hydrocarbons that exist in gaseous phase in natural underground reservoirs but are liquid at atmospheric pressure after being recovered from oil well (casinghead) gas in lease separators and are subsequently commingled with the crude stream without being separately measured. **Lease condensate** is a mixture consisting primarily of pentanes and heavier hydrocarbons, produced by natural gas wells and recovered as a liquid after passing through lease separators. **Crude oil and lease condensate** is the combined volume of these liquid hydrocarbons. Impurities, such as small amounts of nonhydrocarbons produced with the oil, such as sulfur and various metals can be included. Liquids produced at natural gas processing plants (Natural Gas Plant Liquids) are excluded.

**Natural gas:** The term natural gas in this report refers to wet after lease separation unless otherwise specified in this report.

**Natural gas, wet after lease separation:** The volume of natural gas remaining after removal of lease condensate in lease and/or field separation facilities, if any, and after exclusion of nonhydrocarbon gases where they occur in sufficient quantity to render the gas unmarketable.

**Dry natural gas:** Also known as dry gas or consumer-grade natural gas, dry natural gas is the volume of natural gas that remains after natural gas plant liquids and nonhydrocarbon impurities are removed from the natural gas downstream at natural gas processing plants. Dry natural gas is mostly methane and contains only negligible amounts of dissolved liquid hydrocarbons (for example, hexane and octane) and impurities. The higher the methane concentration, the drier the natural gas.

**Natural gas plant liquids:** Natural gas plant liquids (NGPLs) are liquid ethane, propane, butane, isobutane, pentane and sometimes heavier hydrocarbons. Unlike lease condensate, NGPLs remain within natural gas after it passes through lease separation equipment. These liquids are separated from natural gas, wet after lease separation, at natural gas processing plants, fractionators, and gas cycling plants.

**Table 1. U.S. proved reserves and reserves changes, 2022–23**

	Crude oil and lease condensate (million barrels)	Natural gas, wet after lease separation (billion cubic feet)
<b>U.S. proved reserves at December 31, 2022</b>	<b>48,321</b>	<b>691,025</b>
Extensions & Discoveries	5,002	42,290
Revisions & Other Changes (a)	-3,898	-100,202
Net of Acquisitions & Divestitures (b)	1,703	12,448
Production	4,705	41,946
<b>Net changes to U.S. proved reserves</b>	<b>-1,899</b>	<b>-87,410</b>
<b>U.S. proved reserves at December 31, 2023</b>	<b>46,422</b>	<b>603,615</b>
<b>Percent change in U.S. proved reserves</b>	<b>-3.9%</b>	<b>-12.6%</b>

(a) Annual balancing item calculated by EIA.

(b) Net of acquisitions and divestitures = acquisitions - divestitures

Notes: Natural gas, wet after lease separation includes natural gas plant liquids. Percent change calculated from unrounded numbers.

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023.

**Table 2. Crude oil and lease condensate production and proved reserves, from shale plays, 2022–23**  
(million barrels)

Basin	Play	State(s)	2022		2023		Annual change	
			Production	Reserves	Production	Reserves	Production	Reserves
Permian	Bone Spring, Wolfcamp	NM, TX	1,570	15,358	1,763	15,399	193	41
Williston	Bakken/Three Forks	MT, ND	388	5,051	434	4,234	46	-817
Western Gulf	Eagle Ford	TX	368	3,818	377	4,123	9	305
Denver-Julesburg	Niobrara*	CO, NE, WY	117	1,234	134	1,002	17	-232
	Woodford							
Anadarko, S. Oklahoma	SCOOP/STACK*	OK	56	601	57	579	1	-22
Appalachian	Marcellus	PA, WY	20	235	22	223	2	-12
Fort Worth	Barnett	TX	1	17	1	11	0	-6
<b>Subtotal</b>			<b>2,520</b>	<b>26,315</b>	<b>2,789</b>	<b>25,570</b>	<b>269</b>	<b>-745</b>
Other shale plays			28	587	46	659	18	72
<b>U.S. total</b>			<b>2,548</b>	<b>26,902</b>	<b>2,835</b>	<b>26,229</b>	<b>287</b>	<b>-673</b>

Notes: Bone Spring, Wolfcamp play includes proved reserves from shale formations reported on Form EIA-23L in TX RRC 7C, TX RRC 8, TX RRC 8A, and NME. Woodford SCCOP/STACK\* play includes volumes reported as shale from Oklahoma on Form EIA-23L. Niobrara\* play includes volumes reported as shale from Colorado and Wyoming on Form EIA-23L.

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023.

**Table 3. U.S. natural gas, wet after lease separation, reserves changes, by source, 2022–23**  
(trillion cubic feet)

	Changes in proved reserves during 2023					Proved reserves 12/31/2023
	Proved reserves 12/31/2022	Extensions and discoveries	Revisions and other changes (a)	Net of acquisitions and divestitures	Estimated production	
<b>Shale</b>	<b>431.4</b>	<b>34.3</b>	<b>-52.4</b>	<b>12.1</b>	<b>32.2</b>	<b>393.1</b>
<b>Non-shale</b>	<b>259.6</b>	<b>8.0</b>	<b>-47.8</b>	<b>0.4</b>	<b>9.7</b>	<b>210.5</b>
Lower 48 Onshore	129.0	6.4	-18.3	0.5	8.6	109.0
Lower 48 Offshore	5.3	0.2	0.0	-0.1	0.8	4.7
Alaska	125.2	1.4	-29.5	0.0	0.4	96.8
<b>U.S. total</b>	<b>691.0</b>	<b>42.3</b>	<b>-100.2</b>	<b>12.4</b>	<b>41.9</b>	<b>603.6</b>

(a) Annual balancing item calculated by EIA.

Notes: Natural gas is measured at 60 degrees Fahrenheit and atmospheric pressure base of 14.73 pounds per square inch (psia).

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023.

**Table 4. Natural gas, wet after lease separation, production and proved reserves, from shale plays, 2022–23  
(trillion cubic feet)**

Basin	Shale Play	State(s)	2022		2023		Annual change	
			Production	Reserves	Production	Reserves	Production	Reserves
Appalachian	Marcellus	PA, WV	10.3	153.2	10.5	147.3	0.2	-5.9
Permian Basin	Wolfcamp, Bone Spring	NM, TX	6.5	81.3	7.1	79.1	0.6	-2.2
Texas-Louisiana Salt	Haynesville/Bossier	LA, TX	5.1	61.1	5.5	50.3	0.4	-10.8
Western Gulf	Eagle Ford	TX	2.4	39.6	2.6	37.2	0.2	-2.4
Appalachian	Utica/Pt. Pleasant	OH	2.2	32.4	2.2	28.5	0.0	-3.9
Anadarko, S. Oklahoma	Woodford SCOOP/STACK	OK	1.4	24.0	1.4	18.8	0.0	-5.2
Williston	Bakken/Three Forks	MT, ND	1.1	13.2	1.2	12.3	0.1	-0.9
Fort Worth	Barnett	TX	0.4	9.0	0.4	5.9	0.0	-3.1
Arkoma	Fayetteville	AR	0.4	5.3	0.4	3.8	0.0	-1.5
<b>Subtotal</b>			<b>29.8</b>	<b>419.2</b>	<b>31.3</b>	<b>383.2</b>	<b>1.5</b>	<b>-36.0</b>
Other shale plays			0.8	12.2	0.9	9.9	0.1	-2.3
<b>U.S. total</b>			<b>30.6</b>	<b>431.4</b>	<b>32.2</b>	<b>393.1</b>	<b>1.6</b>	<b>-38.3</b>

Notes: Table values are based on shale gas proved reserves and production volumes reported and imputed from data on Form EIA-23L. For certain reasons (e.g., incorrect or incomplete submissions, misidentification of shale versus non-shale reservoirs), the actual proved reserves and production of natural gas from shale plays may be higher or lower. Other shale gas includes all proved reserves reported as shale on 2023 Form EIA-23L, Part 5.

The production estimates are offered only as an observed indicator of production trends and may differ from EIA production volumes listed elsewhere on the EIA website. Natural gas is measured at 60 degrees Fahrenheit and atmospheric pressure base of 14.73 pounds per square inch (psia).

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023.

**Table 5: U.S. crude oil and lease condensate proved reserves, 2013–23**  
(million barrels)

Year	Revisions and other changes (a)	Net of acquisitions and divestitures (b)	Extensions and discoveries	Estimated production	Total proved reserves 12/31	Change from prior year
2013	-50	389	5,507	2,729	36,520	3,117
2014	856	353	5,404	3,200	39,933	3,413
2015	-4,493	-30	3,247	3,427	35,230	-4,703
2016	-262	264	3,204	3,223	35,213	-17
2017	3,464	1,035	5,679	3,401	41,990	6,777
2018	1,177	676	7,194	3,984	47,053	5,063
2019	-2,976	884	6,691	4,480	47,172	119
2020	-8,382	334	3,242	4,154	38,212	-8,960
2021	1,156	2,914	6,265	4,129	44,418	6,206
2022	1,865	1,036	5,370	4,368	48,321	3,903
2023	-3,898	1,703	5,002	4,705	46,422	-1,899

(a) Annual balancing item calculated by EIA.

(b) Net of acquisitions and divestitures = acquisitions - divestitures

Notes: One barrel = 42 U.S. gallons. The production estimates in this table are based on data reported on Form EIA-23L, Annual Survey of Domestic Oil and Gas Reserves and Form EIA-64A, Annual Report of the Origin of Natural Gas Liquids Production. They may differ from the official EIA production data for crude oil and lease condensate for 2023 contained in *Petroleum Supply Annual 2023* and the *Natural Gas Monthly*.

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Proved Reserves," 2013-2023.

**Table 6: Crude oil and lease condensate proved reserves, reserves changes, by states and areas, 2023**  
(million barrels)

State and Subdivision	Changes in proved reserves during 2023						Proved producing reserves 12/31/23	Proved nonproducing reserves 12/31/23	Total proved reserves 12/31/23
	Total proved reserves 12/31/22	Revisions and other changes (c) (+,-)	Extensions and discoveries (+)	Divestitures (-)	Acquisitions (+)	Estimated production (-)			
Alaska	3,357	-611	383	0	0	156	2,070	903	2,973
<b>Lower 48 States</b>	<b>44,963</b>	<b>-3,287</b>	<b>4,619</b>	<b>1,281</b>	<b>2,984</b>	<b>4,549</b>	<b>26,732</b>	<b>16,717</b>	<b>43,449</b>
Alabama	27	27	0	0	0	4	47	4	51
Arkansas	39	-3	0	0	0	4	29	3	32
<b>California</b>	<b>1,492</b>	<b>-140</b>	<b>32</b>	<b>0</b>	<b>11</b>	<b>124</b>	<b>1,066</b>	<b>207</b>	<b>1,273</b>
Coastal Region Onshore	194	-74	0	0	0	12	99	10	108
Los Angeles Basin Onshore	142	-14	1	0	0	9	104	17	121
San Joaquin Basin Onshore	928	-1	28	0	11	90	710	167	877
State Offshore	228	-52	3	0	0	13	153	14	167
Colorado	1,442	-206	51	307	255	166	625	445	1,069
Kansas	335	-39	0	1	1	27	251	19	270
<b>Louisiana</b>	<b>446</b>	<b>5</b>	<b>28</b>	<b>12</b>	<b>17</b>	<b>32</b>	<b>287</b>	<b>164</b>	<b>451</b>
North	86	-23	1	1	8	6	51	13	64
South Onshore	336	19	22	5	9	20	219	140	359
State Offshore	23	10	6	6	0	5	16	11	28
Michigan	46	2	0	0	0	5	39	4	44
Mississippi	113	-64	0	1	35	13	69	1	70
Montana	388	-77	12	0	50	22	197	154	351
Nebraska	13	-1	0	0	0	2	10	0	10
<b>New Mexico</b>	<b>6,192</b>	<b>-399</b>	<b>1,113</b>	<b>78</b>	<b>409</b>	<b>665</b>	<b>3,067</b>	<b>3,505</b>	<b>6,572</b>
East	6,029	-456	1,108	78	409	654	2,977	3,380	6,358
West	163	56	5	0	0	11	90	124	214
North Dakota	4,965	-811	560	109	183	434	2,916	1,438	4,354
Ohio	348	-36	130	15	26	28	134	291	425
Oklahoma	1,830	-289	191	15	44	154	1,099	507	1,606
Pennsylvania	68	0	1	0	0	4	34	31	65
South Dakota	9	-1	0	0	0	1	7	0	7
<b>Texas</b>	<b>20,309</b>	<b>-1,267</b>	<b>1,941</b>	<b>678</b>	<b>1,874</b>	<b>2,006</b>	<b>12,579</b>	<b>7,594</b>	<b>20,173</b>
RRC District 1	2,283	-128	220	337	448	201	1,308	977	2,285
RRC District 2 Onshore	1,550	-228	137	0	76	180	770	585	1,355
RRC District 3 Onshore	597	258	23	75	78	44	580	256	836
RRC District 4 Onshore	291	-21	50	42	83	23	159	179	337
RRC District 5	43	165	0	3	3	7	201	0	201
RRC District 6	162	-14	2	4	6	13	100	38	137
RRC District 7B	85	-10	1	1	0	10	63	3	66
RRC District 7C	1,599	-412	120	67	294	161	912	460	1,372
RRC District 8	11,922	-664	1,331	125	833	1,251	7,262	4,784	12,046
RRC District 8A	1,546	-268	57	4	12	99	946	299	1,245
RRC District 9	89	-9	1	0	0	8	70	4	74
RRC District 10	141	65	1	19	42	10	211	8	219
State Offshore	1	-1	0	0	0	0	0	0	0
Utah	634	-7	74	0	0	56	470	175	645
West Virginia	174	-16	11	0	9	18	80	81	161
Wyoming	1,072	-85	193	1	16	95	809	292	1,101
<b>Federal Offshore</b>	<b>4,939</b>	<b>142</b>	<b>280</b>	<b>64</b>	<b>52</b>	<b>684</b>	<b>2,869</b>	<b>1,797</b>	<b>4,665</b>
Pacific (California)	78	-23	0	0	0	3	40	11	52
Gulf of America (Central & Eastern) (a)	4,530	136	267	64	52	634	2,661	1,627	4,288
Gulf of America (Western)	330	30	13	0	0	47	168	159	326
Other States (b)	81	-23	0	1	0	6	48	3	51
<b>U.S. Total</b>	<b>48,321</b>	<b>-3,898</b>	<b>5,002</b>	<b>1,281</b>	<b>2,984</b>	<b>4,705</b>	<b>28,802</b>	<b>17,620</b>	<b>46,422</b>

(a) Includes Federal offshore Louisiana, Mississippi, Alabama, and Florida.

(b) Includes Arizona, Florida, Idaho, Illinois, Indiana, Kentucky, Maryland, Missouri, Nevada, New York, Oregon, Tennessee, and Virginia.

(c) Annual balancing item calculated by EIA.

Notes: We base the production estimates in this table on data reported on Form EIA-23L. The estimates may differ slightly from our official production data for crude oil and lease condensate for 2023 in the *Petroleum Supply Annual 2023*. One barrel = 42 U.S. gallons.

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023.

**Table 7: U.S. natural gas, wet after lease separation, proved reserves, 2013–23**  
(billion cubic feet)

Year	Revisions and other changes (a)	Net of acquisitions & divestitures (b)	Extensions and discoveries	Estimated production	Total proved reserves 12/31	Change from prior year
2013	3,487	1,287	53,017	26,467	353,994	31,324
2014	5,889	6,565	50,487	28,094	388,841	34,847
2015	-71,332	1,417	34,706	29,329	324,303	-64,538
2016	7,180	432	38,371	29,153	341,133	16,830
2017	60,644	22,123	70,783	30,391	464,292	123,159
2018	-18,917	13,746	79,457	34,077	504,501	40,209
2019	-44,837	16,171	56,910	37,365	495,380	-9,121
2020	-93,066	68,204	39,829	37,062	473,285	-22,095
2021	91,392	31,230	67,564	38,098	625,373	152,088
2022	36,430	11,988	57,786	40,551	691,025	65,652
2023	-100,202	12,448	42,290	41,946	603,615	-87,410

(a) Annual balancing item calculated by EIA.

(b) Net of acquisitions and divestitures = acquisitions - divestitures

Notes: The production estimates in this table are based on data reported on Form EIA-23L and Form EIA-64A. They may differ from the official EIA production data for wet natural gas for 2023 contained in the *Natural Gas Annual 2023*.

Natural gas is measured at 60 degrees Fahrenheit and atmospheric pressure base of 14.73 pounds per square inch (psia).

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2013–2023, and Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production."



**Table 8: Natural gas, wet after lease separation, proved reserves, reserves changes, by states and areas, 2023**  
(billion cubic feet)

State and subdivision	Changes in proved reserves during 2023						Proved producing reserves 12/31/23	Proved nonproducing reserves 12/31/23	Total proved reserves 12/31/23
	Total proved reserves 12/31/22	Revisions and other changes (c) (+,-)	Extensions and discoveries (+)	Divestitures (-)	Acquisitions (+)	Estimated production (-)			
Alaska	125,238	-29,528	1,443	0	0	375	92,074	4,704	96,779
<b>Lower 48 States</b>	<b>565,787</b>	<b>-70,674</b>	<b>40,846</b>	<b>11,142</b>	<b>23,591</b>	<b>41,571</b>	<b>324,465</b>	<b>182,371</b>	<b>506,836</b>
Alabama	1,307	-239	3	0	0	87	874	111	984
Arkansas	6,455	-1,384	1	0	0	393	4,456	224	4,679
<b>California</b>	<b>1,070</b>	<b>17</b>	<b>19</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>843</b>	<b>163</b>	<b>1,006</b>
Coastal Region Onshore	125	-25	0	0	0	8	83	10	93
Los Angeles Basin Onshore	58	8	0	0	0	5	55	6	61
San Joaquin Basin Onshore	804	50	18	0	0	82	645	144	789
State Offshore	83	-16	1	0	0	6	59	4	63
Colorado	22,586	-1,858	298	4,547	3,345	1,821	13,319	4,685	18,003
Kansas	3,151	-170	0	3	1	137	2,738	104	2,842
<b>Louisiana</b>	<b>40,296</b>	<b>-6,862</b>	<b>2,928</b>	<b>155</b>	<b>723</b>	<b>4,350</b>	<b>15,523</b>	<b>17,056</b>	<b>32,579</b>
North	38,605	-6,317	2,900	61	717	4,244	15,161	16,438	31,599
South Onshore	1,566	-645	27	27	6	90	318	520	838
State Offshore	124	100	1	67	0	16	44	98	142
Michigan	1,302	-147	3	0	32	70	1,114	5	1,119
Mississippi	250	-64	0	0	11	28	129	39	169
Montana	624	75	26	0	14	45	463	231	694
<b>New Mexico</b>	<b>46,017</b>	<b>-5,886</b>	<b>7,611</b>	<b>369</b>	<b>1,223</b>	<b>3,165</b>	<b>24,016</b>	<b>21,416</b>	<b>45,432</b>
East	30,690	-3,058	6,532	360	1,205	2,654	15,234	17,120	32,354
West	15,327	-2,827	1,079	8	18	511	8,781	4,296	13,078
New York	86	22	0	0	0	8	101	0	101
North Dakota	12,982	-496	1,172	452	689	1,166	9,163	3,567	12,730
Ohio	32,825	-4,106	1,962	114	199	2,196	15,624	12,948	28,571
Oklahoma	41,771	-7,143	2,439	140	926	2,856	25,695	9,301	34,996
Pennsylvania	106,311	-3,446	7,186	430	82	7,580	71,662	30,462	102,123
<b>Texas</b>	<b>170,262</b>	<b>-30,279</b>	<b>12,215</b>	<b>4,524</b>	<b>13,421</b>	<b>12,240</b>	<b>89,172</b>	<b>59,682</b>	<b>148,854</b>
RRC District 1	11,321	-2,215	1,088	914	2,113	834	5,464	5,096	10,560
RRC District 2 Onshore	7,007	-1,751	803	1	235	743	3,208	2,342	5,550
RRC District 3 Onshore	2,846	371	224	151	56	268	2,441	638	3,079
RRC District 4 Onshore	24,123	-3,803	2,650	816	877	1,211	8,863	12,958	21,820
RRC District 5	8,839	-1,831	541	570	449	632	5,635	1,162	6,797
RRC District 6	31,872	-10,892	847	140	4,613	2,000	9,624	14,677	24,301
RRC District 7B	1,397	-226	1	0	0	98	1,039	35	1,074
RRC District 7C	14,139	-3,797	634	218	1,990	1,017	9,013	2,716	11,729
RRC District 8	54,097	-2,860	5,353	839	2,660	4,668	35,292	18,450	53,742
RRC District 8A	2,015	-453	64	3	3	138	1,257	231	1,487
RRC District 9	8,303	-2,657	1	0	0	359	4,091	1,196	5,288
RRC District 10	4,299	-162	9	872	425	272	3,245	182	3,427
State Offshore	4	-3	0	0	0	1	0	0	0
Utah	3,668	107	121	287	179	289	2,800	699	3,499
West Virginia	50,932	-6,589	4,028	0	2,662	3,140	30,162	17,730	47,891
Wyoming	15,261	-1,523	637	0	3	995	11,700	1,683	13,383
<b>Federal Offshore</b>	<b>5,127</b>	<b>-33</b>	<b>189</b>	<b>120</b>	<b>82</b>	<b>755</b>	<b>2,572</b>	<b>1,918</b>	<b>4,490</b>
Pacific (California)	55	-3	0	0	0	3	36	14	50
Gulf of America (Central & Eastern) (a)	4,308	-22	171	120	82	670	2,234	1,515	3,748
Gulf of America (Western)	765	-8	18	0	0	83	303	390	692
Other States (b)	3,503	-670	7	0	0	150	2,341	350	2,691
<b>U.S. Total</b>	<b>691,025</b>	<b>-100,202</b>	<b>42,290</b>	<b>11,142</b>	<b>23,591</b>	<b>41,946</b>	<b>416,539</b>	<b>187,076</b>	<b>603,615</b>

(a) Includes Federal offshore Louisiana, Mississippi, Alabama, and Florida.

(b) Includes Arizona, Florida, Idaho, Illinois, Indiana, Kentucky, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, Tennessee, and Virginia.

(c) Annual balancing item calculated by EIA.

Notes: We base the production estimates in this table on data reported on Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves." The estimates may differ from our official production data for natural gas for 2022 contained in the *Natural Gas Annual 2022*.

Natural gas is measured at 60 degrees Fahrenheit and atmospheric pressure base of 14.73 pounds per square inch (psia).

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023.

**Table 9: Natural gas, wet after lease separation, proved reserves and production of shale plays, by states and areas, 2020–23**  
(billion cubic feet)

State and Subdivision	Natural gas proved reserves of shale plays				Natural gas production from shale plays			
	2020	2021	2022	2023	2020	2021	2022	2023
Alaska	0	0	0	0	0	0	0	0
<b>Lower 48 States</b>	<b>317,756</b>	<b>393,779</b>	<b>431,413</b>	<b>393,094</b>	<b>26,139</b>	<b>27,985</b>	<b>30,586</b>	<b>32,228</b>
Alabama	0	0	-	-	0	0	-	-
Arizona	0	0	0	0	0	0	0	0
Arkansas	4,210	5,127	5,341	3,836	419	387	357	361
Colorado	1,331	4,149	9,546	6,964	116	301	716	746
Kansas	0	0	0	0	0	0	0	0
<b>Louisiana</b>	<b>28,533</b>	<b>35,630</b>	<b>34,770</b>	<b>29,858</b>	<b>2,555</b>	<b>2,942</b>	<b>3,615</b>	<b>3,975</b>
North Onshore	28,533	35,630	34,770	29,858	2,555	2,942	3,615	3,975
South Onshore	0	0	0	0	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0
Michigan	823	1,092	1,246	1,067	57	53	64	61
Mississippi	0	0	0	0	0	0	0	0
Montana	227	254	395	460	16	15	19	20
Nebraska	0	0	0	0	0	0	0	0
<b>New Mexico</b>	<b>14,667</b>	<b>22,245</b>	<b>25,794</b>	<b>28,220</b>	<b>1,337</b>	<b>1,642</b>	<b>2,036</b>	<b>2,384</b>
East	14,667	22,245	25,794	28,220	1,337	1,642	2,036	2,384
West	0	0	0	0	0	0	0	0
North Dakota	8,376	11,146	12,822	11,879	970	1,052	1,059	1,155
Ohio	27,775	31,790	32,362	28,455	2,320	2,207	2,196	2,174
Oklahoma	15,483	20,750	24,025	18,823	1,195	1,239	1,397	1,444
Pennsylvania	96,699	105,586	104,998	101,243	7,040	7,546	7,433	7,502
<b>Texas</b>	<b>87,296</b>	<b>116,848</b>	<b>130,448</b>	<b>114,326</b>	<b>7,844</b>	<b>8,262</b>	<b>8,767</b>	<b>9,330</b>
RRC District 1	6,517	9,790	10,236	10,073	688	652	689	746
RRC District 2 Onshore	4,290	5,775	5,834	4,785	621	582	632	645
RRC District 3 Onshore	135	177	176	430	21	18	11	8
RRC District 4 Onshore	11,396	14,235	16,390	16,371	599	608	663	759
RRC District 5 Onshore	5,344	6,467	6,946	5,492	516	480	444	481
RRC District 6 Onshore	16,224	20,453	26,315	20,412	1,046	1,358	1,463	1,546
RRC District 7B Onshore	679	1,067	1,223	846	84	77	73	66
RRC District 7C Onshore	7,688	12,282	11,699	10,158	798	803	779	876
RRC District 8 Onshore	30,026	40,334	43,647	40,509	3,088	3,339	3,642	3,853
RRC District 8A Onshore	141	120	160	230	15	5	6	12
RRC District 9 Onshore	4,856	6,148	7,823	5,020	368	340	365	340
RRC District 10 Onshore	0	0	0	0	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0
West Virginia	32,335	39,160	48,226	46,056	2,270	2,339	2,872	2,997
Wyoming	0	0	1,174	1,631	0	0	38	58
Federal Offshore	0	0	0	0	0	0	0	0
Other States (a)	1	2	264	278	0	0	16	20
<b>U.S. Total</b>	<b>317,756</b>	<b>393,779</b>	<b>431,413</b>	<b>393,094</b>	<b>26,139</b>	<b>27,985</b>	<b>30,586</b>	<b>32,228</b>

(a) Includes Alabama, California, Florida, Illinois, Indiana, Kentucky, Maryland, Missouri, New York, South Dakota, Tennessee, Utah, and Virginia.

- No data reported

Notes: The above table is based on shale natural gas proved reserves and production volumes reported and imputed from data on Form EIA-23L. For certain reasons (e.g. incorrect or incomplete respondent submissions, respondent mis-identification of shale vs non-shale reservoirs) the actual proved reserves and production of natural gas from shales may be higher or lower. The production estimates are offered only as an observed indicator of production trends and may differ from official EIA production volumes listed elsewhere on the EIA web site.

Natural gas is measured at 60 degrees Fahrenheit and atmospheric pressure base of 14.73 pounds per square inch (psia)

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Proved Reserves," 2020-2023.

**Table 10: Natural gas, wet after lease separation, proved reserves, reserves changes from shale plays, by states and areas, 2023**  
(billion cubic feet)

State and Subdivision	Changes in proved reserves during 2023						Proved producing reserves of shale plays	Proved nonproducing reserves of shale plays	Proved reserves of shale plays 12/31/23
	Proved reserves of shale plays 12/31/22	Revisions and other changes (b) (+,-)	Divestitures (-)	Acquisitions (+)	Extensions and discoveries (+)	Estimated production (-)			
Alaska	0	0	0	0	0	0	0	0	0
<b>Lower 48 States</b>	<b>431,413</b>	<b>-52,423</b>	<b>8,447</b>	<b>20,517</b>	<b>34,262</b>	<b>32,228</b>	<b>236,747</b>	<b>156,346</b>	<b>393,094</b>
Arkansas	5,341	-1,144	0	0	0	361	3,655	181	3,836
Colorado	9,546	-1,029	4,392	3,345	238	746	4,420	2,543	6,964
Kansas	0	0	0	0	0	0	0	0	0
<b>Louisiana</b>	<b>34,770</b>	<b>-4,391</b>	<b>53</b>	<b>708</b>	<b>2,799</b>	<b>3,975</b>	<b>13,514</b>	<b>16,344</b>	<b>29,858</b>
North Onshore	34,770	-4,391	53	708	2,799	3,975	13,514	16,344	29,858
South Onshore	0	0	0	0	0	0	0	0	0
Michigan	1,246	-150	0	32	0	61	1,067	0	1,067
Mississippi	0	0	0	0	0	0	0	0	0
Montana	395	55	0	6	25	20	231	229	460
Nebraska	0	0	0	0	0	0	0	0	0
<b>New Mexico</b>	<b>25,794</b>	<b>-1,861</b>	<b>334</b>	<b>986</b>	<b>6,019</b>	<b>2,384</b>	<b>12,727</b>	<b>15,493</b>	<b>28,220</b>
East	25,794	-1,861	334	986	6,019	2,384	12,727	15,493	28,220
West	0	0	0	0	0	0	0	0	0
North Dakota	12,822	-1,196	452	687	1,173	1,155	8,654	3,225	11,879
Ohio	32,362	-3,769	114	199	1,951	2,174	15,507	12,948	28,455
Oklahoma	24,025	-5,201	8	235	1,216	1,444	12,488	6,334	18,823
Pennsylvania	104,998	-3,051	430	76	7,152	7,502	70,782	30,462	101,243
<b>Texas</b>	<b>130,448</b>	<b>-25,019</b>	<b>2,664</b>	<b>11,582</b>	<b>9,309</b>	<b>9,330</b>	<b>64,503</b>	<b>49,822</b>	<b>114,326</b>
RRC District 1	10,236	-1,594	882	2,047	1,013	746	5,141	4,932	10,073
RRC District 2 Onshore	5,834	-1,295	1	228	663	645	2,572	2,212	4,785
RRC District 3 Onshore	176	310	66	12	6	8	345	85	430
RRC District 4 Onshore	16,390	-1,142	706	679	1,910	759	5,828	10,543	16,371
RRC District 5 Onshore	6,946	-1,503	1	1	529	481	4,578	915	5,492
RRC District 6 Onshore	26,315	-9,537	2	4,387	795	1,546	6,531	13,881	20,412
RRC District 7B Onshore	1,223	-311	0	0	0	66	818	28	846
RRC District 7C Onshore	11,699	-2,929	192	1,848	608	876	7,765	2,393	10,158
RRC District 8 Onshore	43,647	-4,598	814	2,378	3,747	3,853	26,980	13,528	40,509
RRC District 8A Onshore	160	42	0	2	38	12	114	116	230
RRC District 9 Onshore	7,823	-2,463	0	0	0	340	3,830	1,190	5,020
RRC District 10 Onshore	0	0	0	0	0	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0	0
West Virginia	48,226	-5,752	0	2,662	3,917	2,997	28,333	17,723	46,056
Wyoming	1,174	72	0	0	443	58	599	1,031	1,631
Federal Offshore	0	0	0	0	0	0	0	0	0
Other Shale States (a)	264	14	0	0	19	20	267	11	278
<b>U.S. Total</b>	<b>431,413</b>	<b>-52,423</b>	<b>8,447</b>	<b>20,517</b>	<b>34,262</b>	<b>32,228</b>	<b>236,747</b>	<b>156,346</b>	<b>393,094</b>

(a) Includes Alabama, California, Florida, Illinois, Indiana, Kentucky, Missouri, New York, South Dakota, Tennessee, Utah, and Virginia.

(b) Annual balancing item calculated by EIA.

Notes: The above table is based on shale natural gas proved reserves and production volumes reported and imputed from data on Form EIA-23L. For certain reasons (e.g. incorrect or incomplete respondent submissions, respondent mis-identification of shale vs non-shale reservoirs) the actual proved reserves and production of natural gas from shales may be higher or lower. The production estimates are offered only as an observed indicator of production trends and may differ from official EIA production volumes listed elsewhere on the EIA web site.

Natural gas is measured at 60 degrees Fahrenheit and atmospheric pressure base of 14.73 pounds per square inch (psia)

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Proved Reserves," 2022 and 2023.

**Table 11. Estimated natural gas plant liquids and dry natural gas content of natural gas, wet after lease separation, proved reserves, by states and areas, 2023**

State and Subdivision	Natural gas, wet after lease separation, proved reserves	Estimated yield from total natural gas, wet after lease separation, proved reserves	
	(billion cubic feet)	Natural gas plant liquids (million barrels)	Dry natural gas (billion cubic feet)
Alaska	96,779	4,694	96,121
<b>Lower 48 States</b>	<b>506,836</b>	<b>27,637</b>	<b>470,160</b>
Alabama	984	16	966
Arkansas	4,679	2	4,677
<b>California</b>	<b>1,006</b>	<b>49</b>	<b>940</b>
Coastal Region Onshore	93	4	88
Los Angeles Basin Onshore	61	2	59
San Joaquin Basin Onshore	789	43	731
State Offshore	63	0	62
Colorado	18,003	1,468	15,937
Kansas	2,842	193	2,562
<b>Louisiana</b>	<b>32,579</b>	<b>133</b>	<b>32,478</b>
North	31,599	29	31,562
South Onshore	838	64	784
State Offshore	142	40	132
Michigan	1,119	8	1,108
Mississippi	169	0	169
Montana	694	13	676
<b>New Mexico</b>	<b>45,432</b>	<b>2,611</b>	<b>41,739</b>
East	32,354	2,017	29,487
West	13,078	594	12,252
New York	101	0	101
North Dakota	12,730	1,733	10,300
Ohio	28,571	544	27,796
Oklahoma	34,996	2,352	31,651
Pennsylvania	102,123	939	100,749
<b>Texas</b>	<b>148,854</b>	<b>13,899</b>	<b>131,582</b>
RRC District 1	10,560	399	9,965
RRC District 2 Onshore	5,550	1,107	4,562
RRC District 3 Onshore	3,079	336	2,589
RRC District 4 Onshore	21,820	405	21,223
RRC District 5	6,797	311	6,341
RRC District 6	24,301	267	23,923
RRC District 7B	1,074	107	920
RRC District 7C	11,729	1,233	9,959
RRC District 8	53,742	8,747	43,114
RRC District 8A	1,487	182	1,369
RRC District 9	5,288	413	4,680
RRC District 10	3,427	392	2,936
State Offshore	0	0	0
Utah	3,499	80	3,391
West Virginia	47,891	2,676	44,047
Wyoming	13,383	505	12,689
<b>Federal Offshore</b>	<b>4,490</b>	<b>348</b>	<b>3,991</b>
Pacific (California)	50	0	50
Gulf of America (Central & Eastern) (a)	3,748	311	3,302
Gulf of America (Western)	692	37	640
Other States (b)	2,691	68	2,612
<b>U.S. total</b>	<b>603,615</b>	<b>32,331</b>	<b>566,281</b>

(a) Includes Federal offshore Louisiana, Mississippi, Alabama, and Florida.

(b) Includes Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, Tennessee, and Virginia.

Notes: The production estimates in this table are based on data reported on Form EIA-23L and Form EIA-64A. They may differ from the official U.S. EIA production data for 2023 natural gas plant liquids contained in the *Petroleum Supply Annual 2023* and the *Natural Gas Annual 2023*. One barrel = 42 U.S. gallons.

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves," 2022 and 2023, and Form EIA-64A, "Annual Report of the Origin of Natural Gas Liquids Production."

**Table 12: Proved nonproducing reserves by states, areas, and shale plays, 2023**

State and Subdivision	Crude oil and lease condensate		Natural gas, wet after lease separation	
	Total proved nonproducing reserves (million barrels)	Subtotal of nonproducing reserves of shale plays (million barrels)	Total proved nonproducing reserves (billion cubic feet)	Subtotal of nonproducing reserves of shale plays (billion cubic feet)
Alaska	903	-	4,704	0
<b>Lower 48 States</b>	<b>16,717</b>	<b>11,214</b>	<b>182,371</b>	<b>156,346</b>
Alabama	4	0	111	0
Arkansas	3	0	224	181
<b>California</b>	<b>207</b>	<b>0</b>	<b>163</b>	<b>0</b>
Coastal Region Onshore	10	0	10	-
Los Angeles Basin Onshore	17	-	6	-
San Joaquin Basin Onshore	167	0	144	-
State Offshore	14	0	4	-
Colorado	445	324	4,685	2,543
Kansas	19	0	104	0
<b>Louisiana</b>	<b>164</b>	<b>0</b>	<b>17,056</b>	<b>16,344</b>
North	13	0	16,438	16,344
South Onshore	140	0	520	0
State Offshore	11	-	98	-
Michigan	4	0	5	0
Mississippi	1	0	39	0
Montana	154	151	231	229
<b>New Mexico</b>	<b>3,505</b>	<b>3,123</b>	<b>21,416</b>	<b>15,493</b>
East	3,380	3,123	17,120	15,493
West	124	0	4,296	0
New York	0	0	0	0
North Dakota	1,438	1,337	3,567	3,225
Ohio	291	291	12,948	12,948
Oklahoma	507	253	9,301	6,334
Pennsylvania	31	31	30,462	30,462
<b>Texas</b>	<b>7,594</b>	<b>5,408</b>	<b>59,682</b>	<b>49,822</b>
RRC District 1	977	851	5,096	4,932
RRC District 2 Onshore	585	553	2,342	2,212
RRC District 3 Onshore	256	163	638	85
RRC District 4 Onshore	179	128	12,958	10,543
RRC District 5	0	0	1,162	915
RRC District 6	38	3	14,677	13,881
RRC District 7B	3	0	35	28
RRC District 7C	460	373	2,716	2,393
RRC District 8	4,784	3,264	18,450	13,528
RRC District 8A	299	71	231	116
RRC District 9	4	3	1,196	1,190
RRC District 10	8	0	182	0
State Offshore	0	-	0	-
West Virginia	81	81	17,730	17,723
Wyoming	292	205	1,683	1,031
<b>Federal Offshore</b>	<b>1,797</b>	<b>-</b>	<b>1,918</b>	<b>-</b>
Pacific (California)	11	-	14	-
Gulf of America (Central & Eastern) (a)	1,627	-	1,515	-
Gulf of America (Western)	159	-	390	-
Other States (b)	179	10	1,049	10
<b>U.S. total</b>	<b>17,620</b>	<b>11,214</b>	<b>187,076</b>	<b>156,346</b>

(a) Includes Federal offshore Louisiana, Mississippi, Alabama, and Florida.

(b) Includes Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, Tennessee, Utah, and Virginia.

- No data reported

Source: U.S. Energy Information Administration, Form EIA-23L, "Annual Report of Domestic Oil and Gas Reserves, 2023."