



Independent Statistics & Analysis
U.S. Energy Information
Administration

Proved Reserves of Crude Oil and Natural Gas in the United States, Year-End 2019

January 2021



This report was prepared by the U.S. Energy Information Administration (EIA), the statistical and analytical agency within the U.S. Department of Energy. By law, EIA's data, analyses, and forecasts are independent of approval by any other officer or employee of the United States Government. The views in this report therefore should not be construed as representing those of the U.S. Department of Energy or other federal agencies.

Contents

Proved Reserves of Crude Oil and Natural Gas in the United States, Year-End 2019	1
Oil highlights	1
Natural gas highlights	1
National summary	3
Background	7
Proved reserves of crude oil and lease condensate	9
Crude oil and lease condensate from U.S. shale plays.....	13
Proved reserves of natural gas	14
Nonassociated natural gas	17
Associated-dissolved natural gas	17
Coalbed natural gas (discontinued since the 2018 report).....	18
Natural gas from U.S. shale plays.....	18
Proved reserves of dry natural gas.....	20
Proved reserves of lease condensate and natural gas plant liquids.....	21
Lease condensate	21
Natural gas plant liquids.....	21
Reserves in nonproducing reservoirs	21
Maps and additional data tables	22
Maps.....	23
Oil tables	27
Natural gas tables	35
Miscellaneous/other tables	44

Tables

Table 1. U.S. proved reserves and reserves changes, 2018–19.....	3
Table 2. Production and proved reserves of crude oil from selected U.S. shale plays, 2018–19.....	13
Table 3. Changes to proved reserves of U.S. natural gas by source, 2018–19	16
Table 4. U.S. shale plays: production and proved reserves of natural gas, 2018–19	20
Table 5. U.S. proved reserves of crude oil and lease condensate, 2009–19	27
Table 6. Proved reserves, reserves changes, and production of crude oil and lease condensate, 2019 ...	28
Table 7. Proved reserves, reserves changes, and production of crude oil, 2019	30
Table 8. Proved reserves, reserves changes, and production of lease condensate, 2019	32
Table 9. U.S. proved reserves of natural gas, wet after lease separation, 2001–19	35
Table 10. Proved reserves, reserves changes, and production of natural gas, wet after lease separation, 2019	36
Table 11. Proved reserves, reserves changes, and production of nonassociated natural gas, wet after lease separation, 2019	38
Table 12. Proved reserves, reserves changes, and production of associated-dissolved natural gas, wet after lease separation, 2019	40
Table 13. Proved reserves and production of shale natural gas, 2016–19.....	42
Table 14. Proved reserves, reserves changes, and production of shale natural gas, 2019.....	43
Table 15. Estimated proved reserves of natural gas plant liquids and dry natural gas, 2019.....	44
Table 16. Reported proved nonproducing reserves of crude oil, lease condensate, nonassociated gas, associated-dissolved gas, and total gas, wet after lease separation, 2019	45

Figures

Figure 1. U.S. proved reserves, 1979–2019	3
Figure 2. Proved reserves of the top seven U.S. oil reserves states, 2015–19	4
Figure 3. Proved reserves of the top eight U.S. natural gas reserves states, 2015–19	5
Figure 4. Proved reserves, production, and imports of U.S. crude oil and lease condensate, 1989–2019 .	6
Figure 5. Proved reserves, production, and imports of U.S. natural gas, 1989–2019	6
Figure 6. WTI crude oil spot prices, first day of the month, 2011–20	8
Figure 7. Henry Hub natural gas spot prices, first day of the month, 2011–20.....	8
Figure 8. Proved reserves of U.S. crude oil and lease condensate, 1989–2019	10
Figure 9a. Changes in the proved reserves of U.S. crude oil and lease condensate, 2018–19	10
Figure 9b. Components of U.S. crude oil and lease condensate annual reserves changes, 2009–19.....	11
Figure 10. Proved reserves of U.S. natural gas, 1989–2019	14
Figure 11a. Changes in the proved reserves of U.S. natural gas, 2018–19	15
Figure 11b. Components of U.S. natural gas annual reserves changes, 2009–19	17
Figure 12. Proved reserves of U.S. natural gas (from shale and other sources), 2012–19.....	18
Figure 13. Proved shale gas reserves of the top eight U.S. shale gas reserves states, 2014–19.....	19
Figure 14. Crude oil and lease condensate proved reserves by state/area, 2019.....	23
Figure 15. Changes in crude oil and lease condensate proved reserves by state/area, 2018–19.....	24
Figure 16. Natural gas proved reserves by state/area, 2019.....	25
Figure 17. Changes in natural gas proved reserves by state/area, 2018–19.....	26

THIS PAGE IS LEFT INTENTIONALLY BLANK for PAGINATION

Proved Reserves of Crude Oil and Natural Gas in the United States, Year-End 2019

The decline in oil and natural gas prices in 2019 interrupted a 2-year trend of rising proved reserves of oil and natural gas in the United States. Proved reserves of crude oil and lease condensate remained effectively the same in 2019 as in 2018 (a very slight increase of 0.1%), and proved reserves of natural gas declined by 2% (Table 1). Although the U.S. had enough extensions and discoveries of proved reserves of crude oil and natural gas to replace annual production in 2019, reserves were revised downwards due to lower prices. Highlights are listed below.

Oil highlights

- The annual average spot price for a barrel of West Texas Intermediate (WTI) crude oil at Cushing, Oklahoma decreased 15.1% in 2019, from \$65.66 in 2018 to \$55.77 (Figure 6).
- Proved reserves of crude oil increased 367 million barrels in 2019 while proved reserves of lease condensate (produced from gas wells) dropped 313 million barrels yielding a net gain of 54 million barrels of proved reserves of crude oil and lease condensate (0.1%) to 47.1 billion barrels at year-end 2019 (Table 5).
- At 47.1 billion barrels, U.S. proved reserves of oil in 2019 remain at the record level set in 2018.
- U.S. production of crude oil and lease condensate increased 12.7% from 2018 to 2019 (Table 5).
- Producers in Alaska added 259 million barrels (MMBbl) of proved reserves of crude oil and lease condensate in 2019, the largest net increase in all states (Table 6).
- Producers in New Mexico saw the second-largest net increase in proved reserves of crude oil and lease condensate in 2019 (+226 MMBbl) and in Texas had the third largest (+179 MMBbl). Extensions and discoveries in the Permian Basin of eastern New Mexico and west Texas contributed the most to these annual gains. (Table 6)
- The largest net decrease in proved reserves of crude oil and lease condensate of all states in 2019 was in Colorado (-154 MMBbl). (Table 6)

Natural gas highlights

- The annual average spot price for natural gas at the Louisiana Henry Hub decreased by 21.5% from \$3.35 per million British thermal units (MMBtu) in 2018 to \$2.63 per MMBtu in 2019 (Figure 7).
- Proved reserves of natural gas decreased 1.9%, from 504.5 trillion cubic feet (Tcf) at year-end 2018 to 494.9 Tcf at year-end 2019 (Table 10).
- This is the first annual decrease in proved reserves of natural gas in the United States since 2015, but reserves remain at their 2nd highest level ever.
- Total U.S. production of natural gas increased 9.8% from 2018 to 2019 (Table 9).
- Proved reserves of natural gas from shale increased from 68% of the U.S. total in 2018 to 71% at year-end 2019 (Figure 12).
- The largest net gain in proved reserves of U.S. natural gas by volume in 2019 was in Ohio (+10.4 Tcf) as a result of continuing development of the Utica/Pt. Pleasant shale play in the Appalachian Basin (Table 10).

- The largest net decrease in proved reserves of natural gas in all states in 2019 was in Texas (-12 Tcf) (Table 10). Net downward revisions of reserves in the Eagle Ford, Barnett, and Bossier shale plays contributed the most to the annual drop (Table 4).

Proved reserves are estimated volumes of hydrocarbon resources that analysis of geologic and engineering data demonstrates with reasonable certainty¹ are recoverable under existing economic and operating conditions. Reserves estimates change from year to year as new discoveries are made, as existing fields are thoroughly appraised, as existing reserves are produced, as prices and costs change, and as technologies evolve.

To prepare this report, EIA collects independently developed estimates of proved reserves from a sample of operators of U.S. oil and natural gas fields with its Form EIA-23L. EIA uses this sample to further estimate the portion of proved reserves from operators who do not report. Responses were received from 372 of 412 sampled operators, which provided coverage of about 90% of proved reserves of oil and natural gas at the national level. EIA develops estimates for the United States, each state individually, and some state subdivisions. States with subdivisions are California, Louisiana, New Mexico, Texas, and the Federal Offshore Gulf of Mexico.

¹ *Reasonable certainty* assumes a probability of recovery of 90% or greater.

National summary

Table 1. U.S. proved reserves and reserves changes, 2018–19

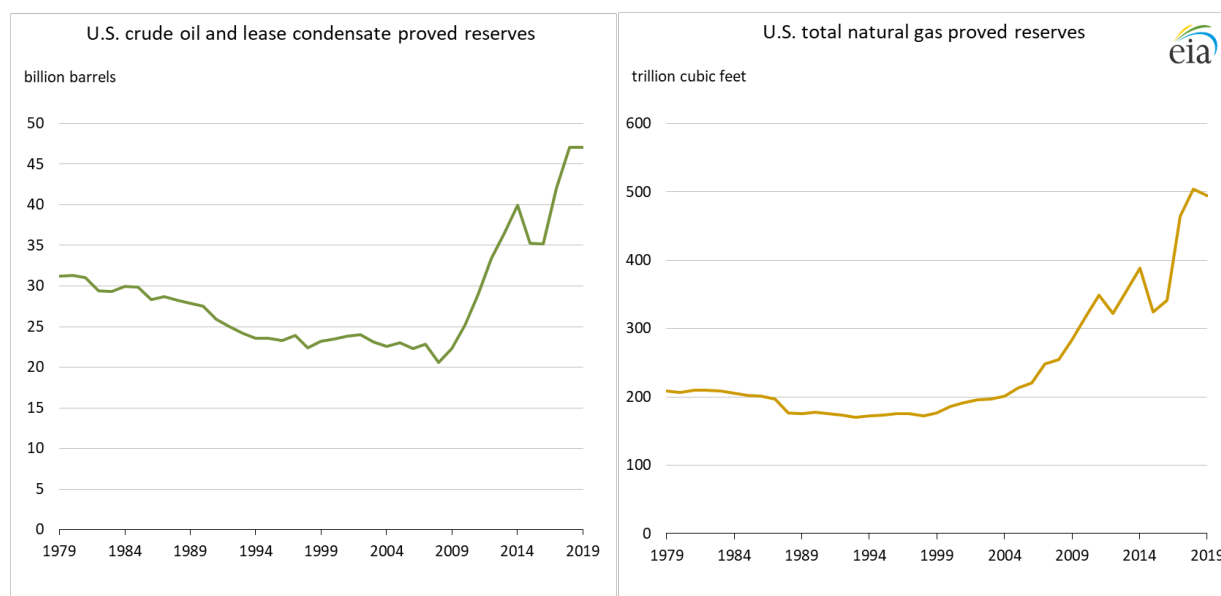
	Crude oil billion barrels	Crude oil and lease condensate billion barrels	Total natural gas trillion cubic feet
U.S. proved reserves as of December 31, 2018	43.8	47.1	504.5
Extensions and discoveries	6.1	6.7	56.7
Net revisions	-1.9	-2.4	-35.3
Net adjustments, sales, and acquisitions	0.3	0.3	6.4
Estimated production	-4.2	-4.5	-37.4
Net additions to U.S. proved reserves	0.4	0.1	-9.6
U.S. proved reserves as of December 31, 2019	44.2	47.1	494.9
Percentage change in U.S. proved reserves	0.8%	0.1%	-1.9%

Notes: *Total natural gas* includes natural gas plant liquids. Columns may not add to total because of independent rounding.

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

From the late 1970s to 1996, U.S. reserves of natural gas and crude oil experienced a steady decline (Figure 1). In 1997, the downward trend for natural gas reversed as producers introduced innovations in [directional drilling](#) and [hydraulic fracturing](#) techniques that successfully increased proved reserves and production of natural gas from shale formations. In 2008, the downward trend for crude oil reversed when innovations in directional drilling and hydraulic fracturing were applied to tight oil-bearing formations, such as the Bakken Shale of the Williston Basin. The upward trends continued until 2015, when the industry experienced a significant price drop for both oil and gas, and proved reserves were revised downward because these lower prices did not support operators' projections of resource development. From 2016 to 2018, U.S. oil and natural gas prices and reserves trended upwards by at least 9% annually. In 2019, prices declined to levels only slightly higher than those of 2015 and that trend of rising reserves was interrupted—proved reserves of U.S. crude oil and lease condensate remained at the 2018 level, while natural gas reserves declined slightly.

Figure 1. U.S. proved reserves, 1979–2019

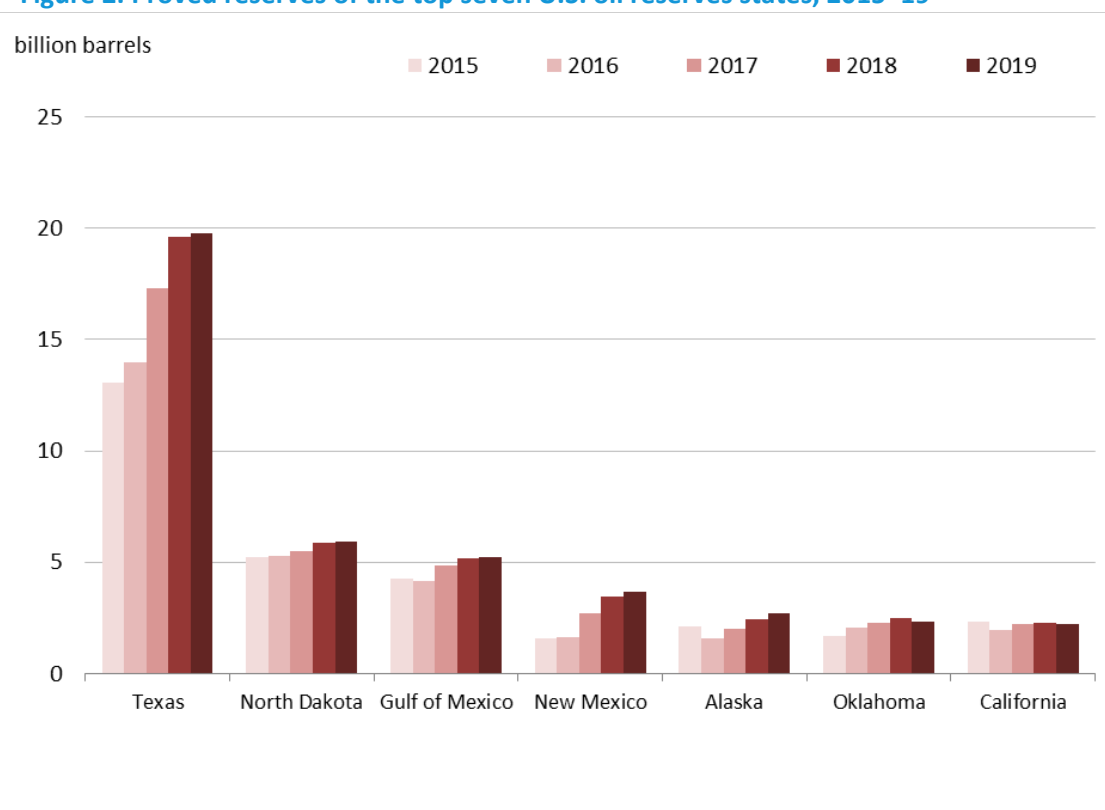


Sources: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 1979–2019*

Proved reserves of combined crude oil and lease condensate increased in five the top seven U.S. oil reserves states in 2019 (Figure 2). In 2019, operators in the state of Alaska reported the largest volumetric increase in its proved reserves of crude oil and lease condensate—a net increase of 259 MMBbl. Most reserves additions were made on the north slope of Alaska.

Operators in New Mexico had the second-largest increase of proved crude oil and lease condensate reserves—a net addition of 226 MMBbl. The third-largest net increase in proved reserves of crude oil and lease condensate was in Texas, at 179 MMBbl. The New Mexico reserves additions and most of the Texas reserves additions were made in the Permian Basin, the center of the Wolfcamp/Bone Spring shale play.

Figure 2. Proved reserves of the top seven U.S. oil reserves states, 2015–19



Notes: Oil reserves include crude oil and lease condensate. Gulf of Mexico represents the federally owned offshore portion of the Gulf of Mexico. Although not a state, it is an important U.S. oil and natural gas production area.

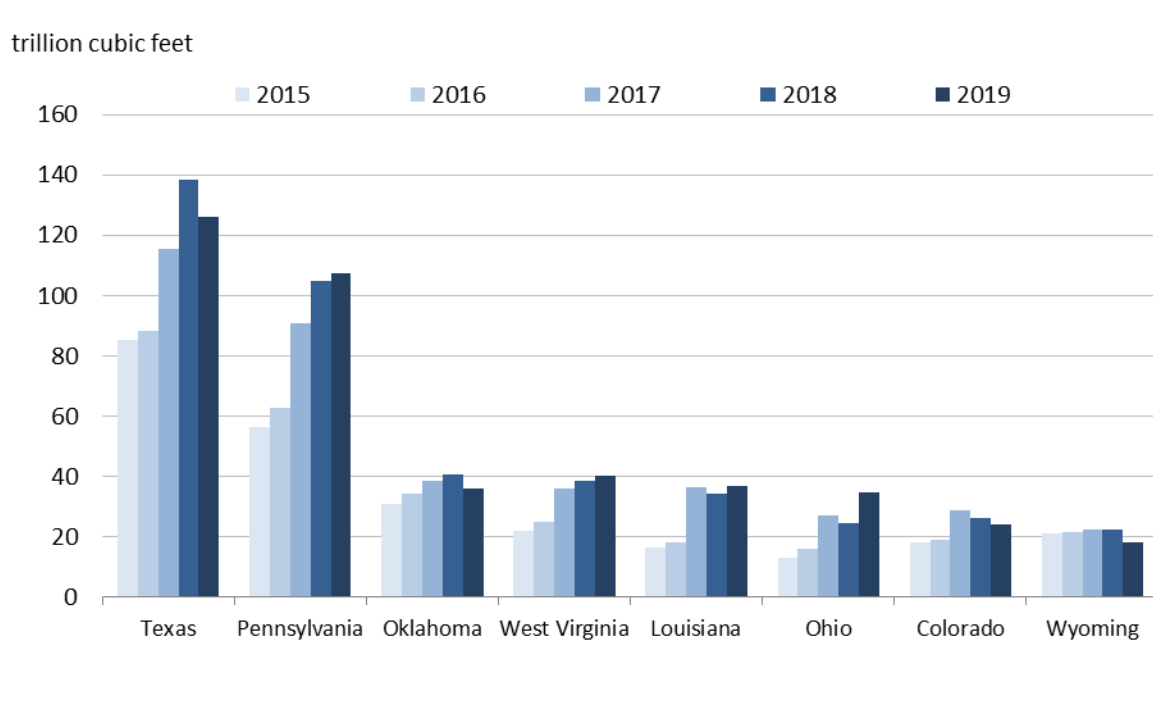
Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 2015–19*

Proved natural gas reserves decreased in four of the top eight U.S. natural gas reserves states in 2019 (Figure 3). Texas saw the largest net decrease in proved natural gas reserves of any state, a net decrease of 12.1 Tcf. Oklahoma saw the second-largest net decrease in 2019, declining by 4.7 Tcf of proved natural gas reserves. Decreases were a result of net downward revisions to proved reserves of natural gas in 2019. The average U.S. natural gas price declined 21.5% in 2019, curtailing development plans and reducing the economically recoverable volume of existing proved reserves.

In spite of the significant natural gas price reduction during 2019, operators in the northeastern U.S. reported significant additions of proved reserves. Operators in the state of Ohio reported the largest net increase in

proved natural gas reserves of all States in 2019, adding a net 10.4 Tcf in the Utica/Pt. Pleasant shale play. Pennsylvania had the second-largest natural gas proved reserves increase—a net addition of 2.4 Tcf, where extensions in the Marcellus shale play exceeded net downward revisions of proved natural gas reserves.

Figure 3. Proved reserves of the top eight U.S. natural gas reserves states, 2015–19



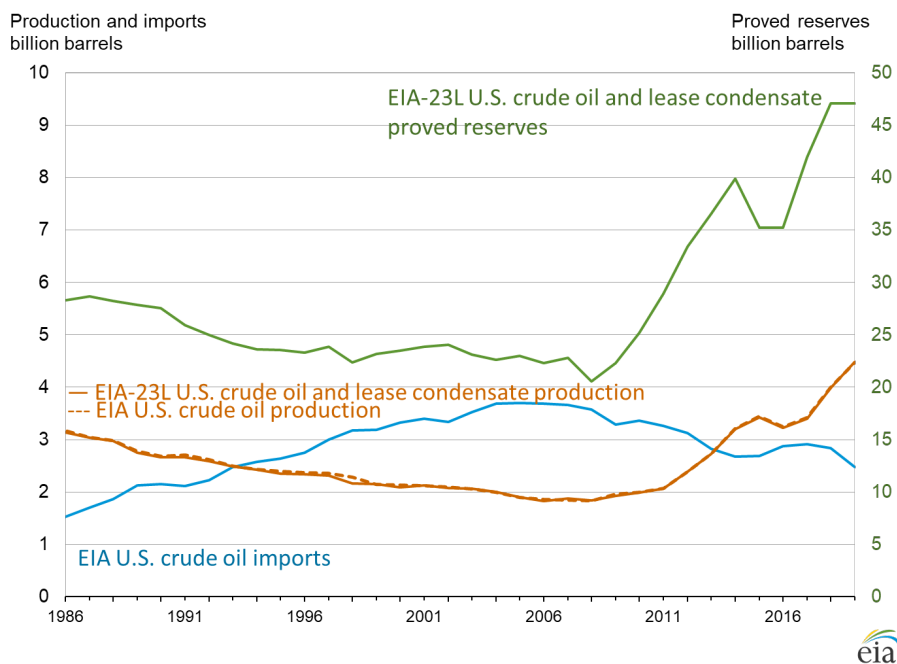
Note: Total natural gas includes natural gas plant liquids that have yet to be extracted downstream and does not include lease condensate.
 Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2015–19

Official EIA oil and natural gas production data

EIA’s official production volumes are published in the [Petroleum Supply Annual 2019](#), DOE/EIA-0340(19), and the [Natural Gas Annual 2019](#), DOE/EIA-0131(19), and are based on the EIA-914, *Monthly Crude Oil and Lease Condensate, and Natural Gas Production* report data. The production numbers in the tables and figures of this report are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, and are used because they are consistent with EIA’s calculations of U.S. reserves. The data may differ from EIA’s official production numbers and are offered here as an indicator of production trends. Hence, they should not be cited as EIA’s official production statistics.

In 2019, production of crude oil and lease condensate increased in the United States by 506 MMBbl (12.7%) from 2018's production level. Crude oil imports decreased 353 MMBbl (-12.4%) from 2018 (Figure 4).

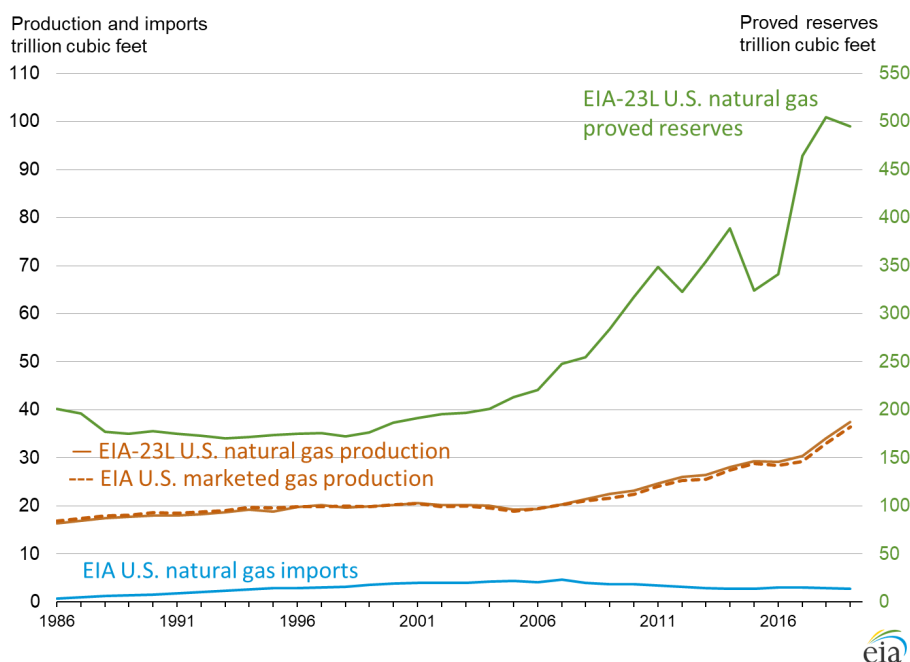
Figure 4. Proved reserves, production, and imports of U.S. crude oil and lease condensate, 1986–2019



Sources: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*; Form EIA-814, *Monthly Imports Report*; *Petroleum Supply Annual 2019*, DOE/EIA-0340(19)

U.S. natural gas production increased 9.8% (3.3 Tcf) in 2019, and natural gas imports decreased 5.1% (0.1 Tcf) from the 2018 level (Figure 5).

Figure 5. Proved reserves, production, and imports of U.S. natural gas, 1986–2019



Sources: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*; U.S. Department of Energy, Office of Fossil Energy, *Natural Gas Imports and Exports*; *Natural Gas Annual 2019*, DOE/EIA-0131(19)

Background

This report provides estimates of U.S. proved reserves of crude oil and lease condensate and proved reserves of natural gas at the end of 2019. Changes for 2019 are measured as the difference between year-end 2018 and year-end 2019 estimates. EIA processes data filed on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, which was submitted by 372 of the 412 sampled operators of U.S. oil and natural gas fields. EIA then estimates the portion of proved reserves that is not reported for the United States, each state, and some federal offshore and state subdivisions. *State subdivisions* (e.g., California Coastal Region Onshore, Louisiana North, Texas Railroad Commission District 1) are defined geographic areas within a large producing state or offshore area. State subdivision boundaries typically align with the boundaries of internal state conservation commission districts that collect production data. Within this report, EIA publishes proved reserves for state subdivisions of California, Louisiana, New Mexico, Texas, and the Federal Offshore Gulf of Mexico.

Proved reserves are estimated volumes of hydrocarbon resources that analysis of geologic and engineering data demonstrates with reasonable certainty are recoverable under existing economic and operating conditions. Reserves estimates change from year to year as new discoveries are made, as existing fields are more thoroughly appraised, as existing reserves are produced, as prices and costs change, and as technologies evolve.

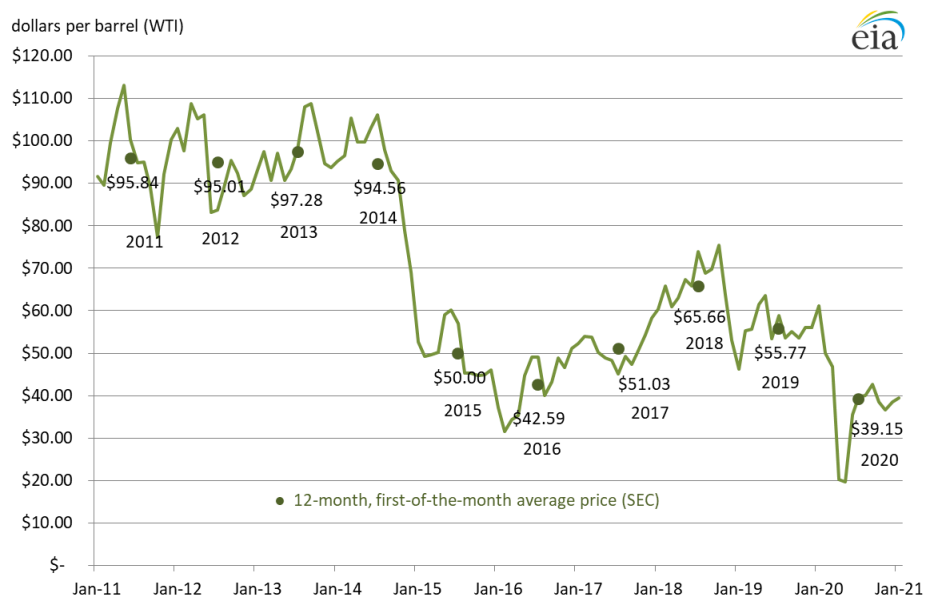
Discoveries include new fields, identification of new reservoirs in previously discovered fields, and additions to reserves that resulted from additional drilling and exploration in previously discovered reservoirs (extensions). Extensions typically make up the largest share of total discoveries. New fields and reservoirs generally account for only a small share of overall annual reserve additions. Beginning with the 2016 report, operators reported to EIA on Form EIA-23L their discoveries as a single, combined category, *extensions and discoveries*, and totals for that category are presented in one column on the data tables in this report.

Revisions primarily occur when operators change their estimates of what they will be able to produce from the properties they operate in response to changing prices or improvements in technology. Higher fuel prices typically increase estimates (create positive revisions) as operators consider a broader portion of the resource base economically producible with reasonable certainty, or proved. Lower prices, on the other hand, generally reduce estimates (create negative net revisions) as producers estimate that less of their resource base is producible economically.

The U.S. Securities and Exchange Commission (SEC) procedure for determining the prices underpinning their proved reserves estimates were revised in 2008 to make reserves estimates less sensitive to price fluctuations. The 2008 SEC rules require companies to use an average of the 12 first-day-of-the-month prices. EIA requires companies to follow the same procedure. SEC and EIA estimates are not exactly the same, however; the SEC requires companies to report their owned reserves, and EIA requires companies to report their operated reserves.

Spot market prices are not necessarily the prices used by operators in their reserve estimates for EIA because actual prices received by operators depend on their particular contractual arrangements, location, hydrocarbon quality, and other factors. However, spot prices do provide a benchmark or trend indicator. The 12-month, first-day-of-the-month average WTI crude oil spot price for 2019 was \$55.77 per barrel—a price drop of -15.1% from 2018 (Figure 6).

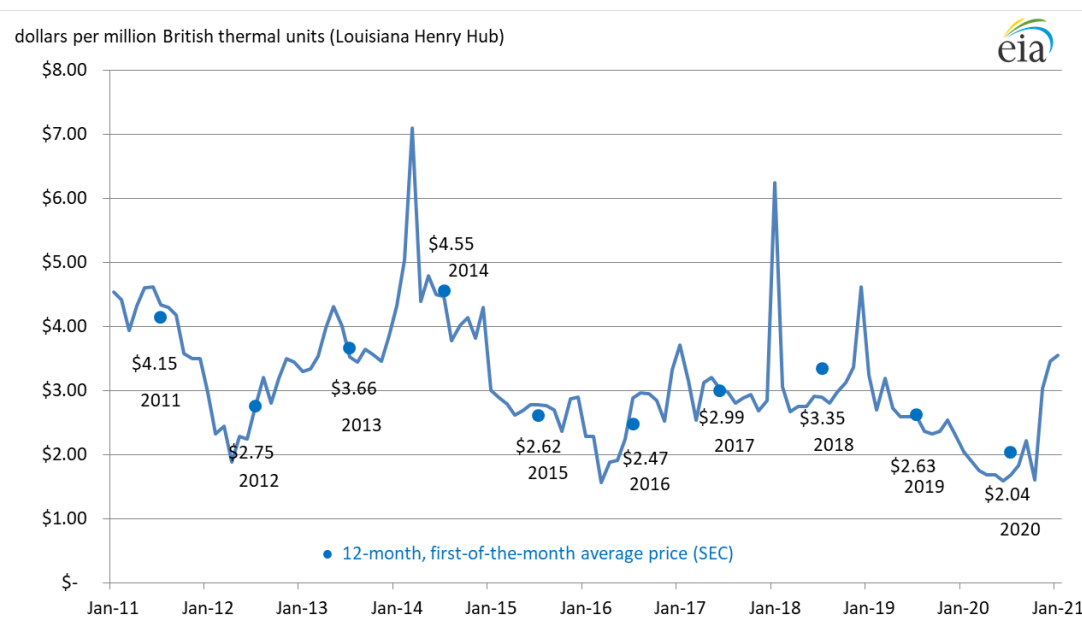
Figure 6. WTI crude oil spot prices, first day of the month, 2011–20



Note: January 1, 2021 price forecast was taken from EIA’s *Short-Term Energy Outlook*, November 10, 2020.
 WTI= West Texas Intermediate. SEC=U.S. Securities and Exchange Commission.
 Source: Refinitiv, U.S. Energy Information Administration

The 12-month, first-day-of-the-month average natural gas spot price at Louisiana’s Henry Hub (the U.S. benchmark location for natural gas) for 2019 was \$2.63 per MMBtu—a 21.5% decrease from the previous year’s average spot price of \$3.35 per MMBtu (Figure 7). Although the natural gas spot price began at \$3.25 per MMBtu on January 1, 2019, after March, the first-day-of-the-month spot price remained below \$3 throughout the year.

Figure 7. Henry Hub natural gas spot prices, first day of the month, 2011–20



Note: January 1, 2021 price forecast was taken from EIA’s *Short-Term Energy Outlook*, November 10, 2020. SEC=U.S. Securities and Exchange Commission.
 Source: Refinitiv, U.S. Energy Information Administration

Proved Reserves Outlook for EIA's next report (2020). The World Health Organization announced on March 11, 2020 that the COVID-19 outbreak was characterized as a pandemic and on March 13, a National Emergency was declared in the United States. In addition to travel restrictions, many states imposed mandatory lockdowns and issued stay-at-home orders, and people avoiding exposure chose not to travel as well. Consequently, demand fell for transportation fuels, fuel prices fell, and a critical shortage of available storage for liquids production was created. On April 20, 2020, for the first time since WTI began trading on the New York Mercantile Exchange (NYMEX) in 1983, the price of West Texas Intermediate oil futures fell below zero dollars per barrel².

The 12-month, first-of-the-month average [crude oil spot price for West Texas Intermediate at Cushing, Oklahoma](#) and the [natural gas spot price at the Henry Hub](#) in Louisiana in 2020 declined from the 2019 level—the 2020 oil price declined 29.8% and natural gas price declined 22.4%. Consequently, EIA expects that oil and gas well operators will revise down their proved reserves in 2020.

During the last week of 2019, 805 rotary rigs were operating in the United States.³ By November 20, 2020, the number of rigs operating in the United States had declined to 310 (-61%). As a result, EIA expects operators to report significantly fewer additions of proved reserves from extensions and discoveries in the 2020 reserves report.

According to EIA's *Short-Term Energy Outlook* forecast, U.S. production in 2020 will decline an estimated 7% for crude oil and 2% for natural gas.⁴ When combined with lower prices, reduced rig counts, and decreased annual production, EIA anticipates that total U.S. proved reserves will decline in 2020 for both crude oil and natural gas.

Proved reserves of crude oil and lease condensate

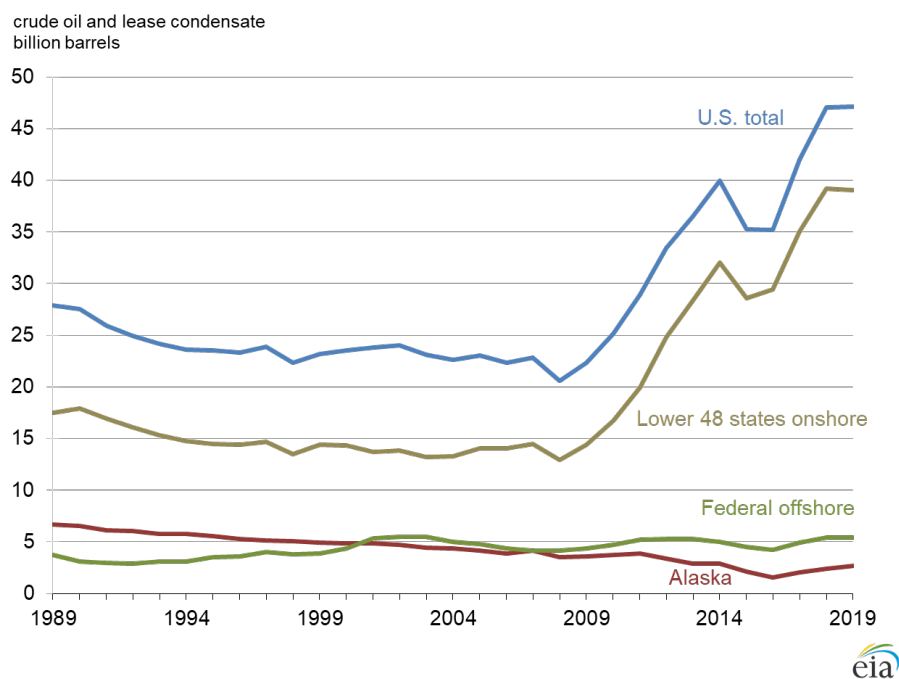
EIA estimates that the United States had 47,107 MMBbl of proved reserves of crude oil and lease condensate as of December 31, 2019—an increase of 0.1% from year-end 2018. Proved reserves rose 10% (259 MMBbl) in Alaska, but declined 0.4% onshore in the Lower 48 states (excluding Federal Offshore [both Pacific and the Gulf of Mexico], and State Offshore reserves), and declined 1.1% in the Federal Offshore (both Pacific and the Gulf of Mexico)(Figure 8).

² EIA Today in Energy, *Low liquidity and limited available storage pushed WTI crude oil futures price below zero*, April 27, 2020.

³ EIA *Crude Oil and Natural Gas Drilling Activity*, EIA and Baker Hughes, Inc., Houston, Texas.

⁴ EIA's *Short-Term Energy Outlook*, November 10, 2020.

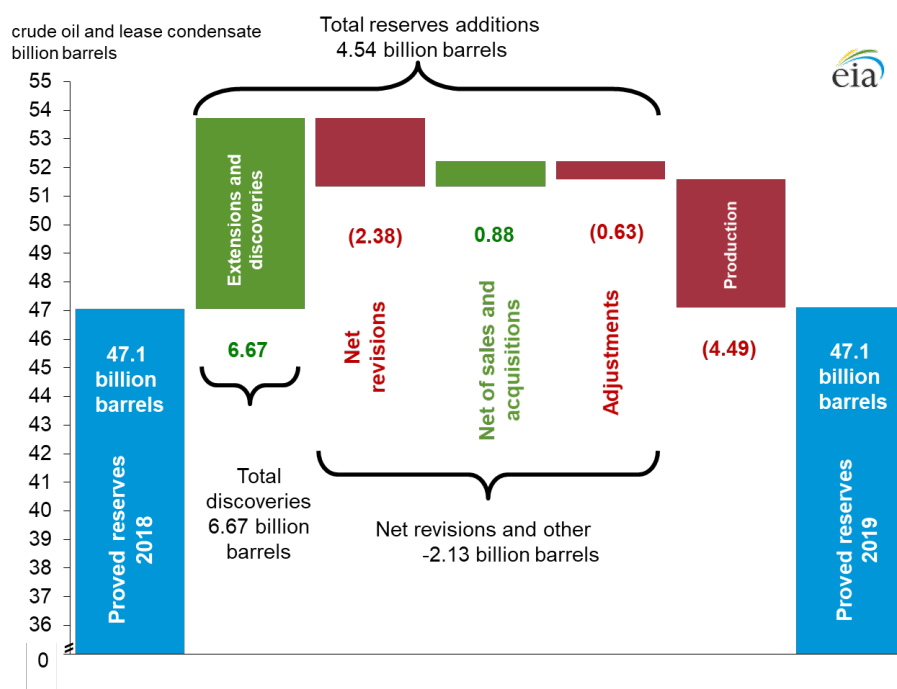
Figure 8. Proved reserves of U.S. crude oil and lease condensate, 1989–2019



Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 1989–2019*

U.S. proved reserves of crude oil and lease condensate increased only slightly by 54 MMBbl (0.1%) in 2019, as the combination of downward *net revisions* and *production* almost completely offset the 6.67 billion barrels of total discoveries for the year (Figure 9a).

Figure 9a. Changes in the proved reserves of U.S. crude oil and lease condensate, 2018–19



Note: Component columns may not add to total because of independent rounding. Y-axis has a nonstandard scale.
Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*

Alaska saw the largest net increase in proved crude oil and lease condensate reserves (259 MMBbl) of all states in 2019—an increase of 10.7% from 2018.

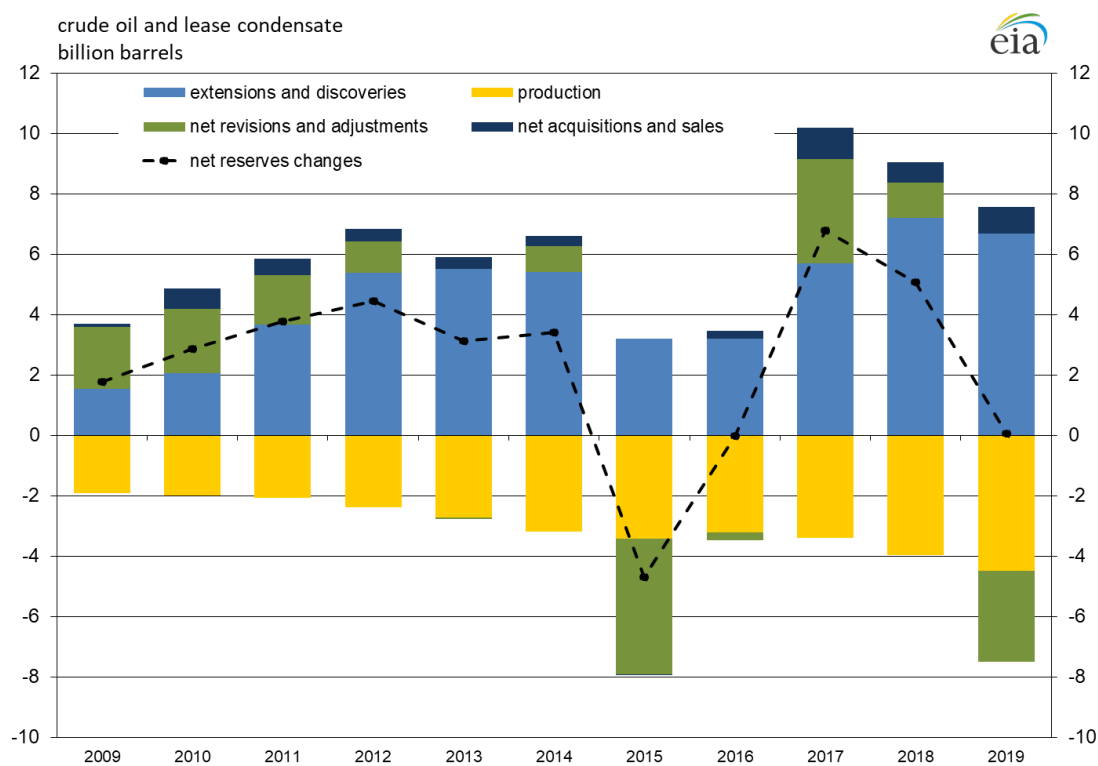
Operators in New Mexico had the second-largest net increase in 2019—226 MMBbl of proved crude oil and lease condensate reserves—an increase of 6.6% from 2018. Texas added a net increase of 179 MMBbl of proved reserves (0.9%). Operators in the west Texas state subdivision of TX Railroad Commission District 8 had the mathematically largest net increase (+652 MMBbl) of all state subdivisions for the year in 2019, but the state total for Texas was reduced when combined with all other Texas subdivisions.

Operators in Ohio had the fourth-largest increase in proved crude oil and lease condensate reserves (106 MMBbl) in 2019—an increase of 50.5% from 2018. Operators acquired and reassessed proved lease condensate reserves for their operations in the Utica shale play in the Appalachian Basin.

Colorado experienced the largest net decline in proved reserves in 2019, -154 MMBbl (-9.0%) of proved crude oil and lease condensate reserves.

Extensions and discoveries in 2019 outweighed the net increases of all other components of proved reserves (Figure 9b), but the gains from this component were countered by a combination of increased production and net revisions to proved reserves that were negative. Figure 9b summarizes the components of U.S. crude oil and lease condensate annual reserves changes over time:

Figure 9b. Components of U.S. crude oil and lease condensate annual reserves changes, 2009–19



Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 2009–19*

Extensions and discoveries. Reserves additions—including discoveries of new fields, identification of new reservoirs in fields discovered in previous years, and reserve additions that result from the additional drilling and exploration in previously discovered reservoirs (extensions)—added 6.67 billion barrels to U.S. crude oil and lease condensate reserves in 2019.

The largest extensions and discoveries of proved reserves of crude oil and lease condensate in 2019 were in Texas, New Mexico, and North Dakota. Texas had 3.5 billion barrels, New Mexico had 1.1 billion barrels, and North Dakota had 0.7 billion barrels of extensions and discoveries in 2019.

Net revisions and other changes. Revisions to reserves occur primarily when operators change their estimates of what they are able to economically produce using existing technology and current economic conditions. Current prices are critical in estimating economically producible reserves. Other changes occur when operators buy and sell properties (revaluing the proved reserves in the process) and when various adjustments are made to reconcile estimated volumes.

Net downward revisions decreased proved reserves of U.S. crude oil and lease condensate by -2.38 billion barrels in 2019. The largest net downward revisions of proved reserves of crude oil and lease condensate were in Texas (net revisions of proved reserves of crude oil and lease condensate accounted for -1.6 billion barrels in 2019).

The proved reserves of U.S. crude oil and lease condensate associated with buying and selling properties⁵ resulted in a net increase of 884 MMBbl in 2019.

Adjustments. Adjustments are the yearly changes in the published reserve estimates that cannot be attributed to the estimates for other reserve change categories because of the survey and statistical estimation methods employed. For example, should last year's year-end reserves for a state or state subdivision fail to match this year's beginning year reserves, an adjustment must be made to account for that difference. Other examples that contribute to adjustments include changes in the selected reporting companies from the previous year, and imputations for missing or unreported reserve changes.

In 2019, the sum of all of EIA's adjustments for U.S. proved oil reserves was -630 MMBbl.

Production. EIA's [official published estimate of total U.S. crude oil production](#) (including lease condensate) is 4,470 MMBbl in 2019, an increase of 11.7% from 2018. As estimated using Form EIA-23L responses, the United States produced 4,490 MMBbl of crude oil and lease condensate in 2019, an increase of 12.7% from 2018 (Tables 5 and 6).⁶ Production onshore in the Lower 48 states (3,591 MMBbl) was 14.3% higher than the 2018 level (3,141 MMBbl), and Federal Offshore (both Pacific and Gulf of Mexico) production experienced a 9.6% increase based on the Form EIA-23L data (rising from 649 MMBbl in 2018 to 711 MMBbl in 2019).

⁵ How can acquisitions in a given year exceed sales? When it comes to proved reserves, an exchange of properties is not a zero-sum game. Operators often have differing development plans for oil- and natural gas-bearing properties they purchase from or exchange with other operators. For example, when an operator purchases acreage that is adjacent to its producing wells, the operator can drill longer horizontal laterals and add more proved reserves.

⁶ The oil production estimates in this report are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They are used to weight estimates used in developing total proved reserves, and may differ slightly from the official U.S. EIA production data for crude oil and lease condensate for 2019 contained in the *Petroleum Supply Annual 2019*, DOE/EIA-0340(19).

Crude oil and lease condensate from U.S. shale plays

As of December 31, 2019, seven major *shale plays*⁷ accounted for 49.3% of all proved reserves of U.S. crude oil and lease condensate (Table 2). The Wolfcamp/Bone Spring shale play in the Permian Basin remains the largest oil-producing shale play in the United States. Of the seven selected major U.S. shale plays with proved reserves of crude oil listed in Table 2, the Wolfcamp/Bone Spring shale play is the only one that had a net gain in proved reserves in 2019. EIA publishes a [series of maps](#) showing major U.S. shale plays where oil and natural gas are produced.

Table 2. Production and proved reserves of crude oil from selected U.S. shale plays, 2018–19
million barrels

Basin	Play	State(s)	2018	2018	2019	2019	2018–19
			Production	Proved reserves	Production	Proved reserves	Reserves change
Permian	Wolfcamp/Bone Spring	New Mexico, Texas	922	11,096	1,209	11,994	898
Williston	Bakken/Three Forks	North Dakota, Montana, South Dakota	458	5,862	517	5,845	-17
Western Gulf	Eagle Ford	Texas	449	4,734	451	4,297	-437
Anadarko, South Oklahoma	Woodford	Oklahoma	34	560	53	524	-36
Appalachian	Marcellus*	Pennsylvania, West Virginia	17	345	21	326	-19
Denver-Julesburg	Niobrara	Colorado, Kansas, Nebraska, Wyoming	25	317	25	235	-82
Fort Worth	Barnett	Texas	2	20	2	19	-1
Subtotal			1,907	22,934	2,278	23,240	306

Notes: Includes lease condensate. Bakken/Three Forks oil includes proved reserves from shale or low-permeability formations reported on Form EIA-23L. Wolfcamp/Bone Spring includes proved reserves from shale or low-permeability formations reported on Form EIA-23L in TX RRC 7C, TX RRC 8, TX RRC 8A, and NME.

* The Marcellus play in this table refers only to portions within Pennsylvania and West Virginia.

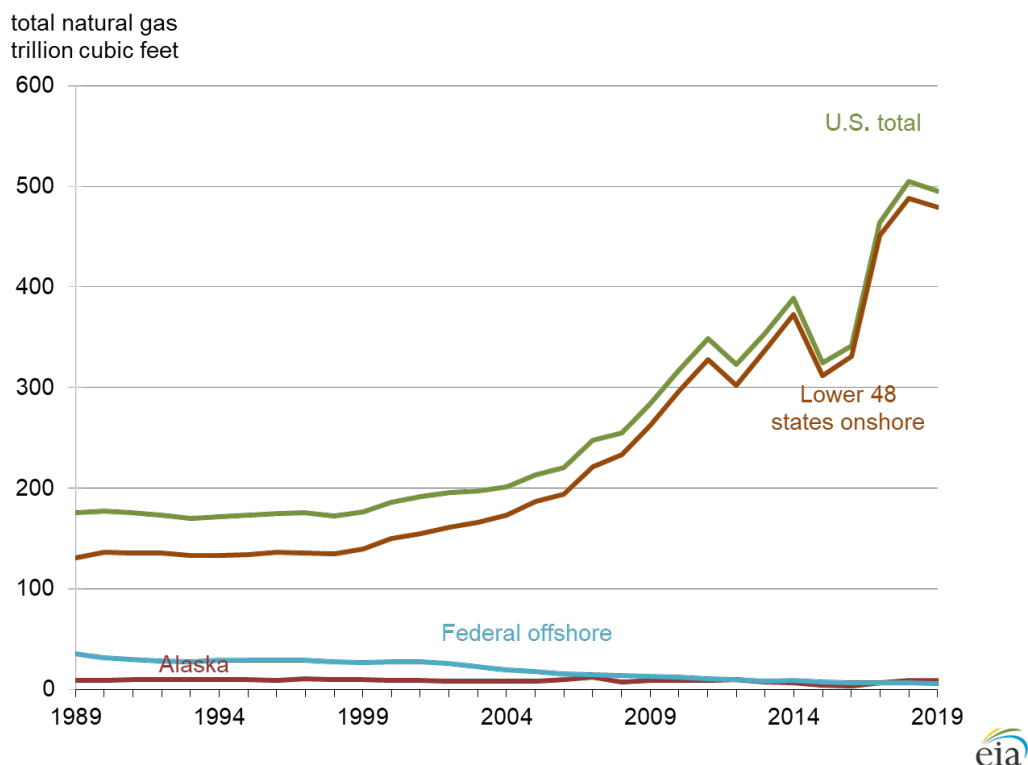
Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2018 and 2019

⁷ *Shale plays* produce oil from petroleum-bearing formations with low permeability, such as the Eagle Ford and the Bakken, which must be hydraulically fractured to produce oil at commercial rates. A kerogen-bearing, thermally mature shale is the source rock that typically lends its name to the play. Often, several oil-producing layers are stacked in these plays, but the source rock is the shale.

Proved reserves of natural gas

The United States had 494.9 Tcf of proved natural gas reserves as of December 31, 2019. U.S. proved reserves of total natural gas (including natural gas plant liquids) decreased by 9.6 Tcf (1.9%) (Figure 10).

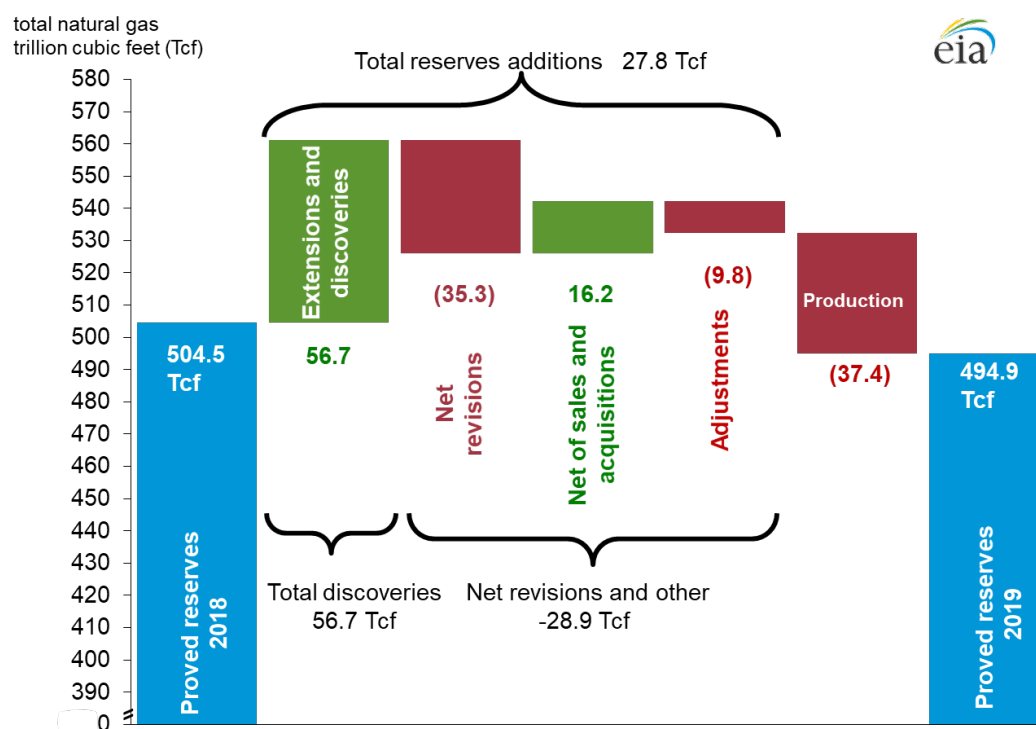
Figure 10. Proved reserves of U.S. natural gas, 1989–2019



Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 1989–2019*

In 2018, extensions and discoveries exceeded net revisions and production, however in 2019 the opposite was true. Net downward revisions of 35.3 Tcf when combined with annual production of 37.4 Tcf were larger than the 56.7 Tcf of extensions and discoveries of natural gas proved reserves in 2019 (Figure 11a), and the National total has declined as a result.

Figure 11a. Changes in the proved reserves of U.S. natural gas, 2018–19



Note: Component columns may not add to total because of independent rounding. Y-axis has a nonstandard scale.

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

Texas, Oklahoma, and Wyoming reported the largest net decreases in proved reserves of natural gas of all states in 2019. Proved reserves of natural gas in Texas decreased by 8.7% overall as downward revisions of natural gas reserves in the Eagle Ford and Barnett Shale plays exceeded gains from the proved reserves of associated-dissolved natural gas that accompanied crude oil development in the Permian Basin. Oklahoma's natural gas reserves (which includes the Woodford shale play) declined 11.6%. Wyoming's proved natural gas reserves declined 17.8%—unlike Texas or Oklahoma, which had extensions of 15 Tcf and 5 Tcf from the Wolfcamp and Woodford shale plays to alleviate a portion of their State's downward revisions and production, Wyoming had only 0.4 Tcf of extensions and discoveries during 2019.

Ohio, Pennsylvania, and Louisiana reported the largest net increases in proved natural gas reserves in 2019. Ohio reported a 42.4% (10.4 Tcf) increase, as operators in the Utica/Pt. Pleasant shale play reported record-level acquisitions of reserves from their competitors and applied new valuation to that volume. Pennsylvania reported a 2.3% (2.4 Tcf) increase in proved natural gas reserves from the Marcellus shale play. Louisiana reported a 6.9% (2.4 Tcf) increase in proved natural gas reserves in 2019 from the Haynesville shale play in northern Louisiana.

Extensions and discoveries. The U.S. total of natural gas extensions and discoveries in 2019 was 56.7 Tcf (Table 3), and 82.0% of those discoveries were from shale plays.

Operators in Texas reported the largest extensions and discoveries of proved natural gas reserves in the United States in 2019, totaling 15.7 Tcf (Table 10). The largest natural gas discoveries in Texas were from extensions to oil fields with associated-dissolved natural gas in the Permian Basin (TX RRC District 8), nonassociated natural

gas in the Haynesville/Bossier shale play (TX RRC District 6), and nonassociated natural gas in the Eagle Ford shale play (TX RRC District 4).

Pennsylvania saw the next-largest volume of extensions and discoveries in 2019 (13.8 Tcf). These discoveries were in the Marcellus shale play of southwestern Pennsylvania.

Table 3. Changes to proved reserves of U.S. natural gas by source, 2018–19
(trillion cubic feet)

Source of natural gas	Year-end 2018	2019	2019	2019	Year-end 2019
	Proved reserves	Extensions and discoveries	Revisions and other changes	Production	Proved reserves
Shale	342.1	46.5	-9.9	-25.6	353.1
Other U.S. natural gas					
Lower 48 states onshore	146.3	9.7	-19.6	-10.4	125.9
Lower 48 states offshore	7.2	0.3	0.1	-1.1	6.5
Alaska	8.9	0.3	0.5	-0.3	9.4
U.S. Total	504.5	56.7	-28.9	-37.4	494.9

Note: The Lower 48 states offshore subtotal in this table includes state offshore and Federal Offshore. Components may not add to total because of independent rounding. Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2018 and 2019

Net revisions and other changes. Net revisions decreased U.S. total proved natural gas reserves by 35.3 Tcf in 2019 (Table 9). In 2018, the U.S. total natural gas reserves were revised downwards by 27.7 Tcf, and the net revision decreases in 2019 are both a continuation of that trend throughout 2019 and a recognition of demand destruction caused by the COVID-19 pandemic in 2020. The following states had the largest positive and negative net revisions in 2019 (Table 10):

- Texas had the largest net revision decrease of proved natural gas reserves of all states in 2019 (-16.3 Tcf).
- Oklahoma had the second-largest net revision decrease of proved natural gas reserves (-6.7 Tcf).
- West Virginia had the third-largest net revision decrease of proved natural gas reserves (-5.2 Tcf).
- Despite the large net revision decrease in 2019, the volume of proved natural gas reserves increased in West Virginia by 4.4%.
- Ohio had the largest net revision increase of proved natural gas reserves of all states in 2019 (3.9 Tcf).

The net change to proved natural gas reserves from the purchase and sale of properties resulted in an additional gain of 16.2 Tcf in 2019.

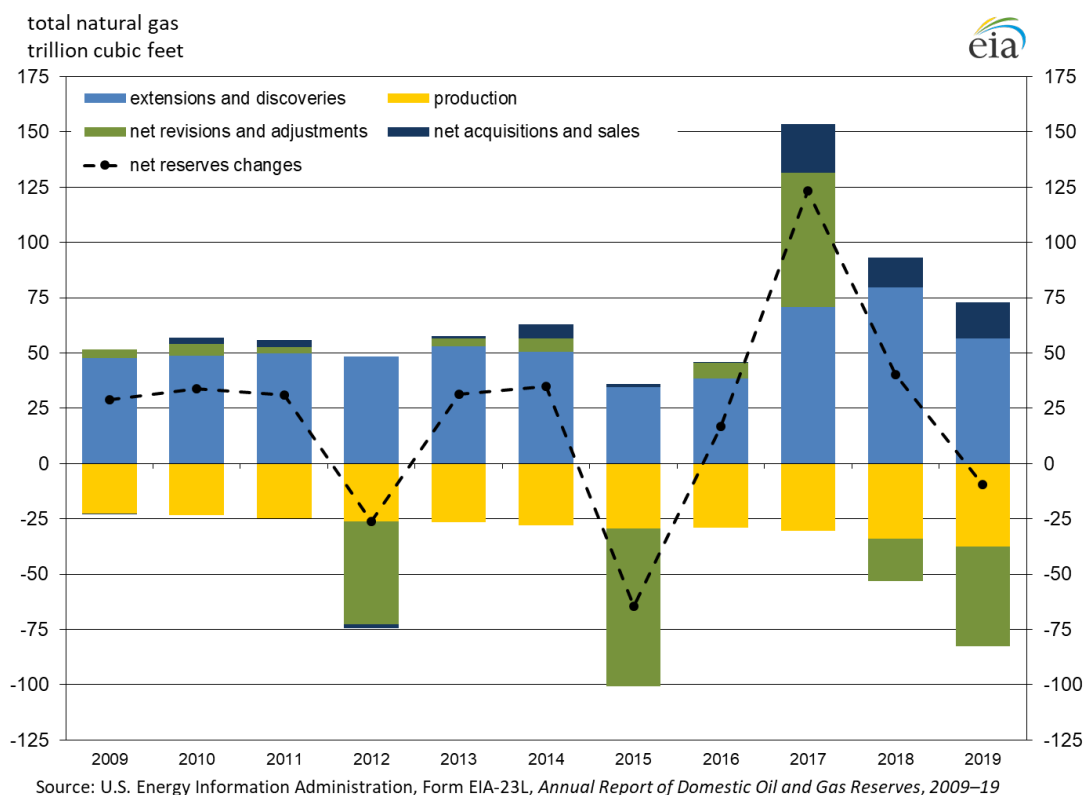
Adjustments. Adjustments are yearly changes in the published reserve estimates that EIA cannot attribute to other reserve change categories. In 2019, the sum of all of EIA's adjustments for proved natural gas reserves was 9.8 Tcf.

Production. EIA's official published estimate of [marketed natural gas production](#) is 36.5 Tcf in 2019, an increase of 10.6% from 2018. EIA estimates (using Form EIA-23L responses) that U.S. production of total natural gas, wet

after lease separation, in 2019 was 37.4 Tcf—an increase of 9.8% from the 2018 estimate (34.1 Tcf) published in last year’s report (Tables 9 and 10).⁸

Figure 11b illustrates the components of U.S. natural gas annual reserves changes over time.

Figure 11b. Components of U.S. natural gas annual reserves changes, 2009–19



Nonassociated natural gas

Nonassociated natural gas, also called *gas well gas*, is defined as natural gas not in contact with significant quantities of crude oil in a reservoir. Nonassociated natural gas accounted for three-quarters (75.4%) of proved natural gas reserves in the United States in 2019. The U.S. total of proved reserves of nonassociated natural gas decreased from 384.9 Tcf in 2018 to 373.1 Tcf in 2019—a decrease of 3.1% (Table 11). Estimated production of U.S. nonassociated natural gas increased 7.1%—from 25.4 Tcf in 2018 to 27.3 Tcf in 2019. The largest decrease in 2019 proved nonassociated natural gas reserves (-14.6 Tcf) was in Texas. The largest increase in 2019 proved nonassociated natural gas reserves (+10.3 Tcf) was in Ohio from the Utica/Pt. Pleasant shale play.

Associated-dissolved natural gas

Associated-dissolved natural gas, also called *casinghead gas*, is defined as the combined volume of natural gas that occurs in crude oil reservoirs either as free gas (associated) or as natural gas in solution with crude oil (dissolved). Associated-dissolved natural gas accounted for 24.6% of proved natural gas reserves in the United States in 2019. The U.S. total proved reserves of associated-dissolved natural gas increased from 119.6 Tcf in

⁸ The natural gas production estimates in this report are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. Estimates differ from the official U.S. EIA production data for natural gas published in the *Natural Gas Annual 2019*, DOE/EIA-0131(19).

2018 to 121.9 Tcf in 2019—an increase of 1.9% (Table 12). Estimated production of associated-dissolved natural gas increased 18%—from 8.6 Tcf in 2018 to 10.2 Tcf in 2019. The largest increase proved reserves of associated-dissolved natural gas in 2019 was in Texas (2.5 Tcf), caused by the oil reserves additions in the Permian Basin).

Coalbed natural gas (discontinued since the 2018 report)

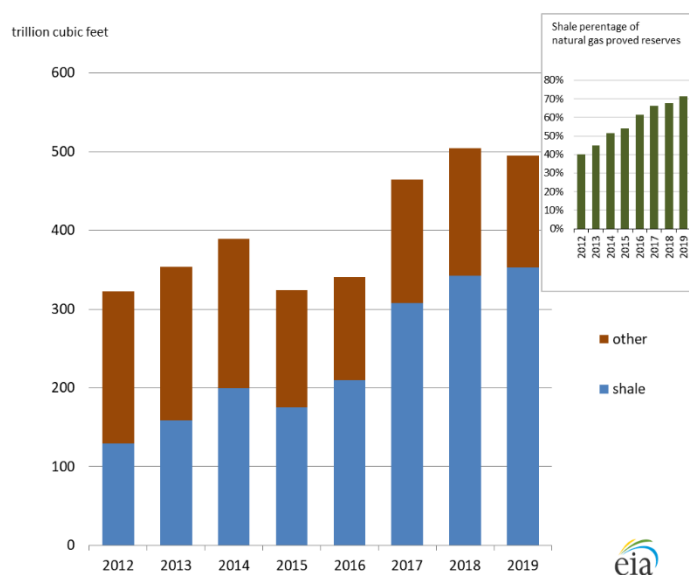
At year-end 2017, proved coalbed methane reserves represented only 2.6% of the U.S. total proved natural gas reserves.⁹ EIA did not include proved coalbed methane reserves as a separate data category in the 2018 report nor in this 2019 report. It is included as conventional natural gas.

Natural gas from U.S. shale plays

Shale formations can be both the *source rock* (where the oil and gas is generated from organic matter in the rock) and the *producing formation* (the rock from which the oil and gas is produced). When a sandstone or carbonate formation produces oil and gas, these rock layers are typically permeable enough to allow oil and gas to easily flow to a nearby wellbore. Shale formations have very low permeability and must typically be hydraulically fractured to produce natural gas at economic rates. Horizontally-drilled wells perform substantially better than vertical wells, though they are more expensive to drill and complete at the same depth because they are longer and the drilling process is more complex¹⁰. Proved reserves of U.S. natural gas from shale increased 3.2%, from 342.1 Tcf in 2018 to 353.1 Tcf in 2019 (Table 13).

The share of total U.S. natural gas made up by natural gas from shale increased from 67.8% in 2018 to 71.3% of proved natural gas reserves in 2019 (Figure 12). Estimated production of natural gas from shale increased 15.9%—from 22.1 Tcf in 2018 to 25.6 Tcf in 2019 (Table 13).

Figure 12. Proved reserves of U.S. natural gas (from shale and other sources), 2012–19



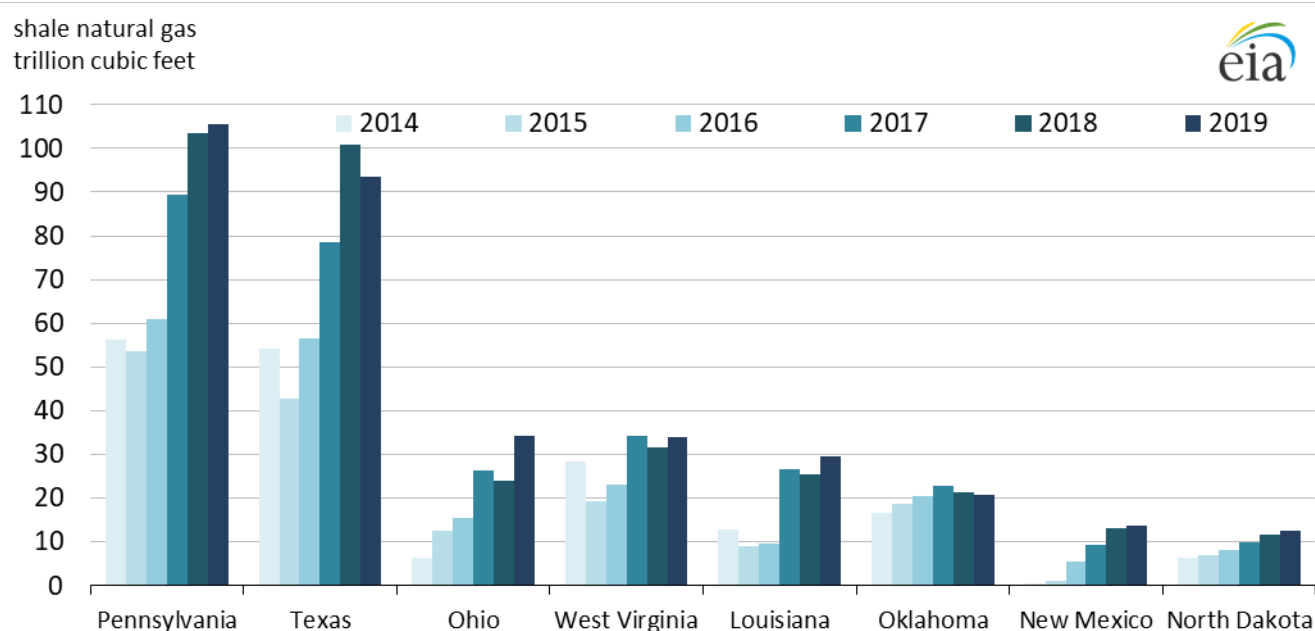
Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 2012-19*

⁹ U.S. Energy Information Administration, *U.S. Crude Oil and Natural Gas Proved Reserves, Year-End 2017*, November 2018, pg. 18.

¹⁰ EIA Today in Energy, *Hydraulically fractured horizontal wells account for most new oil and natural gas wells*, January 30, 2018.

The eight states that reported the most shale natural gas proved reserves in 2019 are shown in Figure 13. Operators in Pennsylvania reported the most proved reserves of shale natural gas in 2019 with 105.4 Tcf, and Texas reported the second-largest reserves with 93.5 Tcf. Proved shale natural gas reserves in Ohio were 34.4 Tcf, making it the third-largest in 2019, now larger than the proved shale gas reserves reported in West Virginia (34.0 Tcf) and those in Louisiana (29.6 Tcf). Oklahoma reported 20.9 Tcf, New Mexico reported 13.8 Tcf, and North Dakota reported 12.5 Tcf of proved shale natural gas reserves in 2019.

Figure 13. Proved shale gas reserves of the top eight U.S. shale gas reserves states, 2014–19



Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves, 2014–19*

EIA collected production and proved reserves data for nine major U.S. shale plays in 2019 (Table 4). The Marcellus shale play remained the play with the largest amount of proved reserves of natural gas from shale in 2019. Proved reserves in the Marcellus increased by 4.3 Tcf (3.2%) in 2019. The second-largest shale gas play in 2019 was the Wolfcamp/Bone Spring shale play of the Permian Basin. Proved shale gas reserves in the Wolfcamp/Bone Spring shale play increased by 2.6 Tcf (5.6%) in 2019.

Table 4. U.S. shale plays: production and proved reserves of natural gas, 2018–19
(trillion cubic feet)

Basin	Shale play	State(s)	2018		2019		Change in	
			Production	Proved Reserves	Production	Proved Reserves	Production	Proved Reserves
Appalachian	Marcellus*	Pennsylvania, West Virginia	7.6	135.1	8.7	139.4	1.1	4.3
Permian Basin	Wolfcamp/Bone Spring	New Mexico, Texas	3.3	46.7	4.5	49.3	1.2	2.6
TX-LA Salt	Haynesville/Bossier	Louisiana, Texas	2.6	44.7	3.4	46.7	0.8	2.0
Western Gulf	Eagle Ford	Texas	2.0	30.8	2.1	26.6	0.1	-4.2
Appalachian	Utica/Pt. Pleasant	Ohio	2.3	23.9	2.6	34.4	0.3	10.5
Anadarko, S. OK	Woodford	Oklahoma	1.3	21.4	1.5	20.9	0.2	-0.5
Fort Worth	Barnett	Texas	1.2	17.2	1.1	14.1	-0.1	-3.1
Williston	Bakken/Three Forks	Montana, North Dakota	0.9	12.0	1.0	12.2	0.1	0.2
Arkoma	Fayetteville	Arkansas	0.5	6.0	0.5	5.1	0.0	-0.9
Subtotal			21.7	337.5	25.4	348.7	3.7	10.9
Other shale			0.4	4.3	0.1	4.4	-0.3	0.1
All U.S. shale			22.1	342.1	25.5	353.1	3.4	11.0

Note: Table values are based on natural gas proved reserves and production volumes from shale reported and imputed from data on Form EIA-23L. * In this table, the Marcellus shale play refers only to portions within Pennsylvania and West Virginia. *Other shale* includes proved reserves and production reported from shale on Form EIA-23L assigned by EIA to the Niobrara, Antrim, and Monterey shale plays.

Columns may not add to subtotals because of independent rounding.

Sources: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2018 and 2019

EIA publishes a [series of maps](#) showing the nation's shale gas resources for both shale plays and geologic basins.

Proved U.S. reserves of dry natural gas

Dry natural gas is the volume of natural gas that remains after natural gas liquids and non-hydrocarbon impurities are removed from the natural gas stream, usually downstream at a natural gas processing plant. Not all produced gas has to be processed at a natural gas processing plant. Some produced gas is sufficiently dry and satisfies pipeline transportation standards without processing.

EIA calculates its estimate of the proved reserves of dry natural gas in the United States by first estimating the expected yield of natural gas plant liquids from total natural gas proved reserves and by then subtracting the gas equivalent volume of the natural gas plant liquids from total natural gas proved reserves.

Proved reserves of dry natural gas in the United States decreased from an estimated 474.8 Tcf in 2018 to 465.4 Tcf in 2019, a decrease of 2.0%.¹¹

¹¹ U.S. Energy Information Administration, *U.S. Crude Oil and Natural Gas Proved Reserves, Year-End 2018*, December 2019, Table 15.

Proved reserves of lease condensate and natural gas plant liquids

Operators of natural gas fields report their estimates of lease condensate reserves and production to EIA on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. Natural gas plant liquids are determined from data reported on Form EIA-64A, *Annual Report of the Origin of Natural Gas Liquids Production*. EIA calculates the expected yield of natural gas plant liquids by using estimates of total natural gas reserves and a recovery factor determined for each area of origin based on Form EIA-64A data.

Lease condensate

Lease condensate is a mixture consisting primarily of hydrocarbons heavier than pentanes that is recovered as a liquid from natural gas in lease separation facilities. This category excludes natural gas plant liquids, such as propane, butane, and natural gasoline, which are recovered at downstream natural gas processing plants or facilities. Lease condensate usually enters the crude oil stream.

As of December 31, 2019, the United States had proved reserves of 2.9 billion barrels of lease condensate, a decrease of 0.3 billion barrels from 2018 (-9.7%) (Table 8). U.S. lease condensate production increased 11.5%—from 288 MMBbl in 2018 to 321 MMBbl in 2019.

Natural gas plant liquids

Natural gas plant liquids (unlike lease condensate) remain within the natural gas after it passes through lease separation equipment. These liquids are normally separated from the natural gas at processing plants, fractionators, and cycling plants. Natural gas plant liquids that are extracted include ethane, propane, butane, isobutane, natural gasoline, and plant condensate. Plant condensate is similar to lease condensate in that it usually enters the crude oil stream, but is recovered at a gas processing plant rather than lease separation facilities.

The estimated volume of natural gas plant liquids contained in proved reserves of total natural gas decreased from 21.8 billion barrels in 2018 to 21.7 billion barrels in 2019 (a 0.9% decrease)(Table 15).¹²

Reserves in nonproducing reservoirs

Not all proved reserves are contained in actively producing reservoirs. Reserves within actively producing reservoirs are known as *proved, developed, producing reserves*. Two additional categories for proved reserves exist: *proved, developed, nonproducing reserves (PDNPs)*, and *proved, undeveloped reserves (PUDs)*.

Examples of PDNPs include: existing producing wells that are shut in awaiting well workovers; drilled wells that await completion; drilled well sites that require installation of production equipment or pipeline facilities; or behind-the-pipe reserves that require the depletion of other zones or reservoirs before they can be placed on production (by recompleting the well).

An example of PUDs are undrilled offset well locations (acreage adjacent to an existing producing well that is scheduled to have wells drilled upon it). However, additional conditions must be met to satisfy the definition of proved reserves:

¹² U.S. Energy Information Administration, *U.S. Crude Oil and Natural Gas Proved Reserves, Year-End 2018*, December 2019, Table 15.

- The locations must be directly offset to wells that have commercial production in the objective formation
- Such locations must be reasonably certain to be within the known proved productive limits of the objective formation
- The locations must conform to existing well spacing regulations where applicable
- The locations must be reasonably certain to be developed. SEC rules currently require development within a five-year period

Reserves from other locations beyond direct offset wells are categorized as *proved, undeveloped reserves* only where interpretations of geological and engineering data from wells indicate with reasonable certainty that the objective formation is laterally continuous and contains commercially recoverable petroleum at that location.

Table 16 shows the estimated volumes of nonproducing proved reserves of crude oil, lease condensate, nonassociated natural gas, associated-dissolved natural gas, and total natural gas for 2019. As of December 31, 2019, the United States had 16.3 billion barrels of crude oil proved reserves and 184.0 Tcf of natural gas proved reserves in nonproducing reservoirs. These volumes are a 5.8% decrease for crude oil and a 4.2% decrease for total natural gas in nonproducing reservoirs from the 2018 levels published in EIA's previous report.¹³

Maps and additional data tables

Maps

Figure 14. Proved reserves of U.S. crude oil and lease condensate by state/area, 2019

Figure 15. Changes in proved reserves of crude oil and lease condensate by state/area, 2018–19

Figure 16. Proved reserves of U.S. natural gas by state/area, 2019

Figure 17. Changes in proved reserves of natural gas by state/area, 2018–19

Oil tables

Table 5. U.S. proved reserves of crude oil and lease condensate, crude oil, and lease condensate, 2009–19

Table 6. Proved reserves, reserves changes, and production of crude oil and lease condensate, 2019

Table 7. Proved reserves, reserves changes, and production of crude oil, 2019

Table 8. Proved reserves, reserves changes, and production of lease condensate, 2019

Natural gas tables

Table 9. U.S. proved reserves of total natural gas, wet after lease separation, 2001–19

Table 10. Proved reserves, reserves changes, and production of natural gas, wet after lease separation, 2019

Table 11. Proved reserves, reserves changes, and production of nonassociated natural gas, wet after lease separation, 2019

Table 12. Proved reserves, reserves changes, and production of associated-dissolved natural gas, wet after lease separation, 2019

Table 13. Proved reserves and production of shale natural gas, 2016–19

Table 14. Proved reserves, reserves changes, and production of shale natural gas, 2019

Table 15. Estimated proved reserves of natural gas plant liquids and dry natural gas, 2019

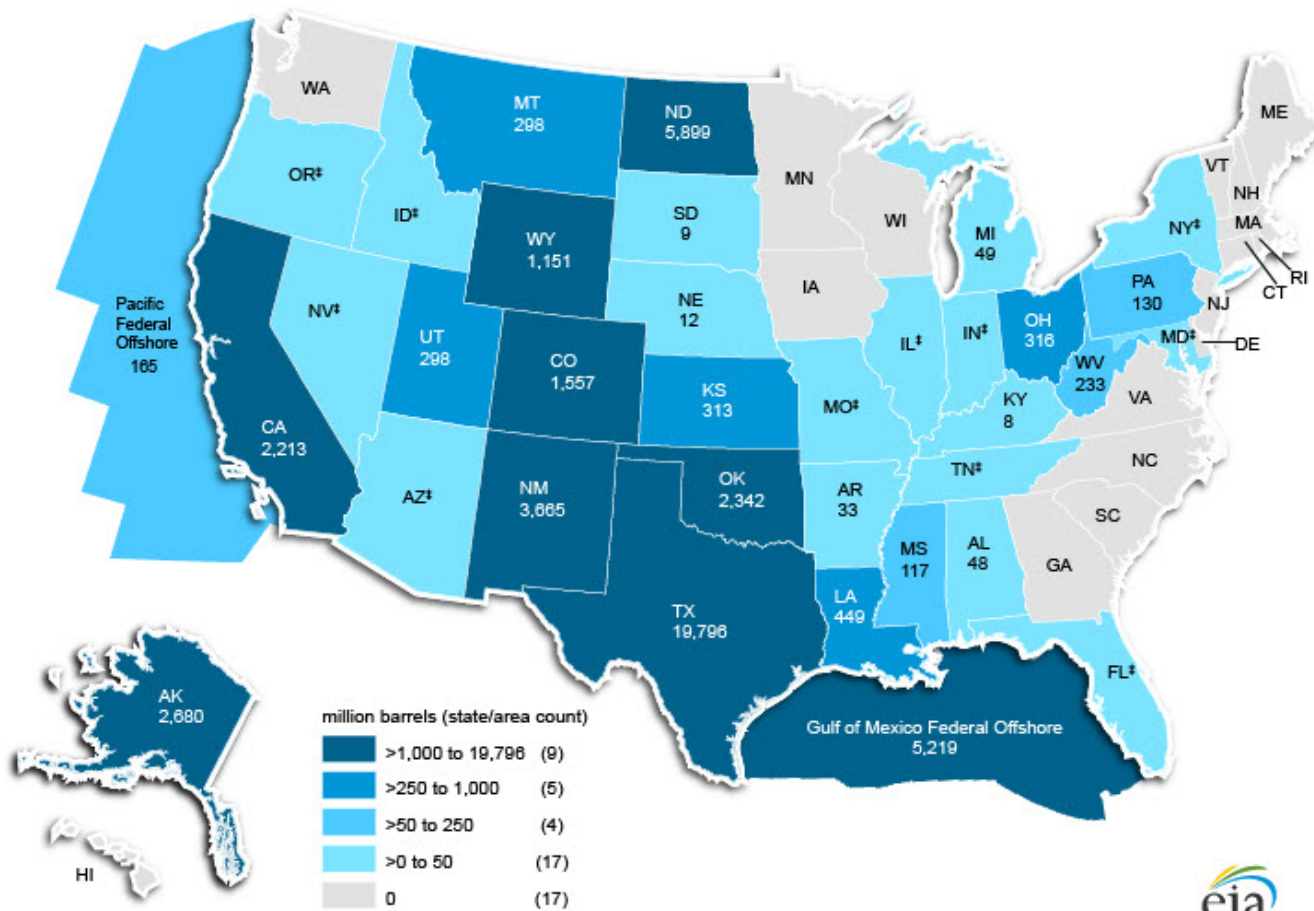
Miscellaneous/other tables

Table 16. Reported proved nonproducing reserves of crude oil, lease condensate, nonassociated gas, associated-dissolved gas, and total gas, wet after lease separation, 2019

¹³ U.S. Energy Information Administration, *U.S. Crude Oil and Natural Gas Proved Reserves, Year-End 2018*, December 2019, Table 16.

Figure 14. Proved reserves of U.S. crude oil and lease condensate by state/area, 2019

2019 U.S. Proved Reserves of Crude Oil and Lease Condensate: 47,107 million barrels



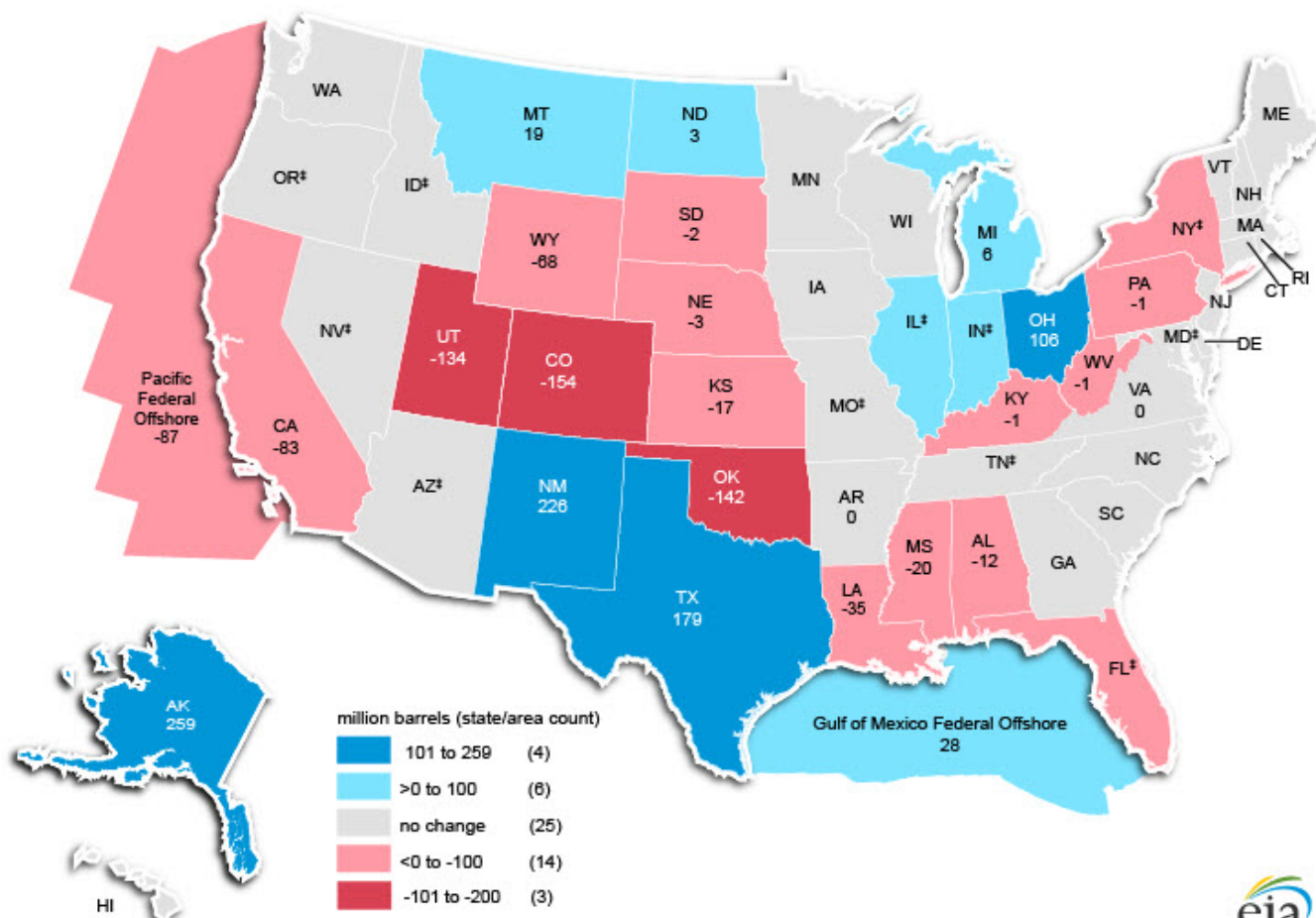
*Data withheld to avoid disclosure of individual company data

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



Figure 15. Changes in proved reserves of crude oil and lease condensate by state/area, 2018–19

Total U.S. Increase: 0.1% (+54 million barrels)

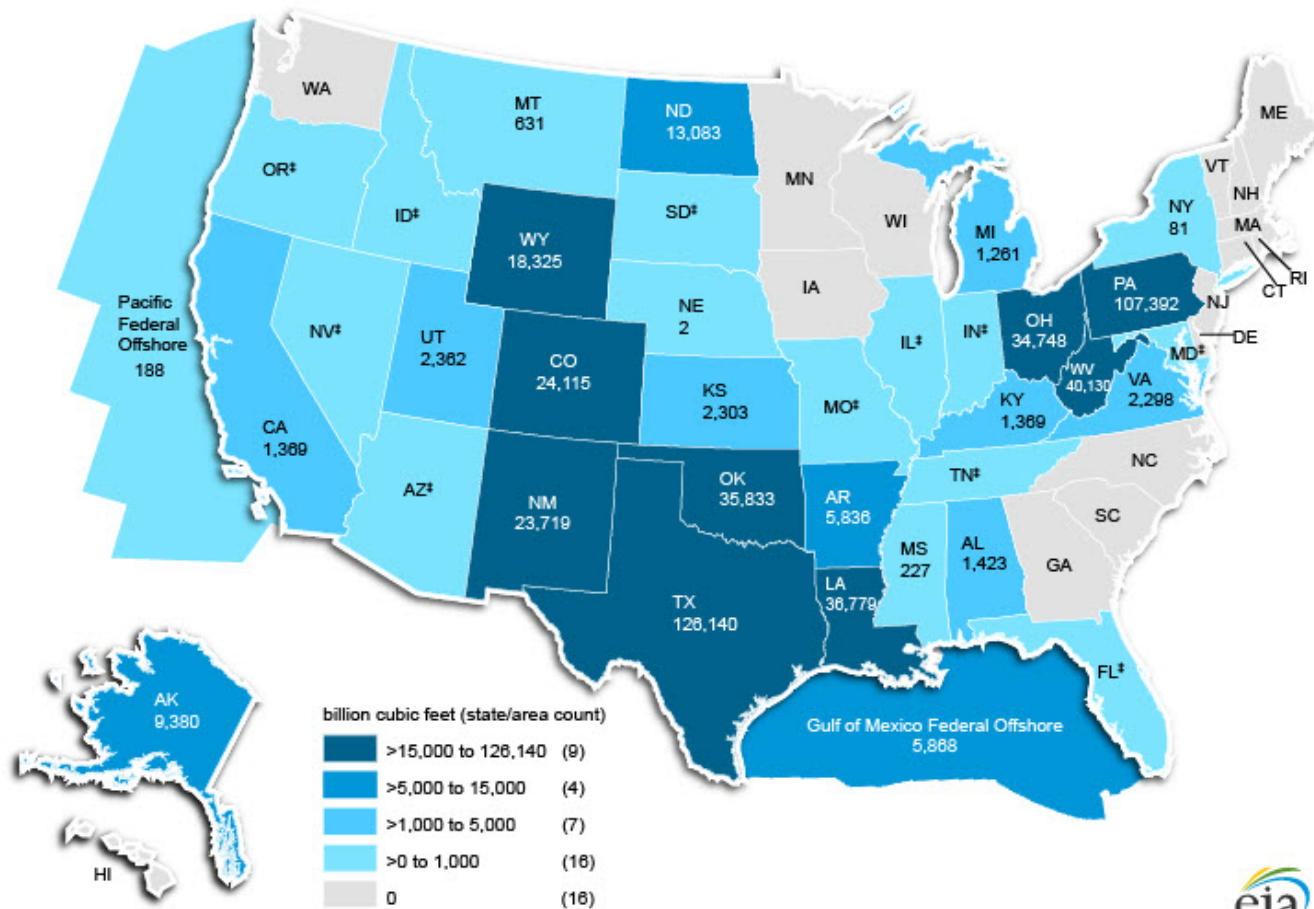


*Data withheld to avoid disclosure of individual company data
 Source: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves



Figure 16. Proved reserves of U.S. natural gas by state/area, 2019

2019 U.S. Proved Reserves of Natural Gas: 494,911 billion cubic feet



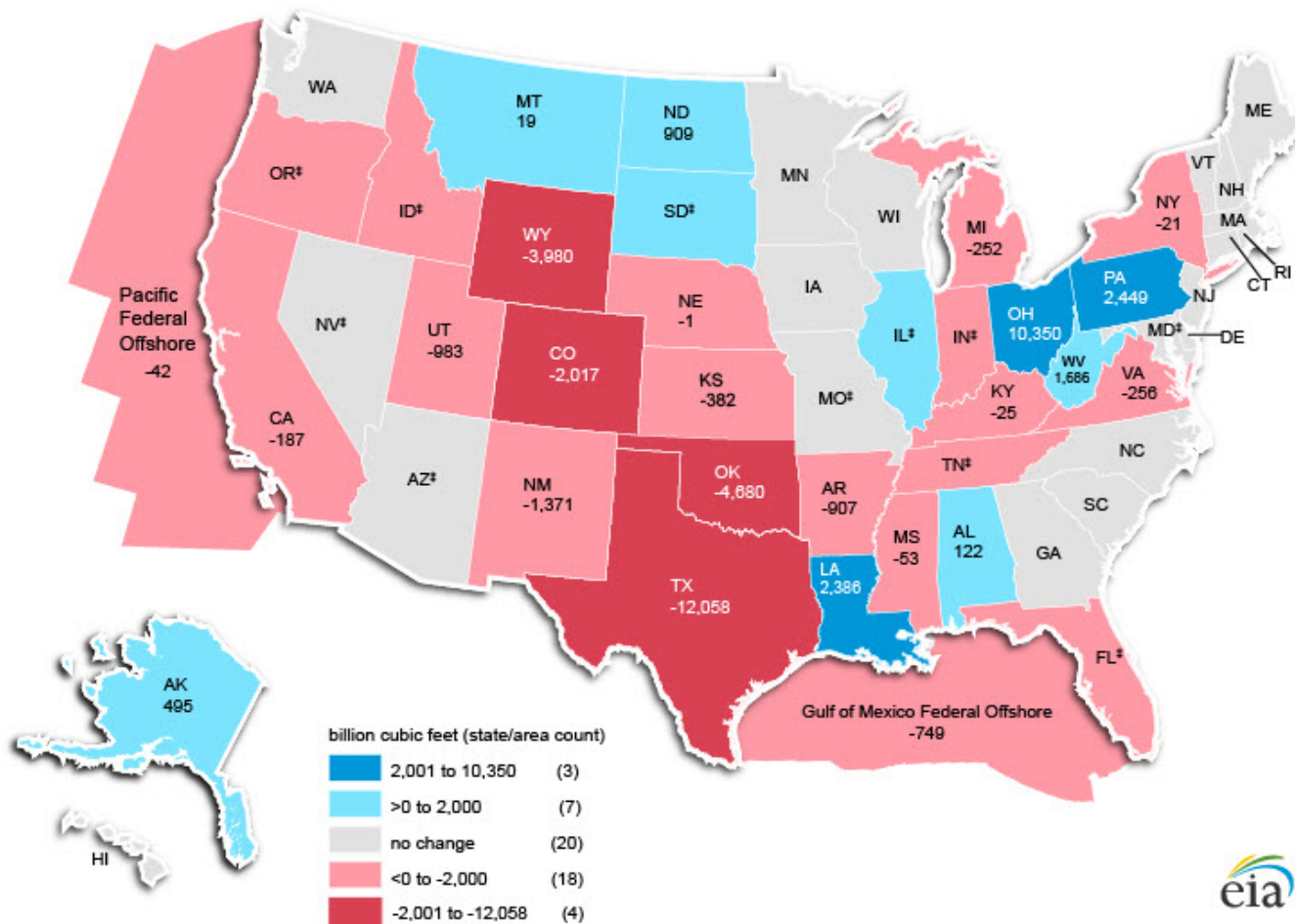
*Data withheld to avoid disclosure of individual company data

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



Figure 17. Changes in proved reserves of natural gas by state/area, 2018–19

Total U.S. Decrease: -1.9% (-9,590 billion cubic feet)



* Data withheld to avoid disclosure of individual company data

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



Table 5. U.S. proved reserves of crude oil and lease condensate, 2009–19

million barrels

Year	Adjustments (1)	Net revisions (2)	Revisions ^a and adjustments (3)	Net of sales ^b and acquisitions (4)	Extensions and discoveries (5)	Estimated Production (6)	Proved ^c reserves 12/31 (7)	Change in reserves from previous year (8)
Crude oil and lease condensate (million barrels)								
2009	46	2,008	2,054	95	1,541	1,929	22,315	1,761
2010	188	1,943	2,131	667	2,059	1,991	25,181	2,866
2011	207	1,414	1,621	537	3,676	2,065	28,950	3,769
2012	137	912	1,049	415	5,375	2,386	33,403	4,453
2013	-595	545	-50	389	5,507	2,729	36,520	3,117
2014	440	416	856	353	5,404	3,200	39,933	3,413
2015	1,115	-5,608	-4,493	-30	3,247	3,427	35,230	-4,703
2016	206	-468	-262	264	3,204	3,223	35,213	-17
2017	752	2,712	3,464	1,035	5,679	3,401	41,990	6,777
2018	764	413	1,117	676	7,194	3,984	47,053	5,063
2019	-630	-2,379	-3,009	884	6,669	4,490	47,107	54
Crude oil (million barrels)								
2009	-4	1,863	1,859	95	1,358	1,751	20,682	1,561
2010	144	1,859	2,003	605	1,744	1,767	23,267	2,585
2011	199	1,325	1,524	480	3,107	1,834	26,544	3,277
2012	109	935	1,044	416	4,637	2,112	30,529	3,985
2013	-620	518	-102	460	4,902	2,418	33,371	2,842
2014	516	321	837	263	4,788	2,874	36,385	3,014
2015	1,155	-4,900	-3,745	-87	2,869	3,104	32,318	-4,067
2016	262	17	279	335	2,794	2,953	32,773	455
2017	822	2,617	3,439	1,000	5,105	3,157	39,160	6,387
2018	551	607	1,158	635	6,567	3,696	43,824	4,664
2019	-573	-1,879	-2,452	910	6,078	4,169	44,191	367
Lease condensate (million barrels)								
2009	50	145	195	0	183	178	1,633	200
2010	44	84	128	62	315	224	1,914	281
2011	8	89	97	57	569	231	2,406	492
2012	28	-23	5	-1	738	274	2,874	468
2013	25	27	52	-71	605	311	3,149	275
2014	-76	95	19	90	616	326	3,548	399
2015	-40	-708	-748	57	378	323	2,912	-636
2016	-56	-485	-541	-71	410	270	2,440	-472
2017	-70	95	25	35	574	244	2,830	390
2018	213	-194	19	41	627	288	3,229	399
2019	-57	-500	-557	-26	591	321	2,916	-313

^a Revisions and adjustments = Col. 1 plus Col. 2.^b Net of sales and acquisitions = acquisitions minus sales^c Proved reserves = Col. 7 from previous year plus Col. 3 plus Col. 4 plus Col. 5 minus Col. 6

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for crude oil and lease condensate for 2019 contained in the *Petroleum Supply Annual 2019*, DOE/EIA-0340(19). One barrel = 42 U.S. gallons.

See EIA petroleum and other liquids data at <http://www.eia.gov/petroleum/data.cfm>.

Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2009–19

Table 6. Proved reserves, reserves changes, and production of crude oil and lease condensate, 2019

million barrels

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Alaska	2,421	-56	364	8	0	51	79	171	2,680	
Lower 48 states	44,632	-574	3,591	6,326	2,022	2,855	6,590	4,319	44,427	
Alabama	60	0	0	6	4	0	3	5	48	
Arkansas	33	4	0	0	0	0	0	4	33	
California	2,296	84	313	371	22	1	74	162	2,213	
Coastal Region Onshore	469	-40	47	39	0	0	3	18	422	
Los Angeles Basin Onshore	170	6	5	14	2	1	9	12	163	
San Joaquin Basin Onshore	1,468	118	260	309	20	0	56	123	1,450	
State Offshore	189	0	1	9	0	0	6	9	178	
Colorado	1,711	-6	148	290	220	251	155	192	1,557	
Kansas	330	20	18	21	11	9	0	32	313	
Kentucky	9	-1	1	1	0	1	0	1	8	
Louisiana	484	33	18	56	3	4	14	45	449	
North	113	12	5	29	0	0	1	10	92	
South Onshore	299	24	9	21	3	4	13	27	298	
State Offshore	72	-3	4	6	0	0	0	8	59	
Michigan	43	12	6	7	0	0	0	5	49	
Mississippi	137	-8	6	2	0	0	1	17	117	
Montana	279	53	1	36	0	1	25	25	298	
Nebraska	15	-1	0	0	0	0	0	2	12	
New Mexico	3,439	-222	228	516	71	47	1,089	329	3,665	
East	3,349	-213	223	510	70	47	1,072	321	3,577	
West	90	-9	5	6	1	0	17	8	88	
North Dakota	5,896	-163	287	430	2	115	713	517	5,899	
Ohio	210	-9	54	28	0	96	20	27	316	
Oklahoma	2,484	-6	109	619	125	297	421	219	2,342	
Pennsylvania	131	15	5	24	0	0	9	6	130	
South Dakota	11	0	0	1	0	0	0	1	9	
Texas	19,617	-375	1,764	3,392	997	1,525	3,509	1,855	19,796	
RRC District 1	2,784	-148	278	331	7	173	340	244	2,845	
RRC District 2 Onshore	1,554	7	67	143	94	69	293	217	1,536	
RRC District 3 Onshore	835	6	50	44	377	226	17	55	658	
RRC District 4 Onshore	222	0	6	49	1	0	7	20	165	
RRC District 5	40	-12	21	3	0	13	0	4	55	
RRC District 6	258	-4	18	68	16	12	4	15	189	
RRC District 7B	108	18	12	18	6	11	0	10	115	
RRC District 7C	1,275	-27	100	229	30	15	304	148	1,260	
RRC District 8	10,472	-143	1,124	2,287	419	920	2,494	1,007	11,154	
RRC District 8A	1,630	-56	63	119	21	75	31	105	1,498	
RRC District 9	145	-10	11	13	3	10	0	12	128	
RRC District 10	292	-5	14	88	23	1	19	18	192	
State Offshore	2	-1	0	0	0	0	0	0	1	

Table 6. Proved reserves, reserves changes, and production of crude oil and lease condensate, 2019 (cont.)

million barrels

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019						Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)		
Utah	432	-48	5	124	3	62	11	37	298
Virginia	0	0	0	0	0	0	0	0	0
West Virginia	234	10	16	62	0	1	52	18	233
Wyoming	1,219	-1	49	154	4	4	140	102	1,151
Federal Offshore	5,443	23	561	168	555	437	354	711	5,384
Pacific (California)	252	-15	1	69	0	0	0	4	165
Gulf of Mexico (Central and Eastern) ^a	4,914	-30	514	94	474	434	352	629	4,987
Gulf of Mexico (Western)	277	68	46	5	81	3	2	78	232
Other states ^b	138	-7	2	18	5	4	0	7	102
U.S. Total	47,053	-630	3,955	6,334	2,022	2,906	6,669	4,490	47,107

^a Includes Federal Offshore Louisiana, Alabama, Mississippi, and Florida.

^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nevada, New York, Oregon, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for crude oil and lease condensate for 2019 contained in the *Petroleum Supply Annual 2019*, DOE/EIA-0340(19). One barrel = 42 U.S. gallons.

See EIA petroleum and other liquids data at <http://www.eia.gov/petroleum/data.cfm>.

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

Table 7. Proved reserves, reserves changes, and production of crude oil, 2019

million barrels

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Alaska	2,421	-56	364	8	0	51	79	171	2,680	
Lower 48 states	41,403	-517	3,365	5,600	1,833	2,692	5,999	3,998	41,511	
Alabama	48	0	0	4	4	0	3	4	39	
Arkansas	33	4	0	0	0	0	0	4	33	
California	2,296	84	313	371	22	1	74	162	2,213	
Coastal Region Onshore	469	-40	47	39	0	0	3	18	422	
Los Angeles Basin Onshore	170	6	5	14	2	1	9	12	163	
San Joaquin Basin Onshore	1,468	118	260	309	20	0	56	123	1,450	
State Offshore	189	0	1	9	0	0	6	9	178	
Colorado	1,592	3	136	285	220	250	120	182	1,414	
Kansas	330	20	18	21	11	9	0	32	313	
Kentucky	9	-1	1	1	0	1	0	1	8	
Louisiana	412	27	14	36	3	3	11	39	389	
North	84	9	2	18	0	0	0	8	69	
South Onshore	260	26	8	15	3	3	11	24	266	
State Offshore	68	-8	4	3	0	0	0	7	54	
Michigan	40	13	6	6	0	0	0	5	48	
Mississippi	132	-6	6	2	0	0	1	17	114	
Montana	279	53	1	36	0	1	25	25	298	
Nebraska	15	-1	0	0	0	0	0	2	12	
New Mexico	3,240	-235	186	450	69	36	1,048	300	3,456	
East	3,185	-226	185	444	69	36	1,031	295	3,403	
West	55	-9	1	6	0	0	17	5	53	
North Dakota	5,895	-163	285	429	2	115	713	517	5,897	
Ohio	80	5	19	9	0	0	0	7	88	
Oklahoma	2,120	16	75	555	74	296	353	184	2,047	
Pennsylvania	8	17	1	9	0	0	0	1	16	
South Dakota	11	0	0	1	0	0	0	1	9	
Texas	18,043	-358	1,702	2,991	887	1,480	3,329	1,696	18,622	
RRC District 1	2,564	-160	276	257	2	166	333	223	2,697	
RRC District 2 Onshore	1,216	-2	62	99	2	39	246	171	1,289	
RRC District 3 Onshore	781	7	47	30	373	223	4	48	611	
RRC District 4 Onshore	30	2	0	3	0	0	0	3	26	
RRC District 5	37	-13	21	1	0	13	0	4	53	
RRC District 6	124	-4	7	23	15	10	4	10	93	
RRC District 7B	100	22	12	16	6	11	0	10	113	
RRC District 7C	1,268	-29	99	226	30	15	304	146	1,255	
RRC District 8	9,986	-141	1,100	2,153	418	917	2,389	952	10,728	
RRC District 8A	1,630	-56	63	119	21	75	31	105	1,498	
RRC District 9	117	3	6	12	1	10	0	11	112	
RRC District 10	190	13	9	52	19	1	18	13	147	
State Offshore	0	0	0	0	0	0	0	0	0	

Table 7. Proved reserves, reserves changes, and production of crude oil, 2019 (cont.)

million barrels

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019					Extensions and discoveries (+)	Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)			
Utah	401	-46	5	119	0	58	11	35	275
Virginia	0	0	0	0	0	0	0	0	0
West Virginia	7	4	4	1	0	0	0	1	13
Wyoming	1,030	-5	43	97	4	4	128	86	1,013
Federal Offshore	5,285	40	548	160	536	434	183	691	5,103
Pacific (California)	252	-15	1	69	0	0	0	4	165
Gulf of Mexico (Central and Eastern) ^a	4,765	-15	503	87	455	431	181	611	4,712
Gulf of Mexico (Western)	268	70	44	4	81	3	2	76	226
Other states ^b	115	-6	2	17	1	4	0	6	86
U.S. Total	43,824	-573	3,729	5,608	1,833	2,743	6,078	4,169	44,191

^a Includes Federal Offshore Louisiana, Alabama, Mississippi, and Florida.^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nevada, New York, Oregon, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for crude oil for 2019 contained in the *Petroleum Supply Annual 2019*, DOE/EIA-0340(19). One barrel = 42 U.S. gallons.See EIA petroleum and other liquids data at <http://www.eia.gov/petroleum/data.cfm>.Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*

Table 8. Proved reserves, reserves changes, and production of lease condensate, 2019

million barrels

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)	Estimated production (-)	
Alaska	0	0	0	0	0	0	0	0	0
Lower 48 states	3,229	-57	226	726	189	163	591	321	2,916
Alabama	12	0	0	2	0	0	0	1	9
California	0	0	0	0	0	0	0	0	0
Coastal Region Onshore	0	0	0	0	0	0	0	0	0
Los Angeles Basin Onshore	0	0	0	0	0	0	0	0	0
San Joaquin Basin Onshore	0	0	0	0	0	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0	0
Colorado	119	-9	12	5	0	1	35	10	143
Kentucky	0	0	0	0	0	0	0	0	0
Louisiana	72	6	4	20	0	1	3	6	60
North	29	3	3	11	0	0	1	2	23
South Onshore	39	-2	1	6	0	1	2	3	32
State Offshore	4	5	0	3	0	0	0	1	5
Michigan	3	-1	0	1	0	0	0	0	1
Mississippi	5	-2	0	0	0	0	0	0	3
Montana	0	0	0	0	0	0	0	0	0
Nebraska	0	0	0	0	0	0	0	0	0
New Mexico	199	13	42	66	2	11	41	29	209
East	164	13	38	66	1	11	41	26	174
West	35	0	4	0	1	0	0	3	35
North Dakota	1	0	2	1	0	0	0	0	2
Ohio	130	-14	35	19	0	96	20	20	228
Oklahoma	364	-22	34	64	51	1	68	35	295
Pennsylvania	123	-2	4	15	0	0	9	5	114
South Dakota	0	0	0	0	0	0	0	0	0
Texas	1,574	-17	62	401	110	45	180	159	1,174
RRC District 1	220	12	2	74	5	7	7	21	148
RRC District 2 Onshore	338	9	5	44	92	30	47	46	247
RRC District 3 Onshore	54	-1	3	14	4	3	13	7	47
RRC District 4 Onshore	192	-2	6	46	1	0	7	17	139
RRC District 5	3	1	0	2	0	0	0	0	2
RRC District 6	134	0	11	45	1	2	0	5	96
RRC District 7B	8	-4	0	2	0	0	0	0	2
RRC District 7C	7	2	1	3	0	0	0	2	5
RRC District 8	486	-2	24	134	1	3	105	55	426
RRC District 8A	0	0	0	0	0	0	0	0	0
RRC District 9	28	-13	5	1	2	0	0	1	16
RRC District 10	102	-18	5	36	4	0	1	5	45
State Offshore	2	-1	0	0	0	0	0	0	1

Table 8. Proved reserves, reserves changes, and production of lease condensate, 2019 (cont.)

million barrels

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Utah	31	-2	0	5	3	4	0	2	23	
Virginia	0	0	0	0	0	0	0	0	0	
West Virginia	227	6	12	61	0	1	52	17	220	
Wyoming	189	4	6	57	0	0	12	16	138	
Federal Offshore	158	-17	13	8	19	3	171	20	281	
Pacific (California)	0	0	0	0	0	0	0	0	0	
Gulf of Mexico (Central and Eastern) ^a	149	-15	11	7	19	3	171	18	275	
Gulf of Mexico (Western)	9	-2	2	1	0	0	0	2	6	
Other states ^b	23	-1	0	1	4	0	0	1	16	
U.S. Total	3,229	-57	226	726	189	163	591	321	2,916	

^a Includes Federal Offshore Louisiana, Alabama, Mississippi, and Florida.

^b Other states include Arizona, Arkansas, Florida, Idaho, Illinois, Indiana, Kansas, Maryland, Missouri, Nevada, New York, Oregon, and Tennessee.

Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for lease condensate for 2019 contained in the *Petroleum Supply Annual 2019*, DOE/EIA-0340(19). One barrel = 42 U.S. gallons.

See EIA petroleum and other liquids data at <http://www.eia.gov/petroleum/data.cfm>.

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

THIS PAGE LEFT INTENTIONALLY BLANK for data table pagination. Data Tables continue on page 35-45.

Table 9. U.S. proved reserves of total natural gas, wet after lease separation, 2001–19

billion cubic feet

Year	Adjustments (1)	Net revisions (2)	Revisions ^a and adjustments (3)	Net of sales ^b and acquisitions (4)	Extensions and discoveries (5)	Estimated production (6)	Proved ^c reserves 12/31 (7)	Change from previous year (8)
Total natural gas (billion cubic feet)								
2001	1,849	-2,438	-589	2,715	23,749	20,642	191,743	5,233
2002	4,006	1,038	5,044	428	18,594	20,248	195,561	3,818
2003	2,323	-1,715	608	1,107	20,100	20,231	197,145	1,584
2004	170	825	995	1,975	21,102	20,017	201,200	4,055
2005	1,693	2,715	4,408	2,674	24,285	19,259	213,308	12,108
2006	946	-2,099	-1,153	3,178	24,456	19,373	220,416	7,108
2007	990	15,936	16,926	452	30,313	20,318	247,789	27,373
2008	271	-3,254	-2,983	937	30,707	21,415	255,035	7,246
2009	5,923	-1,899	4,024	-222	47,579	22,537	283,879	28,844
2010	1,292	4,055	5,347	2,766	48,879	23,224	317,647	33,768
2011	2,715	-112	2,603	3,298	49,882	24,621	348,809	31,162
2012	-810	-45,614	-46,424	-1,859	48,241	26,097	322,670	-26,139
2013	693	2,794	3,487	1,287	53,017	26,467	353,994	31,324
2014	4,905	984	5,889	6,565	50,487	28,094	388,841	34,847
2015	9,430	-80,762	-71,332	1,417	34,706	29,329	324,303	-64,538
2016	7,086	94	7,180	432	38,371	29,153	341,133	16,830
2017	19,326	41,318	60,644	22,123	70,783	30,391	464,292	123,159
2018	8,770	-27,687	-18,917	13,746	79,457	34,077	504,501	40,209
2019	-9,794	-35,279	-45,073	16,171	56,724	37,412	494,911	-9,590

^a Revisions and adjustments = Col. 1 plus Col. 2.^b Net of sales and acquisitions = acquisitions minus sales^c Proved reserves = Col. 7 from previous year plus Col. 3 plus Col. 4 plus Col. 5 minus Col. 6.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for natural gas for 2019 contained in the *Natural Gas Annual 2019*, DOE/EIA-0131(19). Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

See EIA natural gas data at <http://www.eia.gov/naturalgas/data.cfm>.Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2001–19

Table 10. Proved reserves, reserves changes, and production of natural gas, wet after lease separation, 2019

billion cubic feet

State and subdivision	Changes in reserves during 2019								
	Published proved reserves 12/31/18	Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)	Estimated production (-)	Proved reserves 12/31/19
Alaska	8,885	-436	1,041	120	0	39	270	299	9,380
Lower 48 states	495,616	-9,358	51,678	87,878	18,692	34,824	56,454	37,113	485,531
Alabama	1,301	-30	95	58	313	545	6	123	1,423
Arkansas	6,743	35	78	552	195	262	0	535	5,836
California	1,556	-94	207	258	2	1	90	131	1,369
Coastal Region Onshore	206	-51	41	31	0	0	3	11	157
Los Angeles Basin Onshore	59	1	16	13	1	1	3	6	60
San Joaquin Basin Onshore	1,231	-44	150	211	1	0	82	111	1,096
State Offshore	60	0	0	3	0	0	2	3	56
Colorado	26,132	-883	2,976	3,820	2,394	2,657	1,375	1,928	24,115
Kansas	2,685	-67	34	140	836	804	1	178	2,303
Kentucky	1,394	-9	84	56	0	20	0	64	1,369
Louisiana	34,393	-2,186	9,920	10,565	1,613	7,190	2,862	3,222	36,779
North	32,416	-2,232	9,760	10,282	1,575	7,083	2,801	3,001	34,970
South Onshore	1,701	-98	67	194	38	107	61	173	1,433
State Offshore	276	144	93	89	0	0	0	48	376
Michigan	1,513	-22	46	111	356	278	3	90	1,261
Mississippi	280	-13	3	23	2	16	0	34	227
Montana	612	92	1	67	1	5	38	49	631
Nebraska	3	-1	0	0	0	0	0	0	2
New Mexico	25,090	-2,513	1,195	3,500	496	164	5,537	1,758	23,719
East	14,798	-1,465	911	2,797	358	164	4,719	1,205	14,767
West	10,292	-1,048	284	703	138	0	818	553	8,952
New York	102	15	11	36	0	0	0	11	81
North Dakota	12,174	-385	1,169	601	3	309	1,482	1,062	13,083
Ohio	24,398	-826	8,023	4,086	16	8,183	1,681	2,609	34,748
Oklahoma	40,513	292	8,940	15,684	3,680	4,413	4,127	3,088	35,833
Pennsylvania	104,943	87	4,718	9,044	604	431	13,822	6,961	107,392
Texas	138,198	-3,156	10,336	26,681	5,236	7,278	15,725	10,324	126,140
RRC District 1	12,070	-188	397	2,392	71	510	727	777	10,276
RRC District 2 Onshore	5,853	126	275	596	809	541	821	805	5,406
RRC District 3 Onshore	2,732	4	83	464	606	355	342	299	2,147
RRC District 4 Onshore	18,808	-229	117	2,528	193	119	1,465	1,062	16,497
RRC District 5	10,878	-774	83	1,018	291	591	166	804	8,831
RRC District 6	25,690	-851	2,811	7,536	468	1,153	3,153	1,387	22,565
RRC District 7B	2,049	12	28	263	298	6	0	123	1,411
RRC District 7C	8,690	113	992	1,673	166	90	1,491	796	8,741
RRC District 8	34,391	-1,084	4,878	7,456	1,225	3,655	7,035	3,315	36,879
RRC District 8A	1,503	1	131	97	9	63	34	130	1,496
RRC District 9	8,267	-175	314	566	701	123	25	434	6,853
RRC District 10	7,234	-111	227	2,091	397	72	466	389	5,011
State Offshore	33	0	0	1	2	0	0	3	27

Table 10. Proved reserves, reserves changes, and production of natural gas, wet after lease separation, 2019 (cont.)

billion cubic feet

State and subdivision	Changes in reserves during 2019								Proved reserves 12/31/19
	Published proved reserves 12/31/18	Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)	Estimated production (-)	
Utah	3,345	225	51	997	1,123	1,110	26	275	2,362
Virginia	2,554	30	22	216	2	1	11	102	2,298
West Virginia	38,444	1	2,285	7,496	380	435	8,979	2,138	40,130
Wyoming	22,305	-191	660	3,490	42	53	364	1,334	18,325
Federal Offshore	6,847	246	821	378	1,379	666	325	1,092	6,056
Pacific (California)	230	-1	16	54	0	0	0	3	188
Gulf of Mexico (Central and Eastern) ^a	5,965	139	736	304	1,213	638	323	881	5,403
Gulf of Mexico (Western)	652	108	69	20	166	28	2	208	465
Other states ^b	91	-5	3	19	19	3	0	5	49
U.S. Total	504,501	-9,794	52,719	87,998	18,692	34,863	56,724	37,412	494,911

^a Includes Federal Offshore Louisiana, Alabama, Mississippi, and Florida.^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nevada, Oregon, South Dakota, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for natural gas for 2019 contained in the *Natural Gas Annual 2019*, DOE/EIA-0131(19). Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

See EIA natural gas data at <http://www.eia.gov/naturalgas/data.cfm>.Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*

Table 11. Proved reserves, reserves changes, and production of nonassociated natural gas, wet after lease separation, 2019

billion cubic feet

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Alaska	1,628	-200	75	115	0	0	60	72	1,376	
Lower 48 states	383,227	-6,120	39,215	69,240	12,097	25,059	38,815	27,180	371,679	
Alabama	1,204	-21	68	57	313	545	1	111	1,316	
Arkansas	6,691	30	78	552	195	262	0	530	5,784	
California	129	-3	57	35	1	0	37	19	165	
Coastal Region Onshore	0	0	0	0	0	0	0	0	0	
Los Angeles Basin Onshore	0	0	0	0	0	0	0	0	0	
San Joaquin Basin Onshore	129	-3	57	35	1	0	37	19	165	
State Offshore	0	0	0	0	0	0	0	0	0	
Colorado	14,551	-588	1,776	2,351	64	143	598	979	13,086	
Kansas	2,278	-20	25	89	750	762	1	151	2,056	
Kentucky	1,388	-9	81	55	0	20	0	63	1,362	
Louisiana	32,985	-2,194	9,746	10,304	1,612	7,188	2,842	3,113	35,538	
North	31,525	-2,258	9,703	10,054	1,575	7,083	2,800	2,953	34,271	
South Onshore	1,247	-81	40	169	37	105	42	127	1,020	
State Offshore	213	145	3	81	0	0	0	33	247	
Michigan	1,469	-89	29	94	356	278	0	78	1,159	
Mississippi	254	-29	0	23	2	16	0	20	196	
Montana	352	11	0	37	1	3	0	24	304	
Nebraska	3	-1	0	0	0	0	0	0	2	
New Mexico	12,548	-1,196	450	1,502	157	63	1,132	843	10,495	
East	2,552	-186	190	799	23	63	331	321	1,807	
West	9,996	-1,010	260	703	134	0	801	522	8,688	
New York	98	12	11	33	0	0	0	11	77	
North Dakota	23	11	2	1	0	0	0	4	31	
Ohio	23,942	-839	7,911	4,031	16	8,183	1,681	2,576	34,255	
Oklahoma	27,650	-859	8,143	11,048	2,770	2,530	2,389	2,126	23,909	
Pennsylvania	104,794	75	4,718	9,018	604	431	13,822	6,950	107,268	
Texas	86,077	-454	2,999	18,046	3,377	2,867	7,054	5,640	71,480	
RRC District 1	6,141	40	17	1,687	69	247	195	321	4,563	
RRC District 2 Onshore	2,989	182	25	397	805	478	325	396	2,401	
RRC District 3 Onshore	1,729	19	54	398	323	150	303	221	1,313	
RRC District 4 Onshore	18,707	-236	116	2,525	193	119	1,465	1,052	16,401	
RRC District 5	9,979	91	68	1,017	289	581	166	797	8,782	
RRC District 6	24,333	-840	2,208	7,327	355	1,147	3,134	1,273	21,027	
RRC District 7B	1,832	41	15	251	296	0	0	105	1,236	
RRC District 7C	1,173	251	36	373	8	1	0	100	980	
RRC District 8	5,964	-2	154	1,674	46	66	1,025	707	4,780	
RRC District 8A	22	4	0	3	0	0	0	3	20	
RRC District 9	6,947	28	137	525	696	75	25	343	5,648	
RRC District 10	6,228	-32	169	1,868	295	3	416	319	4,302	
State Offshore	33	0	0	1	2	0	0	3	27	

Table 11. Proved reserves, reserves changes, and production of nonassociated natural gas, wet after lease separation, 2019 (cont.)

billion cubic feet

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Utah	2,536	171	49	689	1,122	1,034	0	198	1,781	
Virginia	2,554	30	22	216	2	1	11	102	2,298	
West Virginia	38,431	-14	2,276	7,495	380	435	8,979	2,132	40,100	
Wyoming	21,023	-191	623	3,365	33	43	133	1,196	17,037	
Federal Offshore	2,174	53	148	184	323	252	135	310	1,945	
Pacific (California)	0	0	0	0	0	0	0	0	0	
Gulf of Mexico (Central and Eastern) ^a	2,011	20	122	166	317	226	135	251	1,780	
Gulf of Mexico (Western)	163	33	26	18	6	26	0	59	165	
Other states ^b	1,487	-1,420	3	15	19	3	0	4	35	
U.S. Total	384,855	-6,320	39,290	69,355	12,097	25,059	38,875	27,252	373,055	

^a Includes Federal Offshore Louisiana, Alabama, Mississippi, and Florida.^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nevada, Oregon, South Dakota, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for nonassociated natural gas for 2019 contained in the *Natural Gas Annual 2019*, DOE/EIA-0131(19). Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

See EIA natural gas data at <http://www.eia.gov/naturalgas/data.cfm>.Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*

Table 12. Proved reserves, reserves changes, and production of associated-dissolved natural gas, wet after lease separation, 2019

billion cubic feet

State and subdivision	Published Proved Reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Alaska	7,257	-236	966	5	0	39	210	227	8,004	
Lower 48 states	112,389	-3,238	12,463	18,638	6,595	9,765	17,639	9,933	113,852	
Alabama	97	-9	27	1	0	0	5	12	107	
Arkansas	52	5	0	0	0	0	0	5	52	
California	1,427	-91	150	223	1	1	53	112	1,204	
Coastal Region Onshore	206	-51	41	31	0	0	3	11	157	
Los Angeles Basin Onshore	59	1	16	13	1	1	3	6	60	
San Joaquin Basin Onshore	1,102	-41	93	176	0	0	45	92	931	
State Offshore	60	0	0	3	0	0	2	3	56	
Colorado	11,581	-295	1,200	1,469	2,330	2,514	777	949	11,029	
Kansas	407	-47	9	51	86	42	0	27	247	
Kentucky	6	0	3	1	0	0	0	1	7	
Louisiana	1,408	8	174	261	1	2	20	109	1,241	
North	891	26	57	228	0	0	1	48	699	
South Onshore	454	-17	27	25	1	2	19	46	413	
State Offshore	63	-1	90	8	0	0	0	15	129	
Michigan	44	67	17	17	0	0	3	12	102	
Mississippi	26	16	3	0	0	0	0	14	31	
Montana	260	81	1	30	0	2	38	25	327	
New Mexico	12,542	-1,317	745	1,998	339	101	4,405	915	13,224	
East	12,246	-1,279	721	1,998	335	101	4,388	884	12,960	
West	296	-38	24	0	4	0	17	31	264	
New York	4	3	0	3	0	0	0	0	4	
North Dakota	12,151	-396	1,167	600	3	309	1,482	1,058	13,052	
Ohio	456	13	112	55	0	0	0	33	493	
Oklahoma	12,863	1,151	797	4,636	910	1,883	1,738	962	11,924	
Pennsylvania	149	12	0	26	0	0	0	11	124	
Texas	52,121	-2,702	7,337	8,635	1,859	4,411	8,671	4,684	54,660	
RRC District 1	5,929	-228	380	705	2	263	532	456	5,713	
RRC District 2 Onshore	2,864	-56	250	199	4	63	496	409	3,005	
RRC District 3 Onshore	1,003	-15	29	66	283	205	39	78	834	
RRC District 4 Onshore	101	7	1	3	0	0	0	10	96	
RRC District 5	899	-865	15	1	2	10	0	7	49	
RRC District 6	1,357	-11	603	209	113	6	19	114	1,538	
RRC District 7B	217	-29	13	12	2	6	0	18	175	
RRC District 7C	7,517	-138	956	1,300	158	89	1,491	696	7,761	
RRC District 8	28,427	-1,082	4,724	5,782	1,179	3,589	6,010	2,608	32,099	
RRC District 8A	1,481	-3	131	94	9	63	34	127	1,476	
RRC District 9	1,320	-203	177	41	5	48	0	91	1,205	
RRC District 10	1,006	-79	58	223	102	69	50	70	709	
State Offshore	0	0	0	0	0	0	0	0	0	

Table 12. Proved reserves, reserves changes, and production of associated-dissolved natural gas, wet after lease separation, 2019 (cont.)

billion cubic feet

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Utah	809	54	2	308	1	76	26	77	581	
Virginia	0	0	0	0	0	0	0	0	0	
West Virginia	13	15	9	1	0	0	0	6	30	
Wyoming	1,282	0	37	125	9	10	231	138	1,288	
Federal Offshore	4,673	193	673	194	1,056	414	190	782	4,111	
Pacific (California)	230	-1	16	54	0	0	0	3	188	
Gulf of Mexico (Central and Eastern) ^a	3,954	119	614	138	896	412	188	630	3,623	
Gulf of Mexico (Western)	489	75	43	2	160	2	2	149	300	
Other states ^b	18	1	0	4	0	0	0	1	14	
U.S. Total	119,646	-3,474	13,429	18,643	6,595	9,804	17,849	10,160	121,856	

^a Includes Federal Offshore Louisiana, Alabama, Mississippi, and Florida.^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. They may differ slightly from the official U.S. EIA production data for associated-dissolved natural gas for 2019 contained in the *Natural Gas Annual 2019*, DOE/EIA-0131(19). Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

See EIA natural gas data at <http://www.eia.gov/naturalgas/data.cfm>.Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*

Table 13. Proved reserves and production of shale natural gas, 2016–19

billion cubic feet

State and subdivision	Reserves				Production			
	2016	2017	2018	2019	2016	2017	2018	2019
Alaska	0	0	0	0	0	0	0	0
Lower 48 states	209,809	307,903	342,135	353,086	17,032	18,589	22,054	25,556
Arkansas	6,262	7,090	5,970	5,093	733	618	521	471
California	41	62	41	-	6	6	4	-
Colorado	2,032	1,885	2,727	2,500	164	97	126	149
Florida	0	0	0	0	0	0	0	0
Kansas	0	0	0	0	0	0	0	0
Kentucky	12	17	0	0	0	1	0	0
Louisiana	9,637	26,484	25,598	29,553	1,111	1,450	2,044	2,518
North	9,570	26,316	25,598	29,553	1,085	1,414	2,044	2,518
South	67	168	0	0	26	36	0	0
State Offshore	0	0	0	0	0	0	0	0
Michigan	1,128	942	1,457	1,138	84	63	77	72
Mississippi	7	8	0	0	2	2	0	0
Montana	213	258	221	268	19	18	18	21
New Mexico	5,581	9,451	13,082	13,827	497	592	785	1,101
North Dakota	8,259	9,984	11,737	12,542	582	664	840	1,043
Ohio	15,472	26,468	23,956	34,376	1,386	1,747	2,337	2,558
Oklahoma	20,327	22,675	21,396	20,897	1,082	1,290	1,325	1,490
Pennsylvania	60,979	89,478	103,388	105,394	5,049	5,365	6,079	6,782
Texas	56,577	78,666	100,789	93,477	5,029	5,171	6,392	7,440
RRC District 1	7,493	8,895	11,434	9,511	690	652	693	729
RRC District 2 Onshore	4,126	4,900	4,993	4,345	642	584	654	631
RRC District 3 Onshore	125	744	451	328	23	23	21	23
RRC District 4 Onshore	11,001	12,861	13,953	12,486	706	677	689	682
RRC District 5	8,321	10,636	8,431	6,728	827	730	680	586
RRC District 6	3,249	8,909	18,690	17,026	339	333	515	895
RRC District 7B	1,562	1,736	1,673	1,090	116	110	118	93
RRC District 7C	5,661	7,156	7,454	7,745	451	494	597	705
RRC District 8	7,924	15,317	26,116	27,649	730	1,115	1,960	2,683
RRC District 8A	8	50	104	115	0	1	6	9
RRC District 9	7,107	7,462	7,490	6,454	505	452	459	404
RRC District 10	0	0	0	0	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0
Virginia	45	66	0	0	4	4	0	0
West Virginia	23,146	34,296	31,748	34,020	1,270	1,486	1,504	1,911
Wyoming	17	28	0	0	5	6	0	0
Federal Offshore	0	0	0	0	0	0	0	0
Other states ^a	74	62	25	1	9	10	2	0
U.S. Total	209,809	307,903	342,135	353,086	17,032	18,589	22,054	25,556

^aOther states include California, Indiana, Missouri, New York, South Dakota, Tennessee, and Utah. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The above table is based on proved reserves and production volumes of shale natural gas reported and imputed from data on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. For certain reasons (e.g. incorrect or incomplete respondent submissions, respondent misidentification of shale versus non-shale reservoirs) the actual proved reserves and production of natural gas from shales may be higher or lower. The production estimates are provided as an indicator of production trends and may differ slightly from official U.S. EIA production volumes listed elsewhere on the U.S. EIA web page. Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

Source: U.S. Energy Information Administration, Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*, 2016–19

Table 14. Proved reserves, reserves changes, and production of shale natural gas, 2019

billion cubic feet

State and subdivision	Published proved reserves 12/31/18	Changes in reserves during 2019							Estimated production (-)	Proved reserves 12/31/19
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions and discoveries (+)			
Alaska	0	0	0	0	0	0	0	0	0	0
Lower 48 states	342,135	-6,298	41,528	61,152	7,724	23,699	46,454	25,556	353,086	
Arkansas	5,970	-3	59	462	0	0	0	471	5,093	
Colorado	2,727	-86	235	542	9	0	324	149	2,500	
Kansas	0	0	0	0	0	0	0	0	0	
Kentucky	0	0	0	0	0	0	0	0	0	
Louisiana	25,598	-2,109	8,107	7,562	1,312	7,031	2,318	2,518	29,553	
North Onshore	25,598	-2,109	8,107	7,562	1,312	7,031	2,318	2,518	29,553	
South Onshore	0	0	0	0	0	0	0	0	0	
Michigan	1,457	-473	19	69	0	276	0	72	1,138	
Mississippi	0	0	0	0	0	0	0	0	0	
Montana	221	53	0	23	0	2	36	21	268	
New Mexico	13,082	-1,173	870	2,313	336	156	4,642	1,101	13,827	
North Dakota	11,737	-370	1,149	578	3	294	1,356	1,043	12,542	
Ohio	23,956	-800	7,969	4,035	15	8,182	1,677	2,558	34,376	
Oklahoma	21,396	1,286	7,567	10,847	1,285	1,829	2,441	1,490	20,897	
Pennsylvania	103,388	-584	4,654	8,853	526	431	13,666	6,782	105,394	
Texas	100,789	-2,203	8,711	19,853	3,943	5,064	12,352	7,440	93,477	
RRC District 1	11,434	-177	375	2,279	71	248	710	729	9,511	
RRC District 2 Onshore	4,993	-301	220	418	713	522	673	631	4,345	
RRC District 3 Onshore	451	310	16	29	601	204	0	23	328	
RRC District 4 Onshore	13,953	255	36	2,039	167	0	1,130	682	12,486	
RRC District 5	8,431	-692	57	487	271	276	0	586	6,728	
RRC District 6	18,690	-1,001	2,257	5,964	8	913	3,034	895	17,026	
RRC District 7B	1,673	40	1	238	293	0	0	93	1,090	
RRC District 7C	7,454	239	922	1,506	115	80	1,376	705	7,745	
RRC District 8	26,116	-893	4,526	6,385	1,094	2,694	5,368	2,683	27,649	
RRC District 8A	104	-13	0	3	5	5	36	9	115	
RRC District 9	7,490	30	301	505	605	122	25	404	6,454	
RRC District 10	0	0	0	0	0	0	0	0	0	
Virginia	0	0	0	0	0	0	0	0	0	
West Virginia	31,748	222	2,188	6,008	295	434	7,642	1,911	34,020	
Wyoming	0	0	0	0	0	0	0	0	0	
Federal Offshore	0	0	0	0	0	0	0	0	0	
Other states ^a	91	-83	0	7	0	0	0	0	1	
U.S. Total	342,135	-6,298	41,528	61,152	7,724	23,699	46,454	25,556	353,086	

^a Other states include California, Illinois, Indiana, Missouri, New York, South Dakota, Tennessee, and Utah. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: The above table is based on proved reserves and production volumes of shale natural gas reported and imputed from data on Form EIA-23L, *Annual Report of Domestic Oil and Gas Reserves*. For certain reasons (e.g. incorrect or incomplete respondent submissions, respondent misidentification of shale versus non-shale reservoirs) the actual proved reserves and production of natural gas from shales may be higher or lower. The production estimates are provided as an indicator of production trends and may differ slightly from official U.S. EIA production volumes listed elsewhere on the U.S. EIA website. Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

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

Table 15. Estimated proved reserves of natural gas plant liquids and dry natural gas, 2019

million barrels and billion cubic feet

State and subdivision	Total proved natural gas reserves	Estimated yield from total proved natural gas reserves	
	2019 billion cubic feet	Natural gas plant liquids million barrels	Dry natural gas billion cubic feet
Alaska	9,380	247	9,297
Lower 48 states	485,531	21,403	456,108
Alabama	1,423	30	1,387
Arkansas	5,836	2	5,834
California	1,369	66	1,280
Coastal Region Onshore	157	5	150
Los Angeles Basin Onshore	60	3	57
San Joaquin Basin Onshore	1,096	57	1,018
State Offshore	56	1	55
Colorado	24,115	1,281	22,332
Kansas	2,303	142	2,125
Kentucky	1,369	78	1,275
Louisiana	36,779	331	36,497
North	34,970	79	34,863
South Onshore	1,433	219	1,279
State Offshore	376	33	355
Michigan	1,261	12	1,245
Mississippi	227	0	227
Montana	631	14	613
New Mexico	23,719	1,571	21,509
East	14,767	1,146	13,146
West	8,952	425	8,363
New York	81	0	81
North Dakota	13,083	1,422	11,104
Ohio	34,748	487	34,056
Oklahoma	35,833	2,331	32,527
Pennsylvania	107,392	1,008	105,917
Texas	126,140	9,175	113,736
RRC District 1	10,276	299	9,843
RRC District 2 Onshore	5,406	871	4,558
RRC District 3 Onshore	2,147	171	1,897
RRC District 4 Onshore	16,497	502	15,779
RRC District 5	8,831	248	8,470
RRC District 6	22,565	413	21,982
RRC District 7B	1,411	153	1,196
RRC District 7C	8,741	729	7,702
RRC District 8	36,879	4,524	30,441
RRC District 8A	1,496	209	1,425
RRC District 9	6,853	556	6,034
RRC District 10	5,011	500	4,382
State Offshore	27	0	27
Utah	2,362	61	2,279
Virginia	2,298	1	2,297
West Virginia	40,130	2,484	36,600
Wyoming	18,325	557	17,569
Federal Offshore	6,056	350	5,568
Pacific (California)	188	1	187
Gulf of Mexico (Central and Eastern) ^a	5,403	335	4,935
Gulf of Mexico (Western)	465	14	446
Other states ^b	51	1	50
U.S. Total	494,911	21,650	465,405

^a Includes Federal Offshore Louisiana, Mississippi, Alabama, and Florida.^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: One barrel = 42 U.S. gallons. Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

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

Table 16. Reported proved nonproducing reserves of crude oil, lease condensate, nonassociated gas, associated-dissolved gas, and total gas, wet after lease separation, 2019

State and subdivision	Crude oil (million barrels)	Lease condensate (million barrels)	Nonassociated gas (billion cubic feet)	Associated- dissolved gas (billion cubic feet)	Total gas (billion cubic feet)
Alaska	395	1	655	290	945
Lower 48 states	15,856	1,187	137,974	45,125	183,099
Alabama	3	2	43	4	47
Arkansas	6	0	244	29	273
California	591	0	80	275	355
Coastal Region Onshore	214	0	0	47	47
Los Angeles Basin Onshore	37	0	0	6	6
San Joaquin Basin Onshore	279	0	80	206	286
State Offshore	61	0	0	16	16
Colorado	623	94	4,297	5,160	9,457
Kansas	11	6	159	15	174
Kentucky	1	0	5	0	5
Louisiana	155	24	16,440	396	16,836
North	6	5	15,800	248	16,048
South Onshore	148	19	640	147	787
State Offshore	1	0	0	1	1
Michigan	6	0	0	6	6
Mississippi	33	0	35	1	36
Montana	76	0	13	77	90
New Mexico	2,055	65	1,742	8,020	9,762
New York	0	0	9	0	9
North Dakota	2,239	0	0	4,549	4,549
Ohio	40	131	15,477	230	15,707
Oklahoma	662	111	6,332	4,629	10,961
Pennsylvania	0	66	41,577	0	41,577
Texas	7,179	332	26,504	20,071	46,575
RRC District 1	1,135	26	2,695	2,045	4,740
RRC District 2 Onshore	583	111	835	1,143	1,978
RRC District 3 Onshore	158	11	284	150	434
RRC District 4 Onshore	2	45	7,907	18	7,925
RRC District 5	8	0	508	9	517
RRC District 6	7	48	11,041	842	11,883
RRC District 7B	13	0	166	24	190
RRC District 7C	422	0	21	2,242	2,263
RRC District 8	4,439	81	789	13,139	13,928
RRC District 8A	328	0	0	337	337
RRC District 9	8	5	757	11	768
RRC District 10	76	5	1,501	111	1,612
State Offshore	0	0	0	0	0
Utah	12	2	129	18	147
Virginia	0	0	306	0	306
West Virginia	0	123	21,473	0	21,473
Wyoming	170	29	2,173	219	2,392
Federal Offshore	1,971	202	936	1,426	2,362
Pacific (California)	128	0	0	158	158
Gulf of Mexico (Central and Eastern) ^a	1,816	201	898	1,235	2,133
Gulf of Mexico (Western)	27	1	38	33	71
Other states ^b	10	0	0	0	0
U.S. Total	16,251	1,188	138,629	45,415	184,044

^a Includes Federal Offshore Louisiana, Mississippi, Alabama, and Florida.

^b Other states include Arizona, Florida, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee. Individual state volumes are withheld to avoid disclosure of operator-level reserves data, or because of other statistical precision or data quality reasons.

Notes: One barrel = 42 U.S. gallons. Natural gas is measured at 60 degrees Fahrenheit and at an atmospheric pressure base of 14.73 pounds per square inch absolute (psia).

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