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U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2016

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U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2016

In 2016, total natural gas¹ proved reserves in the United States increased by 5% from 324.3 trillion cubic feet (Tcf) to 341.1 Tcf—an increase of 16.8 Tcf. Over the same period, while proved reserves of U.S. crude oil and lease condensate rose 3% onshore in the Lower 48 states, declines in oil reserves in Alaska and the Federal Offshore led to virtually the same total U.S. crude oil and lease condensate at year-end 2016, at 35.2 billion barrels. Despite increasing prices later in 2016, the average first-of-the-month prices used to calculate reserves dropped for both natural gas (down 6%) and for crude oil (down 15%) compared to 2015.

Oil highlights

- U.S. proved reserves remained at 35.2 billion barrels at year-end 2016 (net decline of 17 million barrels)
- Proved reserves for crude oil and lease condensate increased 3% (846 million barrels) onshore in the Lower 48 states (U.S. total not including Alaska, Federal Offshore, and State Offshore reserves)
- Gains in proved reserves onshore in the Lower 48 states were offset by declines of 865 million barrels in proved reserves in Alaska and the Federal Offshore. (Development costs in these areas are typically higher and can be prohibitive in a lower oil price environment)
- Texas and Oklahoma experienced the largest net increases in proved reserves of crude oil and lease condensate of all states in 2016, mostly from development of liquids-rich shale plays in the Permian Basin (Wolfcamp/Bone Spring formations) and SCOOP and STACK plays in the Anadarko Basin
- U.S. production of crude oil and lease condensate decreased by 6% from 2015
- U.S. oil reserve additions from new fields, identification of new reservoirs in previously discovered fields, and extensions of existing fields effectively offset production to keep total reserves constant

Natural gas highlights

- Proved reserves of natural gas increased 5% (16.8 Tcf) to 341.1 Tcf at year-end 2016
- Pennsylvania added 6.1 Tcf of natural gas proved reserves, the largest net increase of all states in 2016 as a result of development of the Marcellus shale in the Appalachian Basin
- The next largest net gains in natural gas proved reserves by volume in 2016 were in Oklahoma (3.7 Tcf) and Ohio (3.1 Tcf), as a result of development of the SCOOP and STACK plays and the Utica shale play
- U.S. production of total natural gas decreased by 1% from 2015
- The share of natural gas from shale compared with total U.S. natural gas proved reserves increased from 54% in 2015 to 62% in 2016
- U.S. natural gas reserve additions from new fields, identification of new reservoirs in previously discovered fields, and extensions of existing fields exceeded production by more than 30%

Proved reserves are estimated volumes of hydrocarbon resources that analysis of geologic and engineering data demonstrates with reasonable certainty² 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 technologies evolve.

¹ Total natural gas (also known as natural gas, wet after lease separation) includes natural gas liquids that have yet to be extracted downstream at a processing plant, but it does not include lease condensate.

² *Reasonable certainty* assumes a probability of recovery of 90% or greater.

National summary

In 2016, total U.S. crude oil and lease condensate proved reserves remained at 35.2 billion barrels. Proved reserves of U.S. total natural gas increased 16.8 trillion cubic feet (Tcf) to 341.1 Tcf in 2016 (Table 1). Net revisions in 2016 were significantly below what EIA reported in 2015³, while extensions and discoveries remained at about the same level.

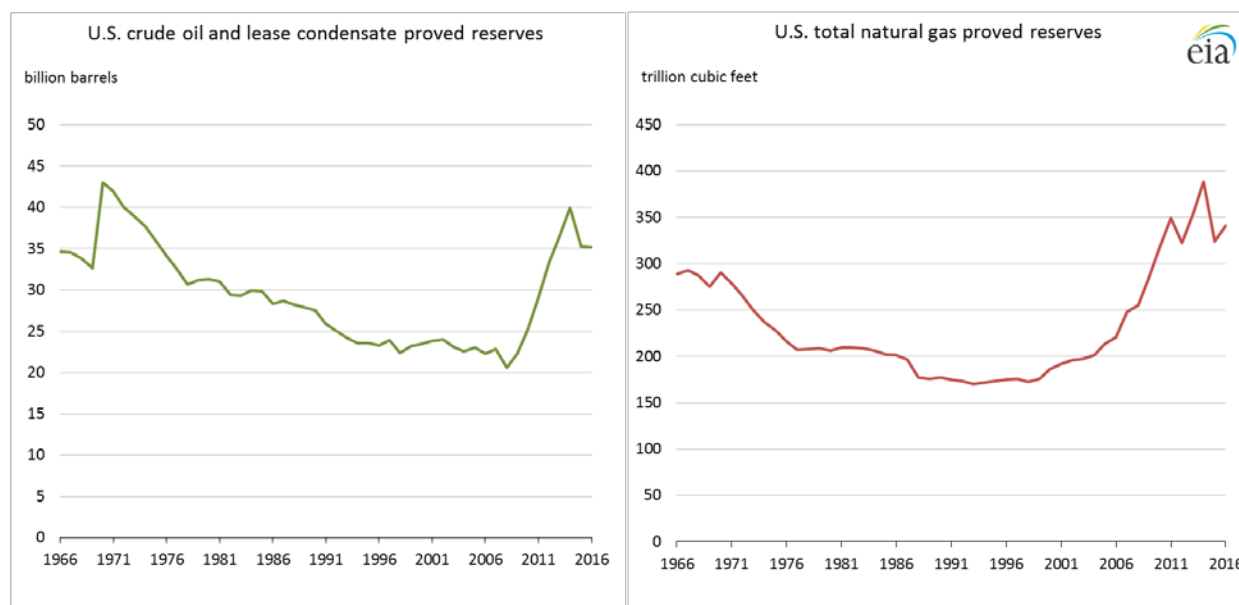
Table 1. U.S. proved reserves and reserves changes, 2015–16

	Crude Oil and Lease Condensate billion barrels	Total Natural Gas trillion cubic feet
U.S. proved reserves as of December 31, 2015	35.2	324.3
Extensions and discoveries	3.2	38.4
Net revisions	-0.5	0.1
Net adjustments, sales, acquisitions	0.5	7.5
Estimated Production	-3.2	-29.2
Net additions to U.S. proved reserves	0.0	16.8
U.S. proved reserves as of December 31, 2016	35.2	341.1
Percent change in U.S. proved reserves	0.0%	5.2%

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

U.S. proved reserves of crude oil and lease condensate and total natural gas have increased by more than 50% in the last decade. Prior to the 1993 discovery of natural gas within the Barnett Shale, reserves had generally been declining since the 1970's (Figure 1).

Figure 1. U.S. oil and natural gas proved reserves, 1966–2016

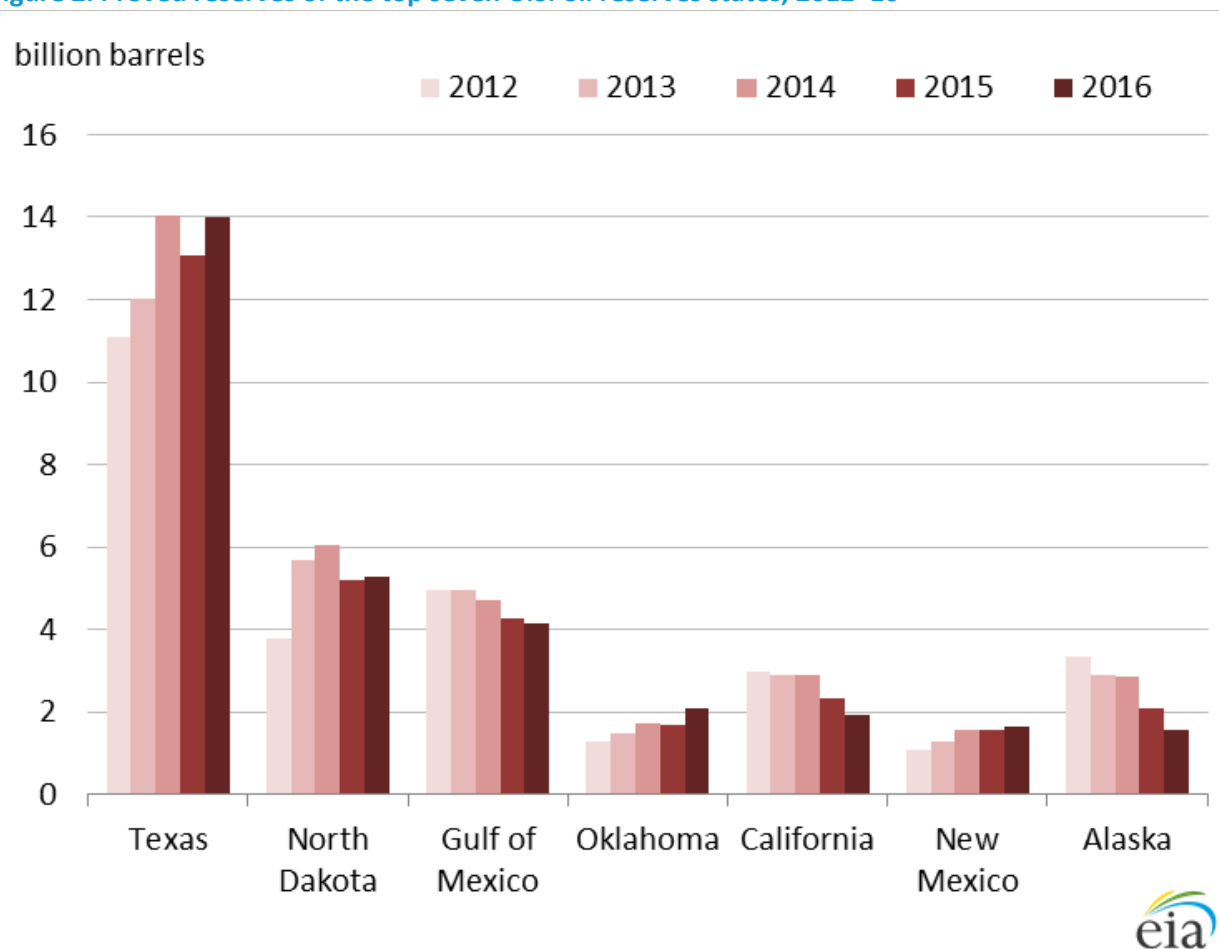


Sources: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, 1977–2016, American Petroleum Institute, 1966–76

³ In 2015, net revisions of proved reserves of crude oil and lease condensate reduced the U.S. total by 5.6 billion barrels, and net revisions of proved reserves of natural gas reduced the U.S. total by 80.8 trillion cubic feet. These large downward revisions, caused by a 40% to 50% reduction in prices, were the main reason the U.S. experienced a 12% decline in oil reserves and a 17% decline in natural gas proved reserves in 2015. (Source: EIA, *U.S. Crude Oil and Natural Gas Proved Reserves, Year-end 2015*)

Proved reserves of crude oil and lease condensate increased in four of the top seven U.S. oil reserves states in 2016 (Figure 2). In 2016, Texas held the largest proved reserves of any state and saw the largest volumetric increase—a net increase of 941 million barrels of crude oil and lease condensate proved reserves from 2015 to 2016. Most reserves additions (in the form of field extensions) were made in the Spraberry Trend Area and Wolfcamp shale play in west Texas (Texas Railroad Commission Districts 8 and 7C). Oklahoma had the second-largest proved reserves increase—a net addition of 386 million barrels of crude oil and lease condensate proved reserves. The largest net declines in proved reserves in 2016 were in Alaska, California, the Federal Offshore Pacific, and the Federal Offshore Gulf of Mexico—combined, the declines in these four areas (a net decline of 1.27 billion barrels) almost offset the gains in Texas and Oklahoma.

Figure 2. Proved reserves of the top seven U.S. oil reserves states, 2012–16

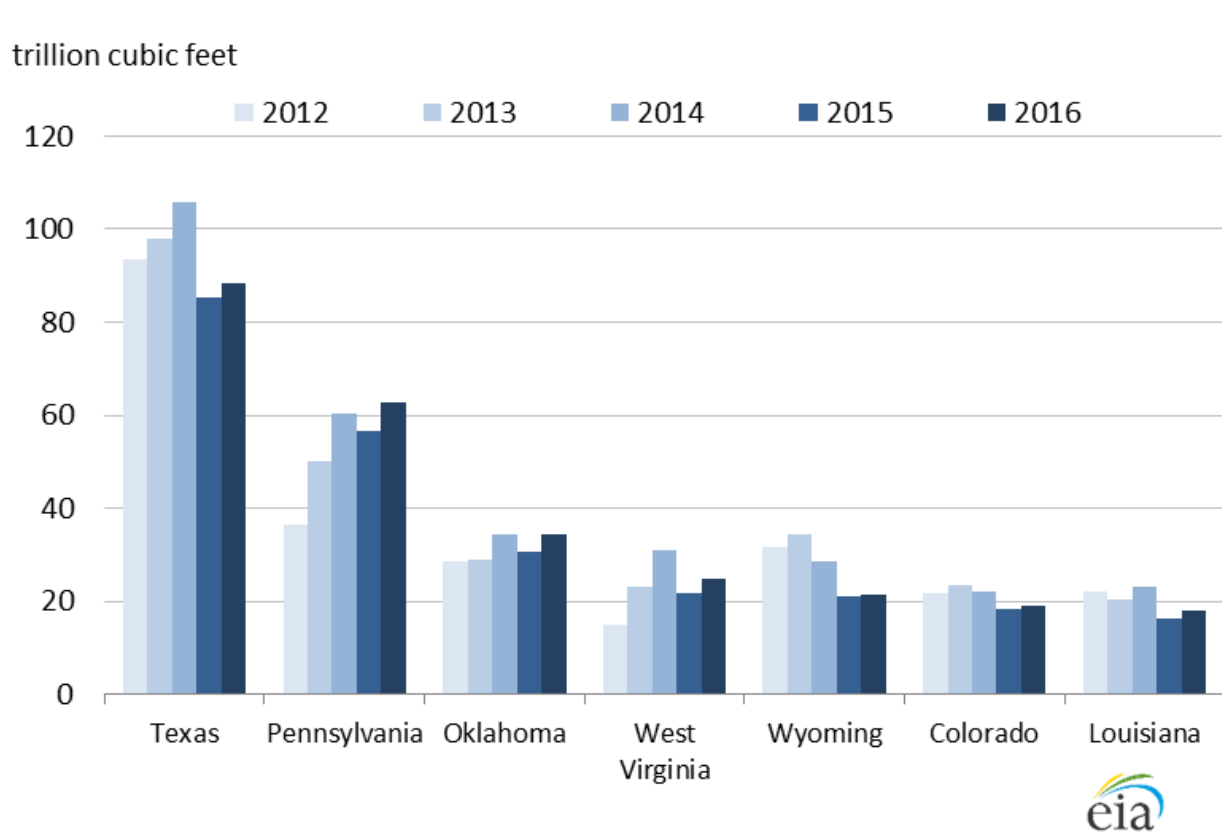


Notes: Oil reserves include crude oil and lease condensate. Gulf of Mexico represents the federally owned offshore portion of the Gulf of Mexico (not a state, but an important U.S. oil and natural gas production area).

Source: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, 2012–16

Proved natural gas reserves increased in each of the top seven U.S. natural gas reserves states in 2016 (Figure 3). Pennsylvania had the largest net increase in proved natural gas reserves of any state, adding 6.1 Tcf of proved natural gas reserves in the Marcellus shale play. Oklahoma had the second-largest net increase, adding 3.7 Tcf of proved natural gas reserves in the Woodford shale play. The third-largest net increase in proved natural gas reserves was in Ohio, where operators added 3.1 Tcf of proved reserves developing the Utica shale play and Point Pleasant formation using drilling and completion techniques applied in the Marcellus shale play.

Figure 3. Proved reserves of the top seven U.S. natural gas reserves states, 2012–16



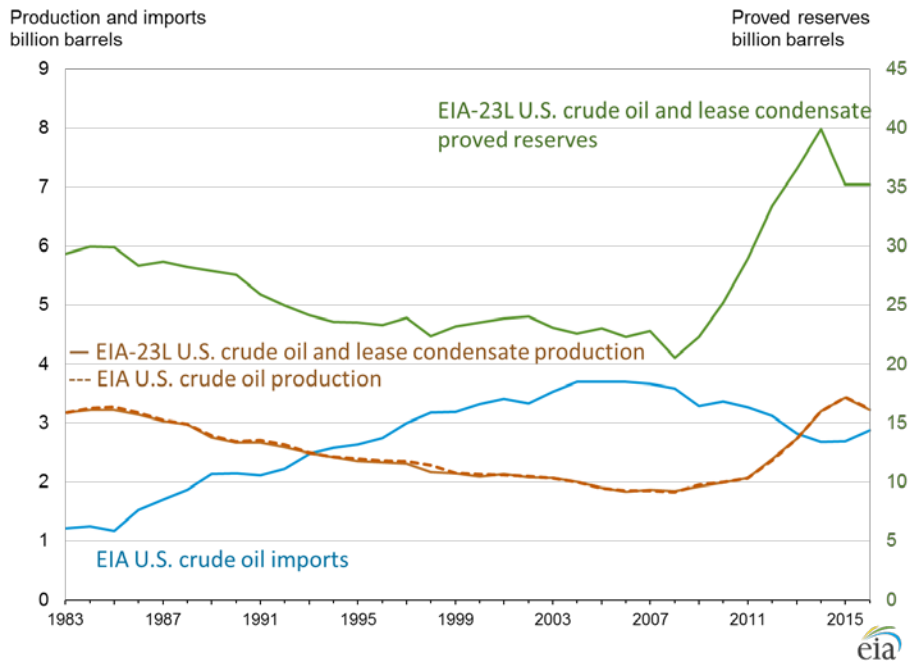
Note: Total natural gas includes natural gas plant liquids that have yet to be extracted downstream and does not include lease condensate.
Source: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, 2012–16

Official EIA oil and natural gas production data

EIA's official production numbers are published by EIA in the [Petroleum Supply Annual 2016](#), DOE/EIA-0340(16) and the [Natural Gas Annual 2016](#), DOE/EIA-0131(16) and are based on the EIA-914 report. 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. They may differ from EIA's official production numbers, should not be cited as EIA's official production statistics, and are offered here only as an indicator of production trends.

In 2016, U.S. crude oil and lease condensate production decreased 204 million barrels (6%) from 2015 production, and imports of crude oil increased 186 million barrels (7%) from the 2015 level (Figure 4).

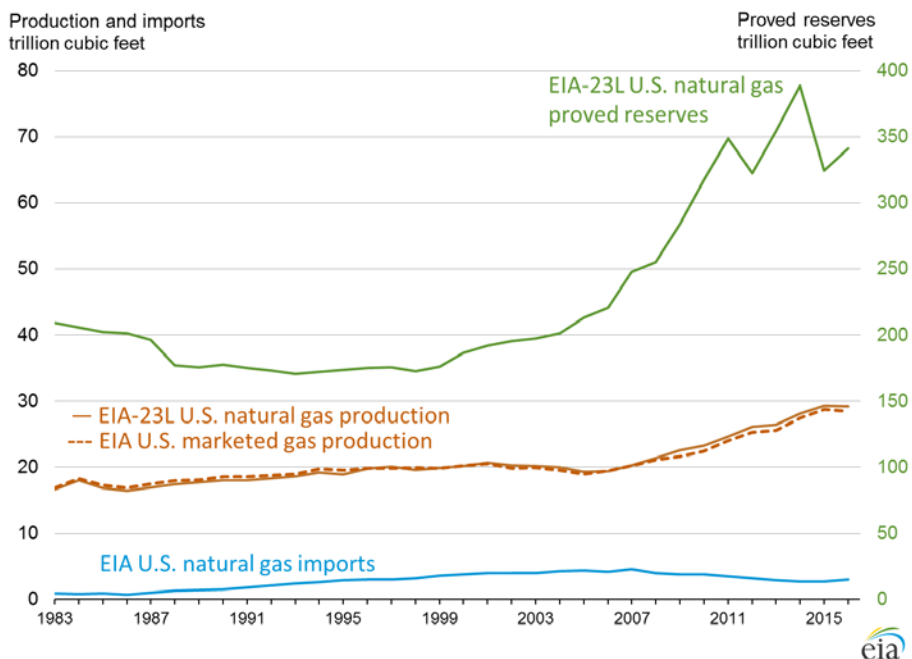
Figure 4. U.S. crude oil and lease condensate proved reserves, production, and imports, 1983–2016



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 2016, DOE/EIA-0340(16)

U.S. natural gas production decreased 176 billion cubic feet (Bcf) (1%) in 2016, and natural gas imports increased 288 Bcf (10%) from the 2015 level (Figure 5).

Figure 5. U.S. total natural gas proved reserves, production, and imports, 1983–2016



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 2016, DOE/EIA-0131(16)

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 2016. Changes for 2016 are measured as the difference between year-end 2015 and year-end 2016 values. The U.S. Energy Information Administration (EIA) starts with the data filed on Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, which was submitted by 461 of the 481 sampled operators of U.S. oil and natural gas fields. EIA then estimates the non-reported portion of proved reserves for the United States, each state, 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.

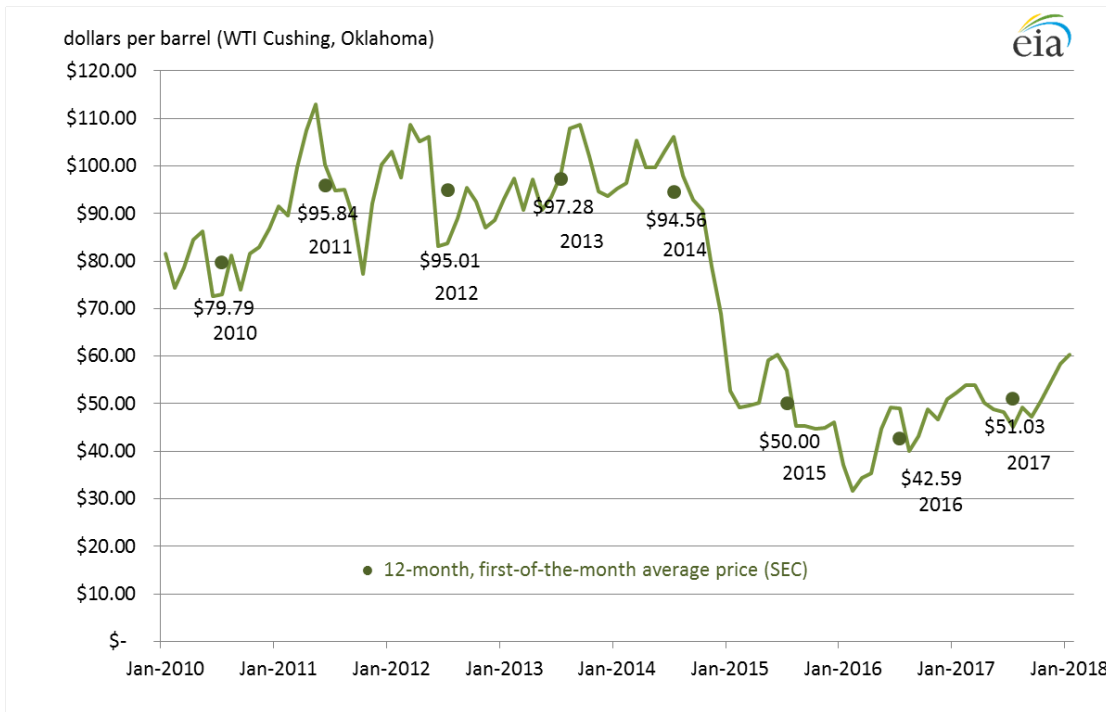
Discoveries include new fields, identification of new reservoirs in previously discovered fields, and additions to reserves that resulted from additional drilling and exploration in previously discovered reservoirs (extensions). Extensions are typically the largest percentage of total discoveries. New fields and reservoirs generally account for only a small percentage of overall annual reserve additions. Beginning with this 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 (positive revisions) as operators consider a broader portion of the resource base economically producible, or proved. Lower prices, on the other hand, generally reduce estimates (negative revisions) as the economically producible base diminishes.

The 2016 reporting period represents the eighth year companies reporting to the U.S. Securities and Exchange Commission (SEC) followed revised rules for determining the prices underpinning their proved reserves estimates. Designed to make estimates less sensitive to price fluctuations, the 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 while EIA requires companies to report their operated reserves.)

Because actual prices received by operators depend on their particular contractual arrangements, location, hydrocarbon quality, and other factors, spot market prices are not necessarily the prices used by operators in their reserve estimates for EIA. 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 2016 was \$42.59 per barrel, 15% lower than for 2015 (Figure 6). The 2016 price was also lower than the 2017 price.

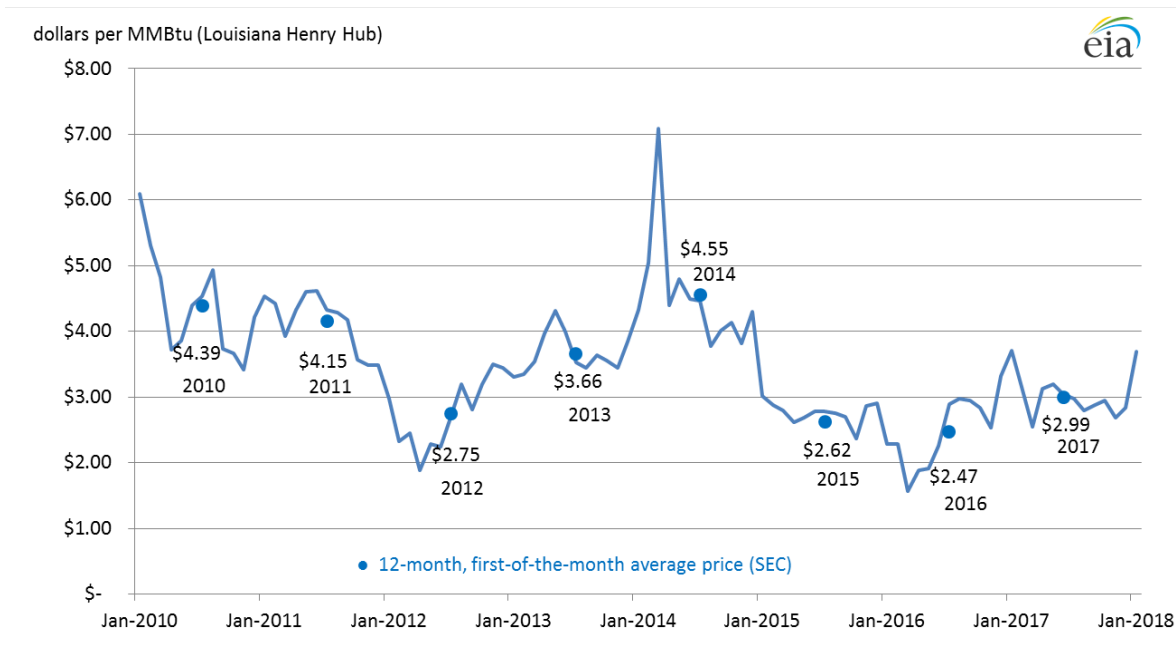
Figure 6. WTI crude oil spot prices, first day of the month, 2010–17



Source: Thomson Reuters, U.S. Energy Information Administration

The 12-month, first-day-of-the-month average natural gas spot price at the Louisiana Henry Hub for 2016 was \$2.47 per MMBtu, a 6% decrease from the previous year’s average spot price of \$2.62 per MMBtu (Figure 7). The 2016 price was also lower than the 2017 price.

Figure 7. Henry Hub natural gas spot prices, first-day-of-the-month, 2010–17



Source: Thomson Reuters, U.S. Energy Information Administration

Proved Reserves Outlook for EIA’s next report (2017). At the start of 2017, the [spot price of WTI crude oil](#) was slightly lower than \$50 per barrel. This price level continued through most of 2017 but increased during the last months of 2017 to slightly more than \$60 per barrel at the end of the year.

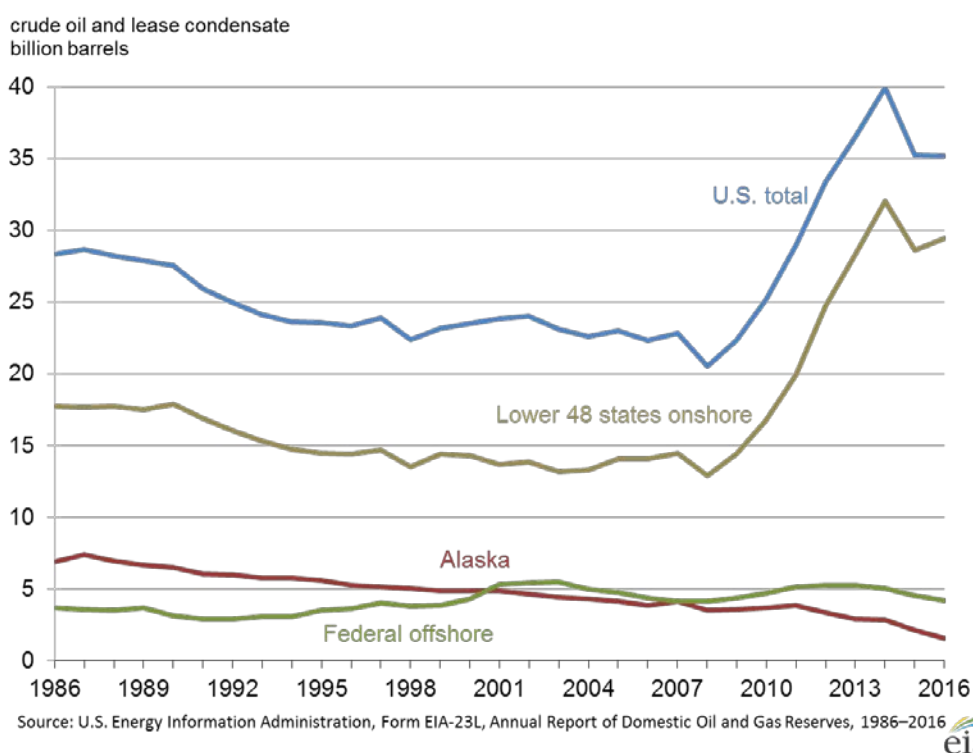
Compared with the 12-month, first-of-the-month 2016 average of \$42.59 per barrel, the 12-month, first-of-the-month 2017 average WTI spot oil price increased 20% to \$51.03 per barrel. Consequently, upward revisions in U.S. crude oil proved reserves in 2017 are likely, but production increases will also affect proved reserves. The 12-month, first-of-the-month average natural gas spot price at the Henry Hub in Louisiana in 2016 was \$2.47 per MMBtu. In December 2016, the monthly average [natural gas spot price](#) exceeded \$3.00 per MMBtu for the first time since 2014. The average 12-month, first-of-the-month spot natural gas price at the Henry Hub increased 21% in 2017, to \$2.99 per MMBtu. As with oil, some net upward revisions in U.S. natural gas proved reserves are expected in the 2017 reserves report.

In the second half of 2016, the [number of U.S. rotary rigs in operation](#) began to increase. Throughout most of 2017, this trend continued. This increase is expected to positively affect both crude oil and natural gas reserves through increased extensions and discoveries in the 2017 reserves report.

Crude oil and lease condensate proved reserves

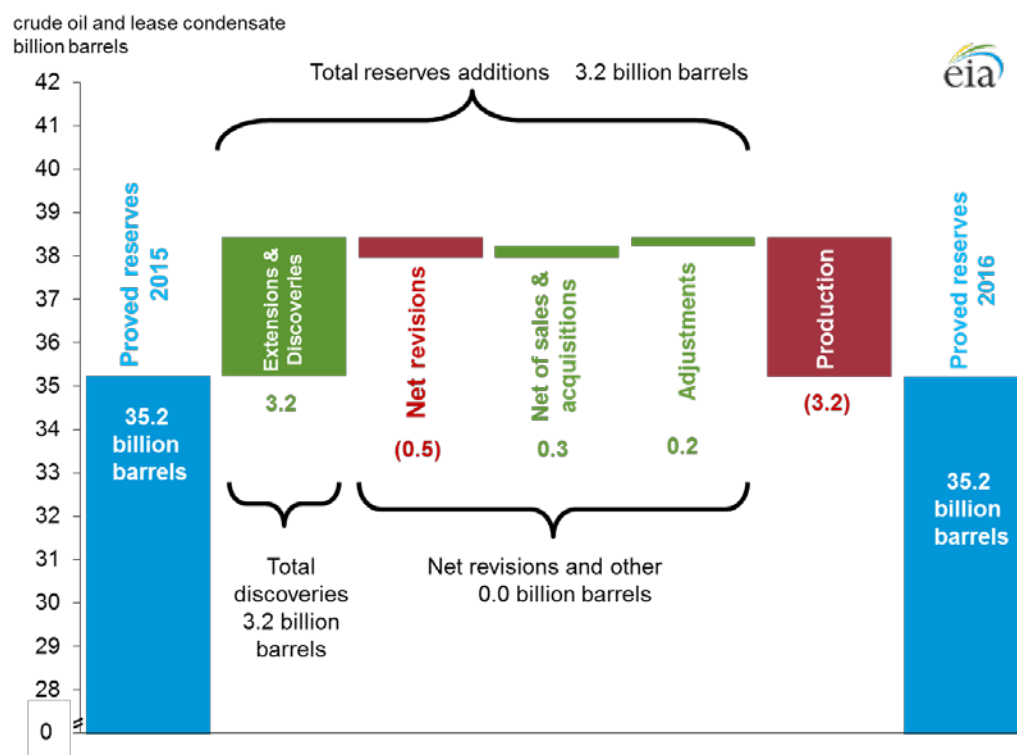
The United States had 35,213 million barrels of crude oil and lease condensate proved reserves as of December 31, 2016, which is almost the same level as at the end of 2015. Proved reserves rose 3% (846 million barrels) onshore in the Lower 48 states (U.S. total not including Alaska, Federal Offshore, and State Offshore reserves), but those gains were offset by declines of 865 million barrels in crude oil and lease condensate proved reserves in Alaska and in the Federal Offshore (both Pacific and the Gulf of Mexico)(Figure 8).

Figure 8. U.S. crude oil and lease condensate proved reserves, 1986–2016



U.S. crude oil and lease condensate proved reserves decreased by 17 million barrels (0.0%) in 2016, as net reserves additions (mostly extensions and discoveries) were virtually the same as annual production (Figure 9a).

Figure 9a. U.S. crude oil and lease condensate proved reserves changes, 2015–16



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 had the largest net increase in crude oil and lease condensate proved reserves (941 million barrels) of all states in 2016—an increase of 7% from 2015. In 2016, the largest proved reserves gains were in the Permian Basin of West Texas (Texas Railroad Commission Districts 8 and 7C) where operators developed the Wolfcamp shale play and drilled horizontal wells in the Spraberry Trend Area. In 2015, Texas proved reserves had declined more than in any other state (1,001 million barrels) after operators revised their proved reserves downward in response to the dramatic drop in oil prices at the end of 2014 from an average of about \$95 per barrel to \$50 per barrel.

Oklahoma had the second-largest net increase in crude oil and lease condensate proved reserves (386 million barrels) in 2016—an increase of 23% from 2015. Development in 2016 centered on two Oklahoma oil plays—the South Central Oklahoma Oil Province (SCOOP) and the Sooner Trend, Anadarko [basin], Canadian & Kingfisher [counties] (STACK). These plays feature several stacked oil-bearing reservoirs in addition to the Woodford Shale, such as the Caney Shale (above the Woodford) and the Hunton Limestone (a carbonate below the Woodford Shale.) One formation within the STACK play, the Meramec formation, is notable because wells have been drilled that produce crude oil with no associated water production (therefore, no produced water disposal costs)⁴.

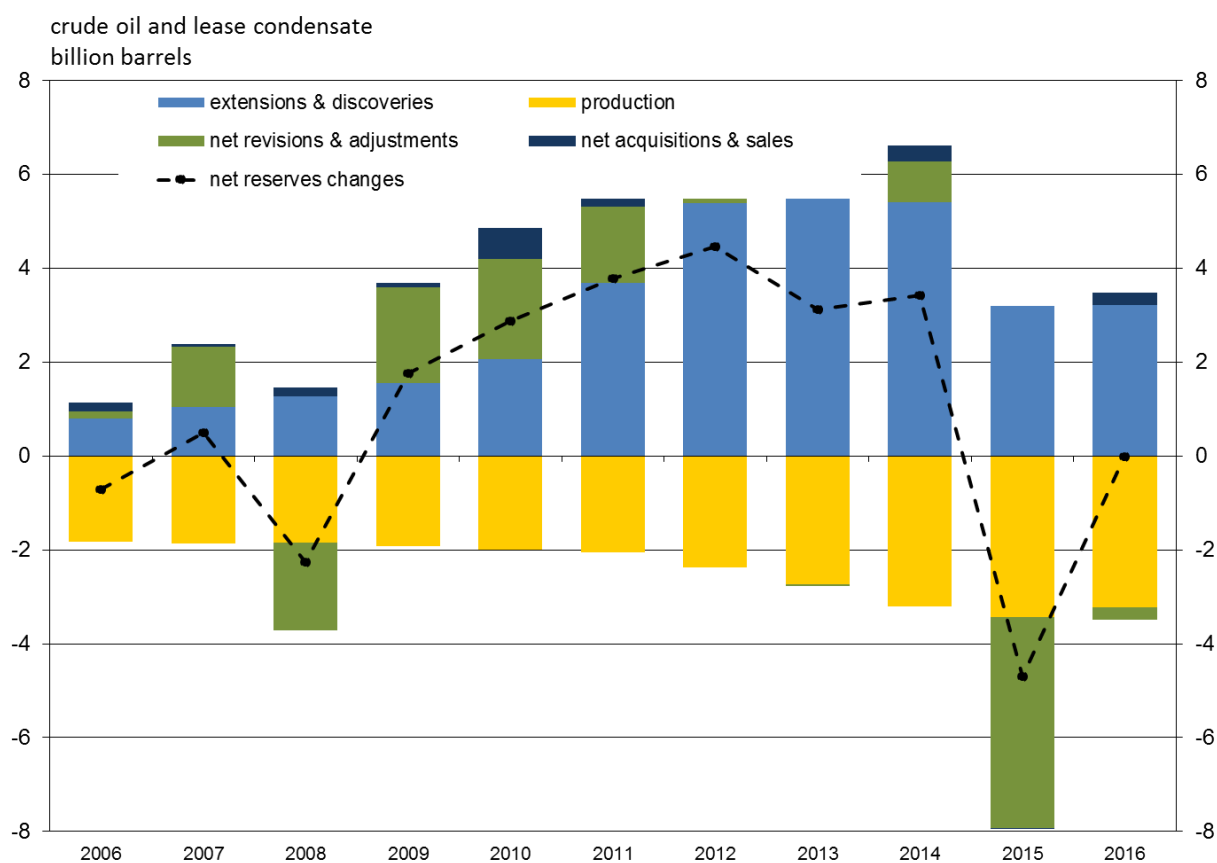
⁴ drillinginfo, “The STACK, The SCOOP and Oklahoma Oil & Gas” (posted April 11, 2017 by Eric Roach),

New Mexico had the third-largest increase in crude oil and lease condensate proved reserves (74 million barrels) in 2016—an increase of 5% from 2015. In eastern New Mexico (portions of which are within the Permian Basin) operators developed the Wolfcamp shale play and the Bone Spring formation.

Alaska had the largest net decline of crude oil and lease condensate proved reserves of all states in 2016—a 25% drop of 530 million barrels. California and the Federal Offshore Pacific had the next largest net declines in proved reserves, (402 million barrels and 203 million barrels, respectively). In Alaska and California, net downward revisions of proved reserves exceeded discoveries. The Federal Offshore Pacific had no discoveries.

The smaller decrease in oil prices in 2016 (after a much larger drop in 2015) resulted in much smaller negative net revisions to proved reserves than in 2015 (Figure 9b).

Figure 9b. Components of U.S. crude oil and lease condensate annual reserves changes, 2006–16



As of December 31, 2016, *tight plays*⁵ accounted for 44% of all U.S. crude oil and lease condensate proved reserves. Most of these proved reserves (97%) came from seven tight plays (Table 2). The Bakken/Three Forks play in the Williston Basin remained the largest oil-producing tight play in the United States in 2016. EIA has a [series of maps and animations](#) showing U.S. shale and other tight plays where oil and natural gas are produced.

<https://info.drillinginfo.com/the-stack-the-scoop-and-oklahoma-oil-gas/>

⁵ *Tight plays* (sometimes called *resource plays*) produce oil from petroleum-bearing formations with low permeability such as the Eagle Ford, the Bakken, and other formations that 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.

Table 2. Crude oil production and proved reserves from selected U.S. tight plays, 2015–16
(million barrels)

Basin	Play	State(s)	2015	2015	2016	2016	Change
			Production	Reserves	Production	Reserves	2015–16 Reserves
Williston	Bakken/Three Forks	ND, MT, SD	421	5,030	375	5,226	196
Permian	Bone Spring, Wolfcamp	NM, TX	66	782	426	4,960	4,178
Western Gulf	Eagle Ford	TX	565	4,295	438	4,163	-132
Anadarko	Woodford	OK	22	384	27	389	5
Denver Julesburg	Niobrara*	CO	58	460	16	225	-235
Appalachian	Marcellus*	PA, WV	16	143	13	139	-4
Fort Worth	Barnett	TX	5	33	3	22	-11
Sub-total			1,153	11,127	1,298	15,124	3,997
Other tight			61	475	42	431	-44
U.S. tight plays			1,214	11,602	1,340	15,555	3,953

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

Other tight includes proved reserves from shale formations reported on Form EIA-23L not assigned by EIA to the Bakken/Three Forks, Barnett, Bone Spring, Eagle Ford, Marcellus, Niobrara, Wolfcamp, or Woodford tight plays.

* The Niobrara estimate in 2016 was modified to include only proved reserves identified from shale reservoirs in the Denver Julesburg basin in Colorado. 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, 2015 and 2016

Extensions and discoveries. Reserves additions including discoveries of new fields, identification of new reservoirs in fields discovered in prior years, and reserve additions that result from the additional drilling and exploration in previously discovered reservoirs (extensions) added 3.2 billion barrels to U.S. crude oil and lease condensate reserves in 2016. The largest extensions and discoveries of crude oil and lease condensate proved reserves in 2016 were in Texas, North Dakota, Oklahoma, and New Mexico. Texas had 1.8 billion barrels, North Dakota had 0.4 billion barrels, Oklahoma had 0.3 billion barrels, and New Mexico had 0.2 billion barrels of extensions and discoveries in 2016.

Net revisions and other changes. Revisions to reserves occur primarily when operators change their estimates of what they are able to economically produce from the properties they operate 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 as various adjustments are made to reconcile estimated volumes.

Net downward revisions decreased U.S. crude oil and lease condensate proved reserves by 0.5 billion barrels in 2016. The largest net downward revisions of crude oil and lease condensate proved reserves were in Alaska, Texas, and Colorado. Alaska revised reserves downward by 0.4 billion barrels, Texas by 0.3 billion, and Colorado by 0.2 billion barrels. In Texas, extensions and discoveries far outweighed negative net revisions, increasing Texas proved reserves in 2016 (see *Extensions and discoveries* above).

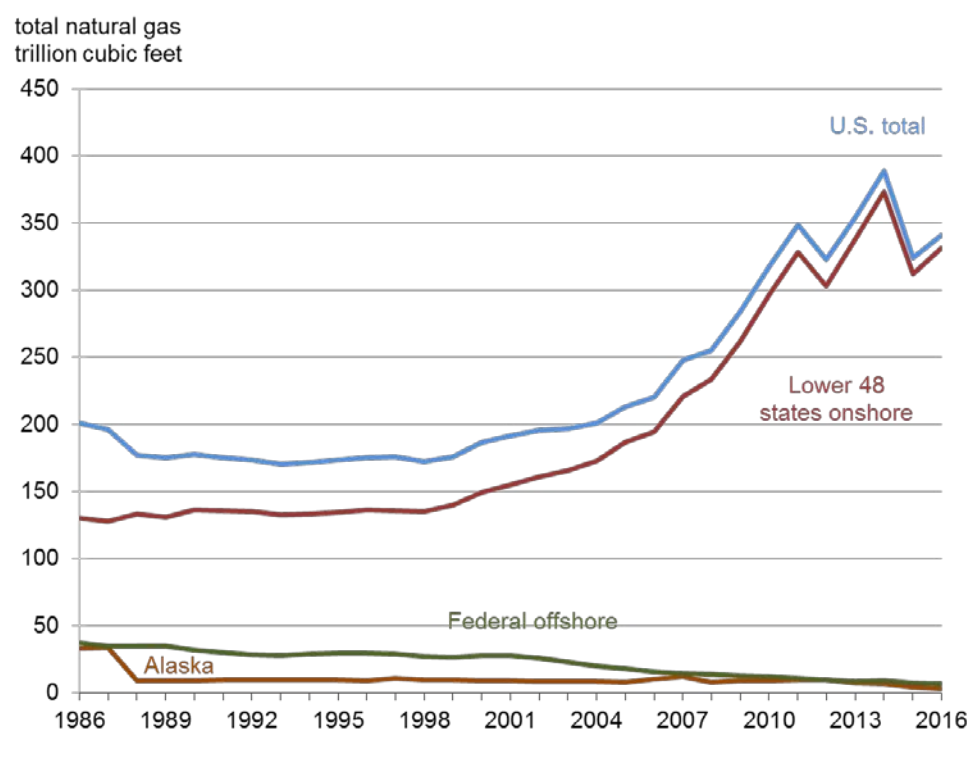
The net change to U.S. crude oil and lease condensate proved reserves associated with buying and selling properties was an increase of 264 million barrels in 2016. Adjustments (positive and negative reserves changes that EIA cannot attribute to any other category) increased U.S. proved oil reserves by 206 million barrels.

Production. EIA's official published estimate of U.S. crude oil production is 3,242 million barrels in 2016, a decrease of 6% from 2015. As estimated using EIA-23L responses⁶, the United States produced 3,223 million barrels of crude oil and lease condensate in 2016, also having a decrease of 6% from 2015. This is the first decline for both of these production estimate series after seven consecutive years of production increases. Production onshore in the Lower 48 states was 9% lower than the 2015 level, but Alaska production experienced a 2% increase, and Federal Offshore production experienced a 3% increase based on the EIA-23L data.

Natural gas proved reserves

The United States had 341.1 trillion cubic feet (Tcf) of proved natural gas reserves as of December 31, 2016. U.S. proved reserves of total natural gas (including natural gas plant liquids) increased by 16.8 Tcf (5%) (Figure 10).

Figure 10. U.S. total natural gas proved reserves, 1986–2016



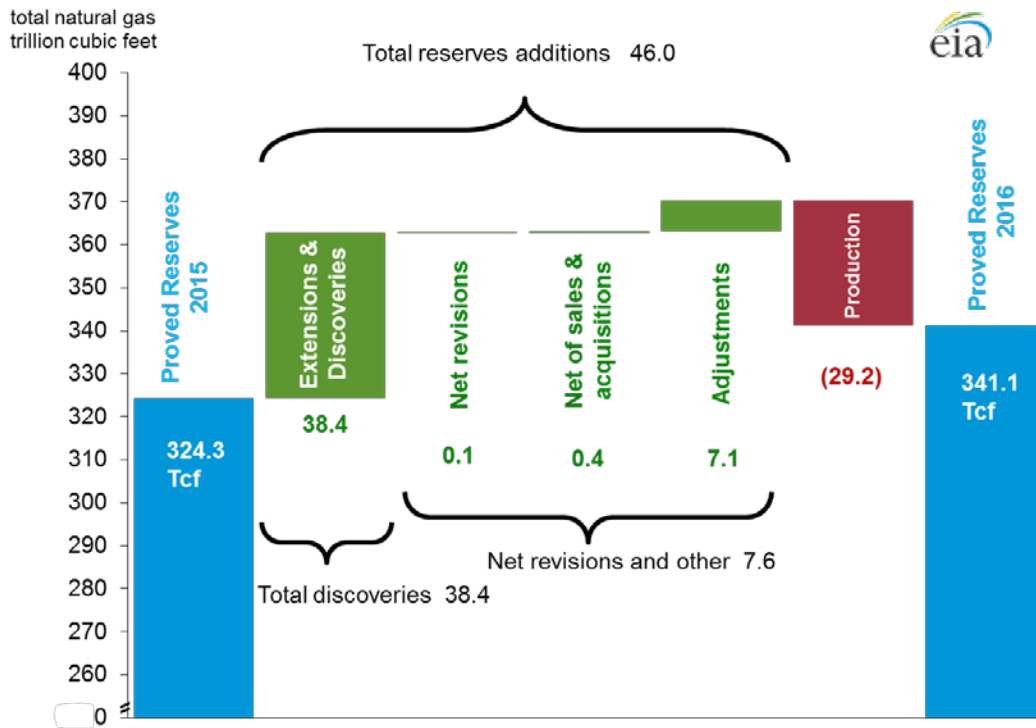
Source: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves



The spot price of U.S. natural gas at the Louisiana Henry Hub dropped below \$2 per million British thermal units (MMBtu) at times in the first half of 2016, but that price had risen higher than \$3 per MMBtu by December 2016. Unlike in 2015, where operators revised their natural gas proved reserves downward by more than 80 Tcf, net revisions resulted in a small increase to natural gas proved reserves in 2016 and were far outweighed by extensions and discoveries (Figure 11a).

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 may differ slightly from the official U.S. EIA production data for crude oil and lease condensate for 2016 contained in the *Petroleum Supply Annual 2016*, DOE/EIA-0340(16).

Figure 11a. U.S. total natural gas proved reserves changes, 2015–16



Note: Component columns may not add to total due to 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

Pennsylvania and Oklahoma reported the largest net increases in natural gas proved reserves in 2016. Pennsylvania natural gas proved reserves increased by 11% (6.1 Tcf) and Oklahoma natural gas proved reserves increased by 12% (3.7 Tcf). Net increases greater than 1 Tcf also occurred in Ohio, Texas, West Virginia, Louisiana, and North Dakota. The states with the largest net decreases in natural gas proved reserves in 2016 were Alaska and New Mexico.

Extensions and discoveries. The U.S. total of natural gas extensions and discoveries were 38.4 Tcf in 2016 (Table 3) and 84% of those discoveries were from shale plays. Extensions and discoveries accounted for most (83%) of all proved reserves additions in 2016.

Table 3. Changes to proved reserves of U.S. natural gas by source, 2015–16
(trillion cubic feet)

Source of natural gas	Year-end 2015	2016	2016	2016 Production	Year-end 2016
	Proved Reserves	Extensions & Discoveries	Revisions & other changes		Proved Reserves
Coalbed methane	12.5	0.0	-1.0	-1.0	10.6
Shale	175.6	32.3	19.0	-17.0	209.8
Other U.S. natural gas					
Lower 48 onshore	123.6	5.8	-9.5	-9.5	110.3
Lower 48 offshore	8.0	0.2	0.2	-1.3	7.1
Alaska	4.6	0.1	-1.1	-0.3	3.3
U.S. TOTAL	324.3	38.4	7.6	-29.2	341.1

Note: The Lower 48 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, 2015 and 2016

Extensions and discoveries of natural gas reserves were highest in Pennsylvania and West Virginia, at 10.7 Tcf and 7.1 Tcf, respectively. Texas had the third-largest volume of extensions and discoveries in 2016 (6.5 Tcf). Extensions and discoveries in Pennsylvania and West Virginia were from extensions in the Marcellus shale play, the largest natural gas shale play in the United States by volume of reserves. Total discoveries in Texas were mostly from extensions to oil fields with associated-dissolved natural gas in the Permian Basin (TX RRC District 8) and to fields within the Eagle Ford shale play (TX RRC Districts 2 and 4).

Net revisions and other changes. Net revisions increased U.S. total natural gas proved reserves by 0.1 Tcf in 2016. This is a notable change from the prior year, when net revisions reduced proved reserves by 80 Tcf. The following states had the largest changes (positive and negative) in 2016 because of net revisions:

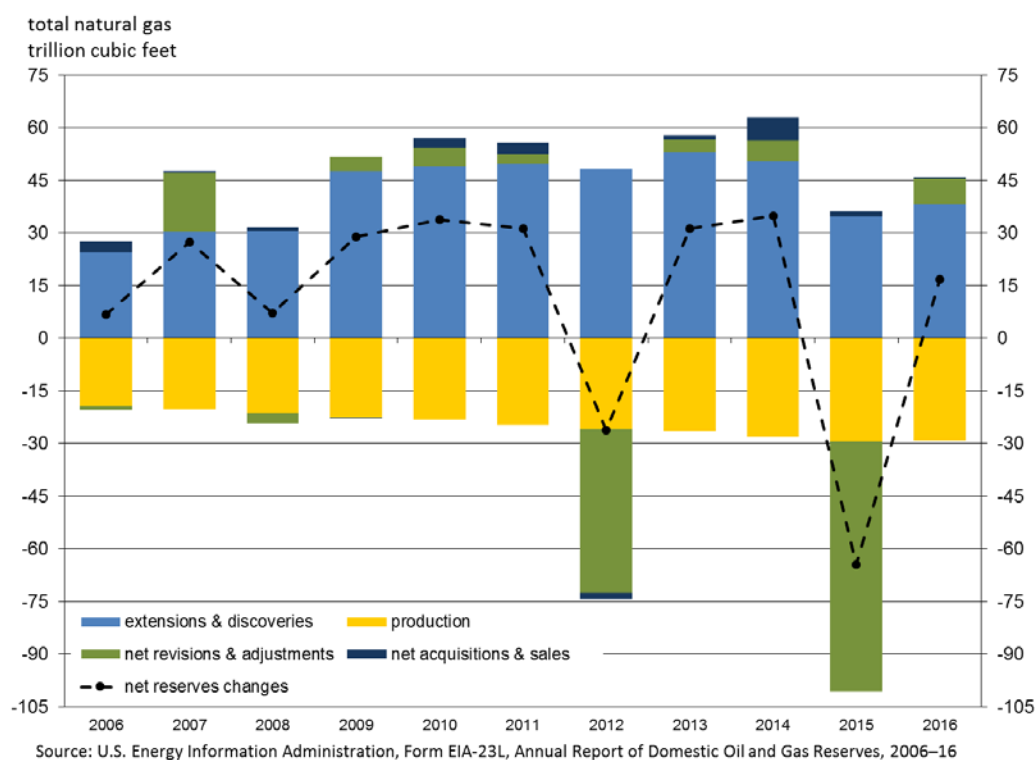
- Pennsylvania had the largest net revision increase of natural gas proved reserves of all states in 2016, with an increase of 2.2 Tcf.
- West Virginia had the largest net revision decrease of natural gas proved reserves (2.9 Tcf). Despite a negative net revision in 2016, total West Virginia proved reserves increased by almost 3 Tcf.
- Texas had an overall net revision increase in its natural gas proved reserves of 2 Tcf. Natural gas proved reserves in west and southwest Texas (Wolfcamp and the Eagle Ford shale plays) increased in 2016, while natural gas proved reserves in north central Texas (Barnett shale play) declined.

The net change to natural gas proved reserves from the purchase and sale of properties resulted in an additional gain of 0.4 Tcf in 2016. Adjustments (annual reserves changes that EIA cannot attribute to any other category) added 7.1 Tcf to U.S. total natural gas proved reserves in 2016.

Production. EIA’s official published estimate of **marketed natural gas production** is 28.5 Tcf in 2016, a decrease of 1% from 2015. As estimated using EIA-23L responses⁷, U.S. production of total natural gas, wet after lease separation, in 2016 is estimated to be 29.2 Tcf, also having a decrease of 1% from 2015. This is the first decline for both of these production estimate series after 10 consecutive years of increases.

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

Figure 11b. Components of U.S. natural gas annual reserves changes, 2006–16



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. EIA considers most shale natural gas and all coalbed natural gas to be nonassociated natural gas. Proved reserves of U.S. nonassociated natural gas increased by 10.1 Tcf in 2016, a 4% increase from 2015. Estimated production of U.S. nonassociated natural gas decreased 2%—from 23.1 Tcf in 2015 to 22.7 Tcf in 2016. The largest increases in 2016 nonassociated natural gas production were in Ohio (Utica shale) and Pennsylvania (Marcellus Shale). The largest decrease in 2016 nonassociated natural gas production (0.6 Tcf) was in Texas.

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 gas in solution with crude oil (dissolved). Proved reserves of associated-dissolved natural gas increased from 65.5 Tcf in 2015 to 72.2 Tcf in 2016—an increase of 10%. Estimated production of associated-dissolved natural gas increased 4%—from 6.2 Tcf in 2015 to

⁷ 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 2016*, DOE/EIA-0131(16).

6.4 Tcf in 2016. The largest increase in 2016 associated-dissolved natural gas production (0.2 Tcf) was in Colorado.

Coalbed natural gas

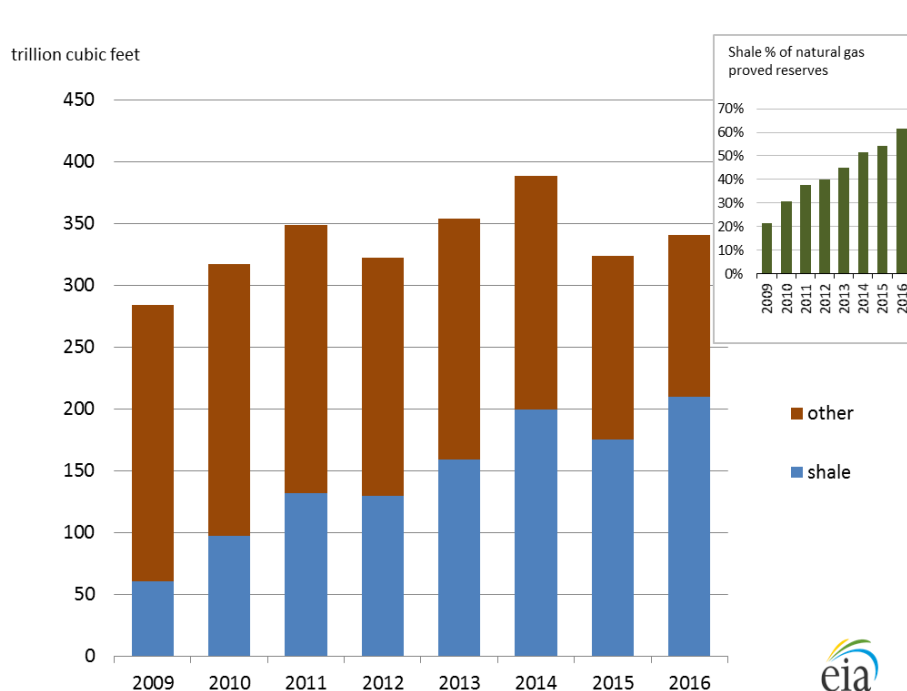
Coalbed natural gas, also called coalbed methane, is a type of natural gas contained in and removed from coal seams. Extraction requires drilling wells into the coal seams and removing water contained in the seams to reduce hydrostatic pressure and to release adsorbed (and free) natural gas from the coal. Proved reserves of U.S. coalbed natural gas decreased from 12.5 Tcf in 2015 to 10.6 Tcf in 2016, a 15% drop. Estimated production of coalbed natural gas decreased 20%—from 1.27 Tcf in 2015 to 1.02 Tcf in 2016. In 2016, New Mexico experienced the largest decrease (0.98 Tcf) in proved reserves of coalbed methane, and Wyoming had the largest increase (0.12 Tcf) in coalbed methane proved reserves.

Natural gas from shale

Shale formations can be the source rock and the production zone. Shale reservoirs must typically be hydraulically fractured to produce natural gas at economic rates. Horizontally-drilled wells perform substantially better than vertical wells (but they are more expensive to drill and complete at the same depth). Proved reserves of U.S. natural gas from shale increased from 175.6 Tcf in 2015 to 209.8 Tcf in 2016.

The share of natural gas from shale compared with total U.S. natural gas proved reserves increased from 54% in 2015 to 62% in 2016 (Figure 12). Estimated production of natural gas from shale increased 12%—from 15.2 Tcf in 2015 to 17.0 Tcf in 2016.

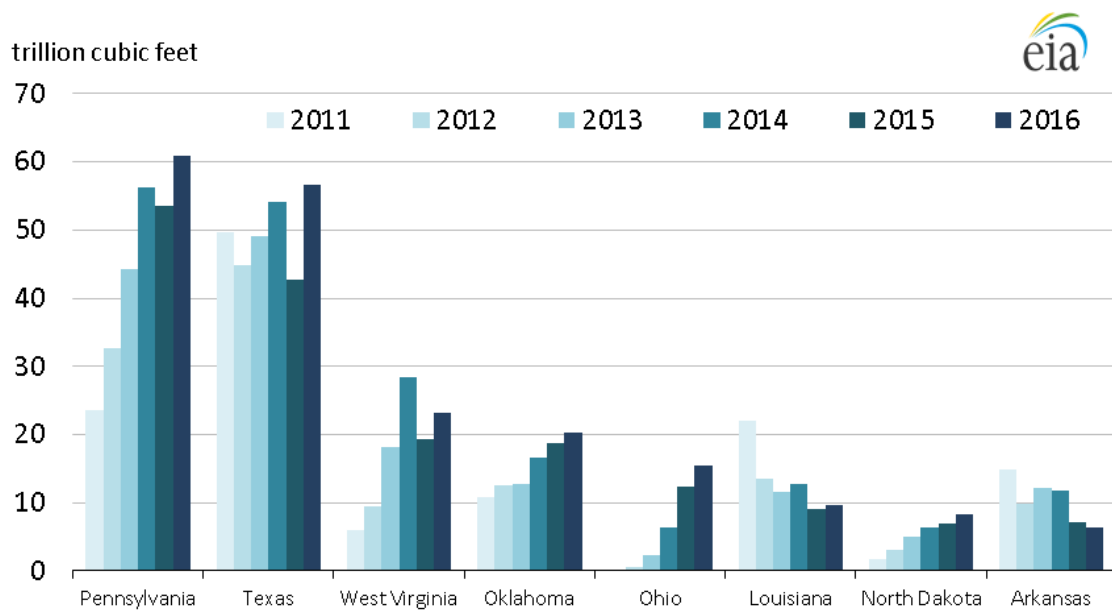
Figure 12. U.S. total natural gas proved reserves (shale and other sources), 2009–16



Source: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, 2009–16

Pennsylvania had the most natural gas proved reserves from shale in 2016 (61.0 Tcf), Texas had the second-most (56.6 Tcf), and West Virginia (23.1 Tcf) remained the third largest (Figure 13). Oklahoma (20.3 Tcf) was the fourth-largest shale gas proved reserves state. Ohio remained the fifth-largest shale gas proved reserves state in 2016 (15.4 Tcf), and Louisiana and North Dakota were the sixth- and seventh-largest shale gas proved reserves states, respectively.

Figure 13. Proved shale gas reserves of the top eight U.S. shale gas reserves states, 2011–16



Source: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, 2011–16

Eight shale plays contained 94% of U.S. shale gas proved reserves at the end of 2016 (Table 4). The Marcellus Shale play remained the play with the largest amount of natural gas proved reserves from shale in 2016. Its proved reserves increased in 2016 by 16%. The second-largest shale gas play was the Eagle Ford, where proved reserves also increased by 16% in 2016.

Table 4. U.S. shale plays: natural gas production and proved reserves, 2015–16
(trillion cubic feet)

Basin	Shale play	State(s)	2015		2016		Change 2016–2015	
			Production	Reserves	Production	Reserves	Production	Reserves
Appalachian	Marcellus*	PA,WV	5.8	72.7	6.3	84.1	0.5	11.4
Western Gulf	Eagle Ford	TX	2.2	19.6	2.1	22.7	-0.1	3.1
Anadarko	Woodford	OK	1.0	18.6	1.1	20.2	0.1	1.6
Permian Basin	Wolfcamp, Bone Spring	NM, TX	0.3	3.0	1.7	19.1	1.4	16.1
Fort Worth	Barnett	TX	1.6	17.0	1.4	16.8	-0.2	-0.2
Appalachian	Utica/Pt. Pleasant	OH	1.0	12.4	1.4	15.5	0.4	3.0
TX-LA Salt	Haynesville/Bossier	LA, TX	1.4	12.8	1.5	13.0	0.1	0.2
Arkoma	Fayetteville	AR	0.9	7.1	0.7	6.3	-0.2	-0.8
Sub-total			14.2	163.3	16.2	197.7	2.0	34.4
Other shale			1.0	12.3	0.8	12.1	-0.2	-0.2
All U.S. shale			15.2	175.6	17.0	209.8	1.8	34.2

Note: Table values are based on natural gas proved reserves and production volumes from shale reported and imputed from data on Form EIA-23L. For certain reasons (e.g., incorrect or incomplete submissions, misidentification of shale versus nonshale reservoirs), the actual proved reserves and production of natural gas from shale plays may be higher or lower. * In this table, the Marcellus Shale play refers only to portions within Pennsylvania and West Virginia. *Other shale* includes fields reported as shale on Form EIA-23L not assigned by EIA to the Marcellus, Barnett, Haynesville/Bossier, Eagle Ford, Woodford, Utica/Pt. Pleasant, Wolfcamp, Bone Spring, or Fayetteville shale plays. Columns may not add to subtotals due to independent rounding.

Sources: U.S. Energy Information Administration, Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves, 2015 and 2016

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

Dry natural gas proved reserves

Dry natural gas is the volume of natural gas (primarily methane) 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 dry natural gas proved reserves by first estimating the expected yield of natural gas plant liquids from total natural gas proved reserves, then deducting the corresponding volume of natural gas that make up that plant liquids estimated volume from total natural gas proved reserves.

U.S. dry natural gas proved reserves increased from an estimated 307.7 Tcf in 2015 to 322.2 Tcf in 2016, an increase of 5%.

Lease condensate and natural gas plant liquids

Operators of natural gas fields report lease condensate reserves and production estimates to EIA on Form EIA-23L, Annual Report of Domestic Oil and Gas Reserves. Natural Gas Plant Liquids (NGPL) 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 using estimates of total natural gas reserves and a recovery factor determined for each area of origin based on the 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 butane and propane, which are recovered at downstream natural gas processing plants or facilities. Lease condensate usually enters the crude oil stream.

Before 2015, U.S. lease condensate proved reserves had increased for six consecutive years. As of December 31, 2016, the United States had 2,440 million barrels of lease condensate proved reserves, a decline of 472 million barrels from 2015 (16%). U.S. lease condensate production also decreased 16%—from 323 million barrels in 2015 to 270 million barrels in 2016.

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, and natural gasoline. Components may be further fractionated or mixed. Lease condensate is not a natural gas plant liquid and is not a component of the natural gas plant liquids total.

The estimated volume of natural gas plant liquids contained in proved reserves of total natural gas increased from 12.7 billion barrels in 2015 to 14.7 billion barrels in 2016 (a 16% increase).

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*; and *Proved, Undeveloped Reserves*.

Examples of Proved, Developed, Nonproducing reserves 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 Proved, Undeveloped Reserves is an undrilled offset well location (acreage adjacent to an existing producing well that is scheduled to have a well drilled upon it). However, additional conditions must be met to satisfy the definition of proved reserves:

1. the locations are directly offset to wells that have commercial production in the objective formation,
2. it is reasonably certain such locations are within the known proved productive limits of the objective formation,
3. the locations conform to existing well spacing regulations where applicable, and
4. it is reasonably certain the locations will be developed. SEC rules currently require development within a 5-year time 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 18 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 2016. As of December 31, 2016, the United States had 13.3 billion barrels of crude oil proved reserves and 110.5 Tcf of natural gas proved reserves in nonproducing reservoirs. This is a 6% increase for both fuels from the 2015 level published in EIA's last report.

Maps and additional data tables

Maps

Figure 14. Crude oil and lease condensate proved reserves by state/area, 2016

Figure 15. Changes in crude oil and lease condensate proved reserves by state/area, 2015–16

Figure 16. Natural gas proved reserves by state/area, 2016

Figure 17. Changes in natural gas proved reserves by state/area, 2015–16

Oil Tables

Table 5. U.S. proved reserves of crude oil and lease condensate, crude oil, and lease condensate, 2006–16

Table 6. Crude oil and lease condensate proved reserves, reserves changes, and production, 2016

Table 7. Crude oil proved reserves, reserves changes, and production, 2016

Table 8. Lease condensate proved reserves, reserves changes, and production, 2016

Natural Gas Tables

Table 9. U.S. proved reserves of total natural gas, wet after lease separation, 2001–16

Table 10. Total natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

Table 11. Nonassociated natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

Table 12. Associated-dissolved natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

Table 13. Shale natural gas proved reserves and production, 2013–16

Table 14. Shale natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

Table 15. Coalbed methane proved reserves and production, 2013–16

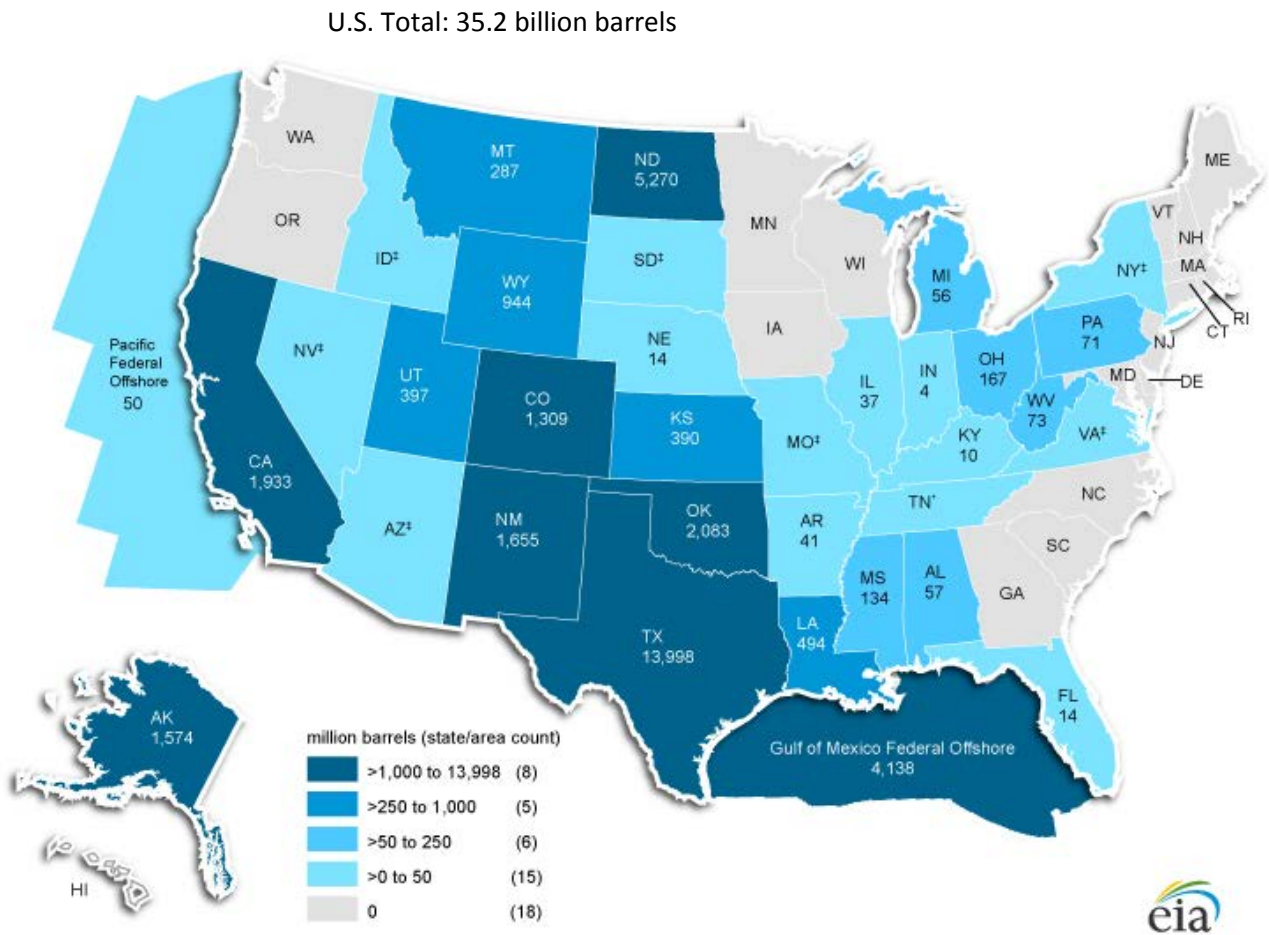
Table 16. Coalbed methane proved reserves, reserves changes, and production, 2016

Table 17. Estimated natural gas plant liquids and dry natural gas proved reserves, 2016

Miscellaneous/Other Tables

Table 18. Reported proved nonproducing reserves of crude oil, lease condensate, nonassociated gas, associated-dissolved gas, and total gas (wet after lease separation), 2016

Figure 14. Crude oil and lease condensate proved reserves by state/area, 2016

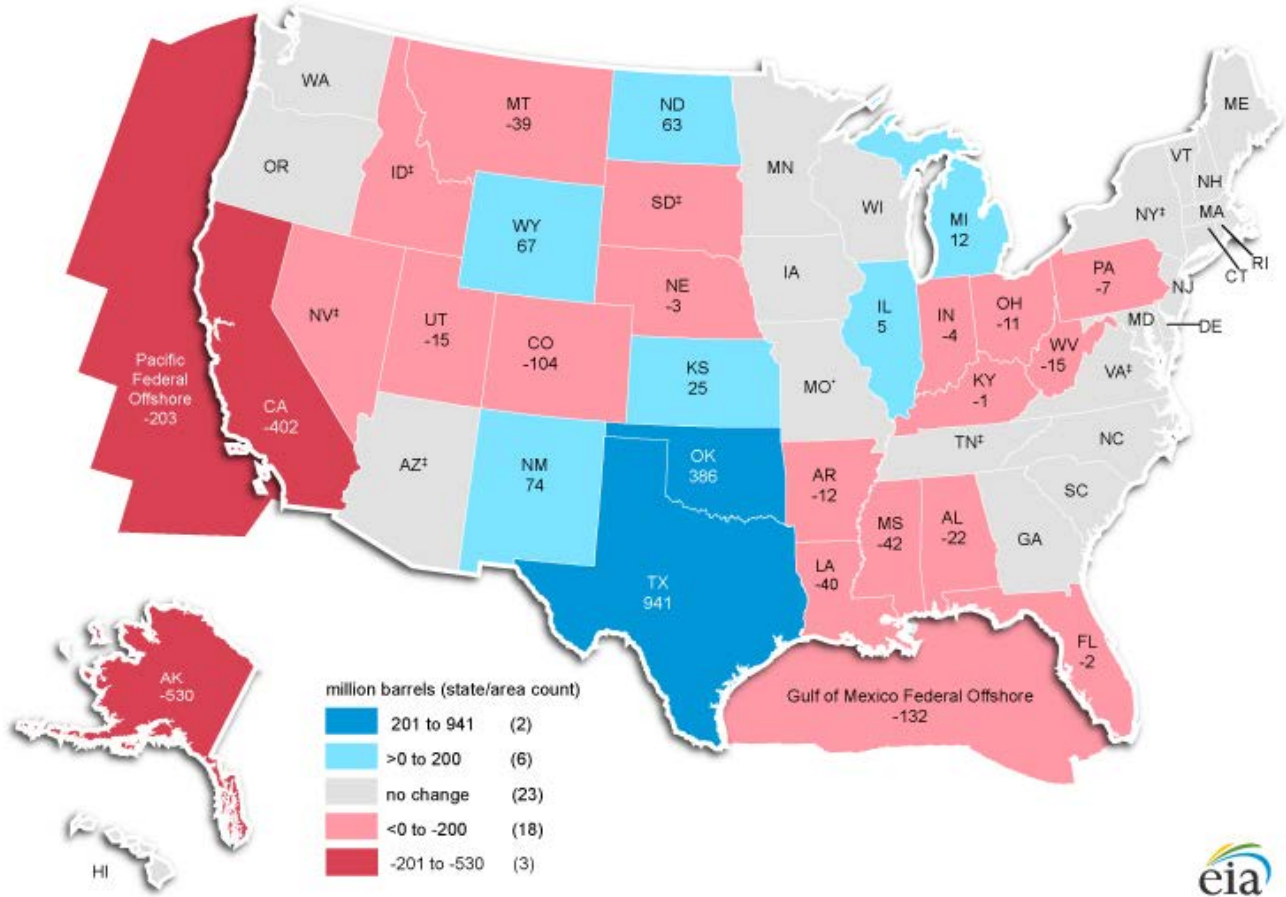


‡Data withheld to avoid disclosure of individual company data.

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

Figure 15. Changes in crude oil and lease condensate proved reserves by state/area, 2015–16

Total U.S. decrease: 0% (-17 million barrels)



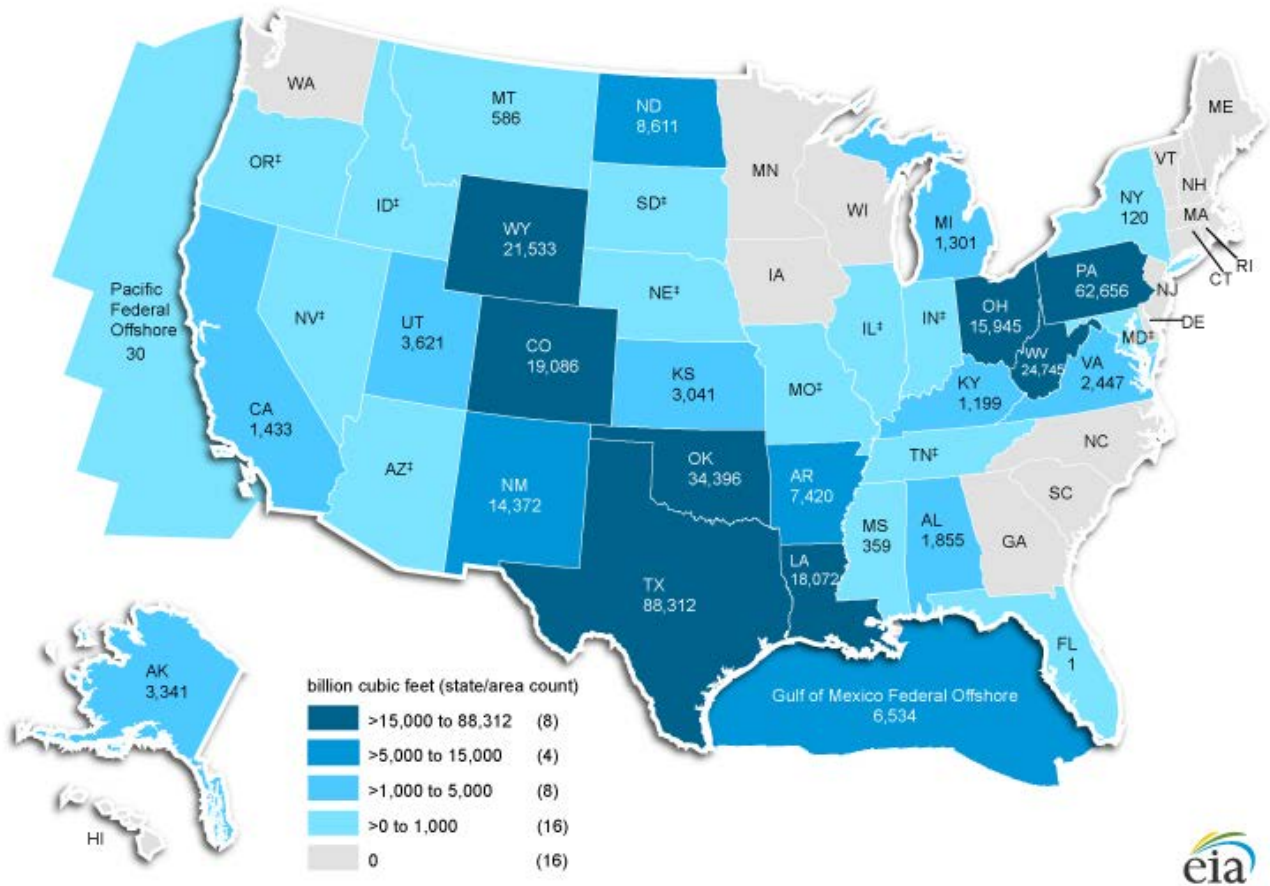
‡Data withheld to avoid disclosure of individual company data.

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



Figure 16. Natural gas proved reserves by state/area, 2016

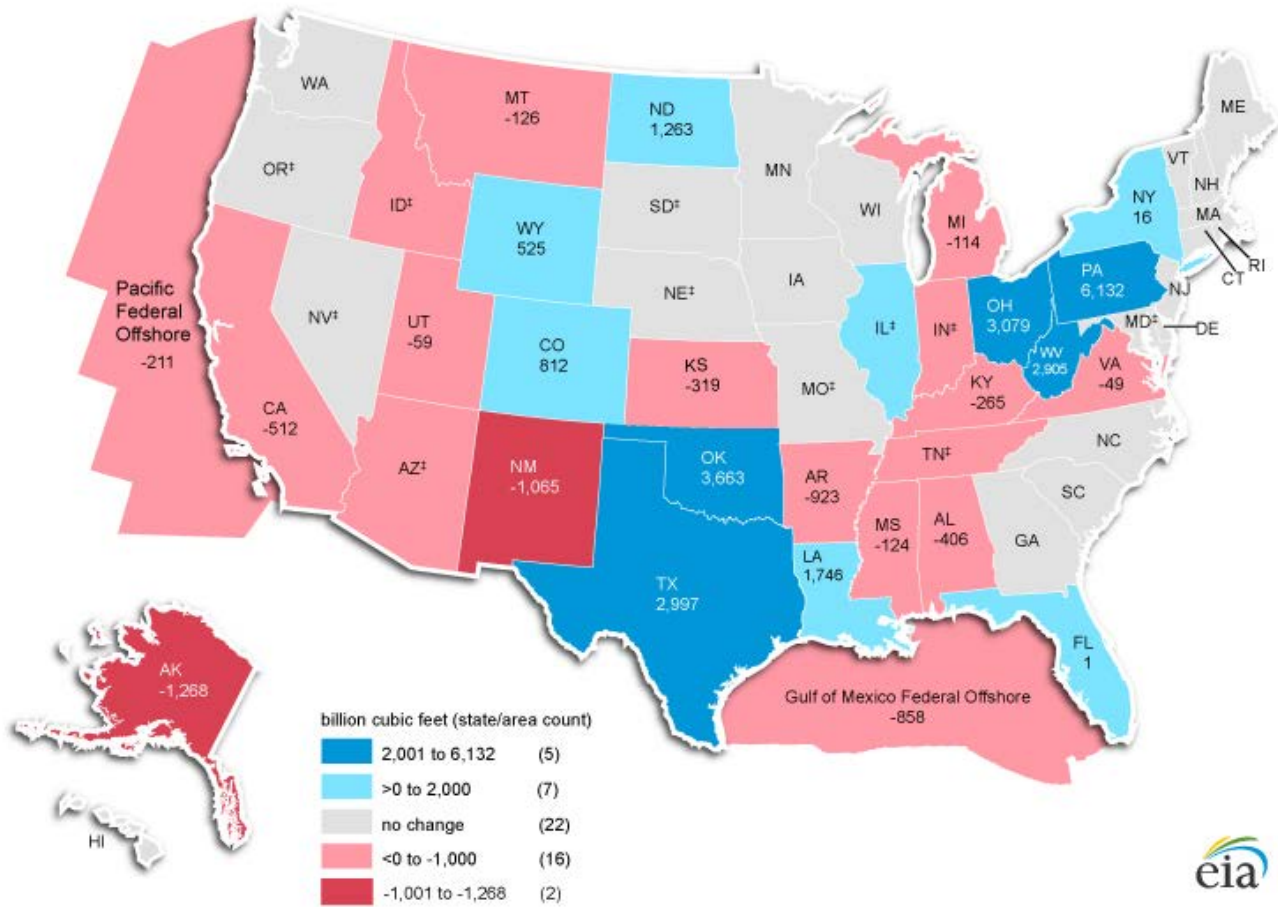
U.S. Total: 341.1 trillion cubic feet



‡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 natural gas proved reserves by state/area, 2015–16

Total U.S. increase: 5% (+16.8 trillion 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

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Table 5. U.S. proved reserves of crude oil and lease condensate, 2006–16

million barrels

Year	Adjustments (1)	Net revisions (2)	Revisions ^a and adjustments (3)	Net of sales ^b and acquisitions (4)	Extensions & discoveries (5)	Estimated Production (6)	Proved ^c reserves 12/31 (7)	Change From Prior year (8)
Crude oil and lease condensate (million barrels)								
2006	109	43	152	189	785	1,834	22,311	-708
2007	21	1,275	1,296	44	1,033	1,872	22,812	501
2008	318	-2,189	-1,871	187	1,271	1,845	20,554	-2,258
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
Crude oil (million barrels)								
2006	94	2	96	194	577	1,652	20,972	-785
2007	65	1,200	1,265	-19	790	1,691	21,317	345
2008	278	-2,039	-1,761	166	1,071	1,672	19,121	-2,196
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	1,115	-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
Lease condensate (million barrels)								
2006	15	41	56	-5	208	182	1,339	77
2007	-44	75	31	63	243	181	1,495	156
2008	40	-150	-110	21	200	173	1,433	-62
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

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

Note: One barrel = 42 U.S. gallons.

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 2016 contained in the *Petroleum Supply Annual 2016*, DOE/EIA-0340(16).

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, 2006–16

Table 6. Crude oil and lease condensate proved reserves, reserves changes, and production, 2016

million barrels

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016								Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)		
Alaska	2,104	-80	96	450	0	0	82	178	1,574	
Lower 48 states	33,126	286	5,555	5,669	1,254	1,518	3,122	3,045	33,639	
Alabama	79	-14	5	9	3	6	1	8	57	
Arkansas	53	3	2	12	0	0	0	5	41	
California	2,335	17	175	280	145	2	24	195	1,933	
Coastal Region										
Onshore	485	11	16	80	2	0	3	21	412	
Los Angeles Basin										
Onshore	152	11	14	40	31	2	0	13	95	
San Joaquin Basin										
Onshore	1,544	-70	119	98	112	0	20	140	1,263	
State Offshore	154	65	26	62	0	0	1	21	163	
Colorado	1,413	11	211	430	68	177	110	115	1,309	
Florida	16	0	2	2	0	0	0	2	14	
Illinois	32	7	17	14	3	0	0	2	37	
Indiana	8	-2	0	0	1	0	0	1	4	
Kansas	365	92	36	65	3	1	2	38	390	
Kentucky	11	0	2	2	0	0	0	1	10	
Louisiana	534	43	52	105	14	12	28	56	494	
North	135	1	7	28	1	0	1	12	103	
South Onshore	335	38	44	75	13	12	27	35	333	
State Offshore	64	4	1	2	0	0	0	9	58	
Michigan	44	13	6	2	0	0	0	5	56	
Mississippi	176	-23	21	21	0	0	1	20	134	
Montana	326	21	27	57	10	2	2	24	287	
Nebraska	17	-1	1	1	0	0	0	2	14	
New Mexico	1,581	-52	403	329	15	21	193	147	1,655	
East	1,497	-53	383	298	11	21	179	139	1,579	
West	84	1	20	31	4	0	14	8	76	
North Dakota	5,207	-110	694	494	171	93	429	378	5,270	
Ohio	178	-15	49	44	7	0	25	19	167	
Oklahoma	1,697	76	426	306	71	100	314	153	2,083	
Pennsylvania	78	-9	7	7	0	0	8	6	71	
Texas	13,057	336	2,401	2,671	539	820	1,763	1,169	13,998	
RRC District 1	2,504	-50	427	351	41	20	300	229	2,580	
RRC District 2										
Onshore	1,668	148	264	713	129	103	283	202	1,422	
RRC District 3										
Onshore	494	8	83	92	15	135	7	47	573	
RRC District 4										
Onshore	184	1	70	46	3	3	28	24	213	
RRC District 5	50	-4	6	3	5	9	0	4	49	
RRC District 6	200	8	15	38	14	9	1	16	165	
RRC District 7B	121	-5	11	20	0	4	0	9	102	
RRC District 7C	1,103	-16	215	197	49	86	245	100	1,287	
RRC District 8	4,823	190	1,083	904	256	352	884	399	5,773	
RRC District 8A	1,482	51	183	196	6	30	11	102	1,453	
RRC District 9	154	3	17	29	0	0	1	13	133	
RRC District 10	272	3	27	82	21	69	3	24	247	
State Offshore	2	-1	0	0	0	0	0	0	1	

Table 6. Crude oil and lease condensate proved reserves, reserves changes, and production, 2016 (cont.)

million barrels

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Estimated production (-)	Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions& discoveries (+)			
Utah	412	-9	84	63	12	0	16	31	397	
West Virginia	88	-29	20	12	4	4	15	9	73	
Wyoming	877	-43	107	128	84	205	83	73	944	
Federal Offshore	4,523	-22	805	612	104	75	108	585	4,188	
Pacific (California)	253	-24	8	182	0	0	0	5	50	
Gulf of Mexico (Central & Eastern) ^a	3,947	64	629	382	103	75	94	497	3,827	
Gulf of Mexico (Western)	323	-62	168	48	1	0	14	83	311	
Miscellaneous ^b	19	-4	2	3	0	0	0	1	13	
U.S. Total	35,230	206	5,651	6,119	1,254	1,518	3,204	3,223	35,213	

^a Includes federal offshore Louisiana, Alabama, Mississippi, and Florida.^b Includes Arizona, Idaho, Missouri, Nevada, New York, South Dakota, Tennessee, and Virginia.

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 2016 contained in the *Petroleum Supply Annual 2016*, DOE/EIA-0340(16). 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. Crude oil proved reserves, reserves changes, and production, 2016

million barrels

State and subdivision	Changes in reserves during 2016								
	Published proved reserves 12/31/15	Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	Proved reserves 12/31/16
Alaska	2,034	-75	96	387	0	0	82	178	1,572
Lower 48 states	30,284	337	5,128	4,820	1,125	1,460	2,712	2,775	31,201
Alabama	64	-13	5	6	0	0	0	7	43
Arkansas	51	3	2	11	0	0	0	5	40
California	2,333	19	175	280	145	2	24	195	1,933
Coastal Region									
Onshore	485	11	16	80	2	0	3	21	412
Los Angeles Basin									
Onshore	152	11	14	40	31	2	0	13	95
San Joaquin Basin									
Onshore	1,543	-69	119	98	112	0	20	140	1,263
State Offshore	153	66	26	62	0	0	1	21	163
Colorado	1,212	49	209	314	64	176	110	111	1,267
Florida	16	0	2	2	0	0	0	2	14
Illinois	31	6	17	13	3	0	0	2	36
Indiana	8	-2	0	0	1	0	0	1	4
Kansas	337	80	30	55	2	1	2	35	358
Kentucky	10	1	2	2	0	0	0	1	10
Louisiana	424	43	42	78	11	11	23	46	408
North	89	3	4	17	0	0	0	8	71
South Onshore	276	35	38	59	11	11	23	30	283
State Offshore	59	5	0	2	0	0	0	8	54
Michigan	43	10	5	2	0	0	0	5	51
Mississippi	158	-23	21	12	0	0	1	19	126
Montana	326	19	27	57	10	2	2	24	285
Nebraska	17	-1	1	1	0	0	0	2	14
New Mexico	1,486	-52	342	282	10	20	183	138	1,549
East	1,433	-52	335	266	9	20	172	133	1,500
West	53	0	7	16	1	0	11	5	49
North Dakota	5,193	-110	690	490	171	93	428	377	5,256
Ohio	62	-12	11	21	0	0	1	3	38
Oklahoma	1,262	57	371	220	25	100	264	116	1,693
Pennsylvania	13	-10	1	1	0	0	0	1	2
Texas	11,759	347	2,225	2,214	501	787	1,486	1,030	12,859
RRC District 1	2,324	-16	406	324	41	20	254	209	2,414
RRC District 2									
Onshore	1,145	146	228	469	128	103	207	144	1,088
RRC District 3									
Onshore	436	2	78	77	10	131	4	38	526
RRC District 4									
Onshore	30	1	8	4	0	0	0	4	31
RRC District 5	46	-3	6	3	4	9	0	4	47
RRC District 6	123	11	9	23	1	1	0	11	109
RRC District 7B	118	-3	11	20	0	3	0	9	100
RRC District 7C	1,091	-13	214	195	49	86	245	99	1,280
RRC District 8	4,692	175	1,054	864	255	351	762	382	5,533
RRC District 8A	1,476	37	183	177	6	30	11	102	1,452
RRC District 9	140	5	17	27	0	0	1	12	124
RRC District 10	137	6	11	31	7	53	2	16	155
State Offshore	1	-1	0	0	0	0	0	0	0

Table 7. Crude oil proved reserves, reserves changes, and production, 2016 (cont.)

million barrels

State and subdivision	Changes in reserves during 2016								
	Published proved reserves 12/31/15	Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	Proved reserves 12/31/16
Utah	389	-8	80	63	12	0	15	29	372
West Virginia	12	-5	3	2	0	0	0	2	6
Wyoming	725	-43	76	101	73	193	73	59	791
Federal Offshore	4,335	-15	789	590	97	75	100	564	4,033
Pacific (California)	253	-24	8	182	0	0	0	5	50
Gulf of Mexico (Central and Eastern) ^a	3,825	13	615	362	97	75	86	477	3,678
Gulf of Mexico (Western)	257	-4	166	46	0	0	14	82	305
Miscellaneous ^b	18	-3	2	3	0	0	0	1	13
U.S. Total	32,318	262	5,224	5,207	1,125	1,460	2,794	2,953	32,773

^a Includes federal offshore Louisiana, Alabama, Mississippi, and Florida.^b Includes Arizona, Idaho, Missouri, Nevada, New York, South Dakota, Tennessee, and Virginia.

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 2016 contained in the *Petroleum Supply Annual 2016*, DOE/EIA-0340(16). 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. Lease condensate proved reserves, reserves changes, and production, 2016

million barrels

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	
Alaska	70	-5	0	63	0	0	0	0	2
Lower 48 states	2,842	-51	427	849	129	58	410	270	2,438
Alabama	15	-1	0	3	3	6	1	1	14
Arkansas	2	0	0	1	0	0	0	0	1
California	2	-2	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	1	-1	0	0	0	0	0	0	0
State Offshore	1	-1	0	0	0	0	0	0	0
Colorado	201	-38	2	116	4	1	0	4	42
Florida	0	0	0	0	0	0	0	0	0
Kansas	28	12	6	10	1	0	0	3	32
Kentucky	1	-1	0	0	0	0	0	0	0
Louisiana	110	0	10	27	3	1	5	10	86
North	46	-2	3	11	1	0	1	4	32
South Onshore	59	3	6	16	2	1	4	5	50
State Offshore	5	-1	1	0	0	0	0	1	4
Michigan	1	3	1	0	0	0	0	0	5
Mississippi	18	0	0	9	0	0	0	1	8
Montana	0	2	0	0	0	0	0	0	2
Nebraska	0	0	0	0	0	0	0	0	0
New Mexico	95	0	61	47	5	1	10	9	106
East	64	-1	48	32	2	1	7	6	79
West	31	1	13	15	3	0	3	3	27
North Dakota	14	0	4	4	0	0	1	1	14
Oklahoma	435	19	55	86	46	0	50	37	390
Texas	1,298	-11	176	457	38	33	277	139	1,139
RRC District 1	180	-34	21	27	0	0	46	20	166
RRC District 2 Onshore	523	2	36	244	1	0	76	58	334
RRC District 3 Onshore	58	6	5	15	5	4	3	9	47
RRC District 4 Onshore	154	0	62	42	3	3	28	20	182
RRC District 5	4	-1	0	0	1	0	0	0	2
RRC District 6	77	-3	6	15	13	8	1	5	56
RRC District 7B	3	-2	0	0	0	1	0	0	2
RRC District 7C	12	-3	1	2	0	0	0	1	7
RRC District 8	131	15	29	40	1	1	122	17	240
RRC District 8A	6	14	0	19	0	0	0	0	1
RRC District 9	14	-2	0	2	0	0	0	1	9
RRC District 10	135	-3	16	51	14	16	1	8	92
State Offshore	1	0	0	0	0	0	0	0	1

Table 8. Lease condensate proved reserves, reserves changes, and production, 2016 (cont.)

million barrels

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	
Utah	23	-1	4	0	0	0	1	2	25
West Virginia	76	-24	17	10	4	4	15	7	67
Wyoming	152	0	31	27	11	12	10	14	153
Federal Offshore	188	-7	16	22	7	0	8	21	155
Pacific (California)	0	0	0	0	0	0	0	0	0
Gulf of Mexico (Central and Eastern) ^a	122	51	14	20	6	0	8	20	149
Gulf of Mexico (Western)	66	-58	2	2	1	0	0	1	6
Miscellaneous ^b	183	-2	44	30	7	0	32	21	199
U.S. Total	2,912	-56	427	912	129	58	410	270	2,440

^a Includes federal offshore Louisiana, Alabama, Mississippi, and Florida.^b Includes Arizona, Idaho, Illinois, New York, Ohio, Pennsylvania, South Dakota, Tennessee, and Virginia.

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 2016 contained in the *Petroleum Supply Annual 2016*, DOE/EIA-0340(16). 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

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Table 9. U.S. proved reserves of total natural gas, wet after lease separation, 2001–16

billion cubic feet

Year	Adjustments (1)	Net revisions (2)	Revisions ^a and adjustments (3)	Net of sales ^b and acquisitions (4)	Extensions & discoveries (5)	Estimated production (6)	Proved ^c reserves 12/31 (7)	Change from prior 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

^a Revisions and adjustments = Col. 1 + Col. 2.^b Net of sales and acquisitions = acquisitions - sales^c Proved reserves = Col. 7 from prior year + Col. 3 + Col. 4 + Col. 5 - 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 wet and dry natural gas for 2016 contained in the *Natural Gas Annual 2016*, DOE/EIA-0131(16). Natural gas is measured at 60 degrees Fahrenheit and 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, 2001–16

Table 10. Total natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

billion cubic feet

State and subdivision	Changes in reserves during 2016								
	Published proved reserves 12/31/15	Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	Proved reserves 12/31/16
Alaska	4,609	102	849	1,857	175	26	96	309	3,341
Lower 48 states	319,694	6,984	55,951	54,849	19,391	19,972	38,275	28,844	337,792
Alabama	2,261	-110	237	399	44	39	17	146	1,855
Arkansas	8,343	113	268	535	9	0	63	823	7,420
California	1,945	-283	154	212	38	0	36	169	1,433
Coastal Region									
Onshore	237	21	4	41	8	0	4	14	203
Los Angeles Basin									
Onshore	66	-7	8	12	13	0	0	7	35
San Joaquin Basin									
Onshore	1,585	-346	120	131	17	0	32	136	1,107
State Offshore	57	49	22	28	0	0	0	12	88
Colorado	18,274	3,188	2,981	3,130	3,003	1,794	649	1,667	19,086
Florida	0	-1	2	0	0	0	0	0	1
Kansas	3,360	-160	397	331	328	336	0	233	3,041
Kentucky	1,464	-32	36	81	106	0	0	82	1,199
Louisiana	16,326	1,122	3,879	6,358	606	3,448	2,029	1,768	18,072
North	13,695	956	3,497	5,653	494	3,392	1,837	1,468	15,762
South Onshore	2,394	-23	362	671	111	56	192	241	1,958
State Offshore	237	189	20	34	1	0	0	59	352
Michigan	1,415	405	155	415	157	0	0	102	1,301
Mississippi	483	-42	31	55	10	0	0	48	359
Montana	712	-120	92	44	47	44	2	53	586
New Mexico	15,437	104	4,713	5,776	151	382	941	1,278	14,372
East	6,077	71	1,846	1,253	58	99	716	630	6,868
West	9,360	33	2,867	4,523	93	283	225	648	7,504
New York	104	23	34	27	0	0	0	14	120
North Dakota	7,348	-69	1,861	402	275	166	591	609	8,611
Ohio	12,866	97	3,219	2,701	275	0	4,174	1,435	15,945
Oklahoma	30,733	586	5,021	3,233	2,877	2,143	4,258	2,235	34,396
Pennsylvania	56,524	-616	8,086	5,879	1,747	772	10,720	5,204	62,656
Texas	85,315	1,679	19,507	17,494	7,774	8,786	6,470	8,177	88,312
RRC District 1	10,907	173	1,464	4,589	91	80	781	745	7,980
RRC District 2									
Onshore	5,249	507	925	1,864	342	319	936	765	4,965
RRC District 3									
Onshore	2,211	37	232	342	111	254	69	298	2,052
RRC District 4									
Onshore	8,937	-153	7,677	1,257	503	450	981	1,113	15,019
RRC District 5	12,637	888	735	1,843	2,638	2,405	58	1,088	11,154
RRC District 6	9,846	-205	1,662	2,080	1,875	851	86	934	7,351
RRC District 7B	1,735	-62	165	157	36	455	2	157	1,945
RRC District 7C	5,534	283	1,323	610	572	644	862	549	6,915
RRC District 8	12,674	651	3,497	2,708	806	979	2,640	1,295	15,632
RRC District 8A	1,165	238	170	177	2	41	8	125	1,318
RRC District 9	8,329	-898	888	509	1	410	1	559	7,661
RRC District 10	6,051	143	756	1,341	782	1,898	46	534	6,237
State Offshore	40	77	13	17	15	0	0	15	83

Table 10. Total natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016 (cont.)

billion cubic feet

State and subdivision	Changes in reserves during 2016								Proved reserves 12/31/16
	Published proved reserves 12/31/15	Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	
Utah	3,680	145	441	354	75	0	147	363	3,621
Virginia	2,496	12	184	120	3	0	0	122	2,447
West Virginia	21,840	65	2,025	4,964	982	1,069	7,092	1,400	24,745
Wyoming	21,008	774	1,380	1,104	571	867	901	1,722	21,533
Federal Offshore	7,633	101	1,238	1,227	311	126	185	1,181	6,564
Pacific (California)	241	-9	3	202	0	0	0	3	30
Gulf of Mexico (Central and Eastern) ^a	6,206	355	976	842	296	126	164	967	5,722
Gulf of Mexico (Western)	1,186	-245	259	183	15	0	21	211	812
Miscellaneous ^b	127	3	10	8	2	0	0	13	117
U.S. Total	324,303	7,086	56,800	56,706	19,566	19,998	38,371	29,153	341,133

^a Includes federal offshore Louisiana, Alabama, Mississippi, and Florida.^b Includes Arizona, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

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 2016 contained in the *Natural Gas Annual 2016*, DOE/EIA-0131(16).

See EIA Natural Gas Data at <http://www.eia.gov/naturalgas/data.cfm>

Natural gas is measured at 60 degrees Fahrenheit and 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 11. Nonassociated natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

billion cubic feet

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	
Alaska	674	139	439	68	175	26	91	112	1,014
Lower 48 states	258,133	5,950	41,298	44,501	16,843	15,503	30,973	22,614	267,899
Alabama	2,143	-97	222	383	44	39	16	130	1,766
Arkansas	8,251	106	266	497	9	0	63	816	7,364
California	184	-27	16	29	0	0	1	24	121
Coastal Region Onshore	0	1	0	0	0	0	0	0	1
Los Angeles Basin									
Onshore	1	0	0	1	0	0	0	0	0
San Joaquin Basin									
Onshore	182	-30	16	27	0	0	1	24	118
State Offshore	1	2	0	1	0	0	0	0	2
Colorado	11,762	2,688	1,222	1,975	2,528	677	10	1,048	10,808
Florida	0	0	0	0	0	0	0	0	0
Kansas	2,914	-99	329	229	327	321	0	205	2,704
Kentucky	1,430	-32	34	80	106	0	0	80	1,166
Louisiana	15,867	944	3,639	6,050	583	3,436	1,996	1,702	17,547
North	13,620	921	3,470	5,607	493	3,392	1,837	1,461	15,679
South Onshore	2,061	-139	160	415	89	44	159	194	1,587
State Offshore	186	162	9	28	1	0	0	47	281
Michigan	1,302	452	149	414	157	0	0	94	1,238
Mississippi	432	-36	20	51	10	0	0	39	316
Montana	391	-74	49	9	38	42	0	30	331
New Mexico	10,701	60	3,103	4,772	130	330	216	784	8,724
East	1,537	-4	413	303	43	48	27	170	1,505
West	9,164	64	2,690	4,469	87	282	189	614	7,219
New York	96	29	28	27	0	0	0	13	113
North Dakota	25	100	40	20	0	0	14	18	141
Ohio	12,474	50	3,142	2,499	275	0	4,167	1,412	15,647
Oklahoma	23,442	808	3,885	2,052	2,696	1,493	2,710	1,678	25,912
Pennsylvania	56,377	-626	7,928	5,866	1,747	772	10,720	5,179	62,379
Texas	59,673	668	13,251	12,932	6,473	6,511	3,035	5,502	58,231
RRC District 1	6,400	179	610	4,134	17	35	388	302	3,159
RRC District 2 Onshore	3,175	159	393	1,107	52	49	538	448	2,707
RRC District 3 Onshore	1,520	61	119	174	104	165	62	225	1,424
RRC District 4 Onshore	8,775	-141	7,572	1,247	501	450	980	1,093	14,795
RRC District 5	12,518	955	731	1,836	2,634	2,394	57	1,083	11,102
RRC District 6	9,581	-167	1,608	2,034	1,871	849	86	872	7,180
RRC District 7B	1,502	-87	131	71	36	454	0	140	1,753
RRC District 7C	1,391	264	138	189	240	115	27	142	1,364
RRC District 8	2,684	18	544	667	304	61	868	297	2,907
RRC District 8A	29	18	4	7	0	7	3	5	49
RRC District 9	7,075	-852	734	356	1	318	0	449	6,469
RRC District 10	4,983	184	654	1,093	698	1,614	26	431	5,239
State Offshore	40	77	13	17	15	0	0	15	83

Table 11. Nonassociated natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016 (cont.)

billion cubic feet

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016								Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)		
Utah	3,086	53	235	295	11	0	113	284	2,897	
Virginia	2,496	12	184	120	3	0	0	122	2,447	
West Virginia	21,810	67	2,025	4,963	982	1,069	7,092	1,398	24,720	
Wyoming	20,141	807	1,157	911	538	758	749	1,633	20,530	
Federal Offshore	3,032	95	367	323	186	55	71	411	2,700	
Pacific (California)	0	0	0	0	0	0	0	0	0	
Gulf of Mexico (Central and Eastern) ^a	2,554	334	282	297	171	55	71	354	2,474	
Gulf of Mexico (Western)	478	-239	85	26	15	0	0	57	226	
Miscellaneous ^b	104	2	7	4	0	0	0	12	97	
U.S. Total	258,807	6,089	41,737	44,569	17,018	15,529	31,064	22,726	268,913	

^a Includes federal offshore Louisiana, Alabama, Mississippi, and Florida.^b Includes Arizona, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.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 2016 contained in the *Natural Gas Annual 2016*, DOE/EIA-0131(16).See EIA Natural Gas Data at <http://www.eia.gov/naturalgas/data.cfm>

Natural gas is measured at 60 degrees Fahrenheit and 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 12. Associated-dissolved natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

billion cubic feet

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016								Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)		
Alaska	3,935	-37	410	1,789	0	0	5	197	2,327	
Lower 48 states	61,561	1,034	14,653	10,348	2,548	4,469	7,302	6,230	69,893	
Alabama	118	-13	15	16	0	0	1	16	89	
Arkansas	92	7	2	38	0	0	0	7	56	
California	1,761	-256	138	183	38	0	35	145	1,312	
Coastal Region Onshore	237	20	4	41	8	0	4	14	202	
Los Angeles Basin Onshore	65	-7	8	11	13	0	0	7	35	
San Joaquin Basin Onshore	1,403	-316	104	104	17	0	31	112	989	
State Offshore	56	47	22	27	0	0	0	12	86	
Colorado	6,512	500	1,759	1,155	475	1,117	639	619	8,278	
Florida	0	-1	2	0	0	0	0	0	1	
Kansas	446	-61	68	102	1	15	0	28	337	
Kentucky	34	0	2	1	0	0	0	2	33	
Louisiana	459	178	240	308	23	12	33	66	525	
North	75	35	27	46	1	0	0	7	83	
South Onshore	333	116	202	256	22	12	33	47	371	
State Offshore	51	27	11	6	0	0	0	12	71	
Michigan	113	-47	6	1	0	0	0	8	63	
Mississippi	51	-6	11	4	0	0	0	9	43	
Montana	321	-46	43	35	9	2	2	23	255	
New Mexico	4,736	44	1,610	1,004	21	52	725	494	5,648	
East	4,540	75	1,433	950	15	51	689	460	5,363	
West	196	-31	177	54	6	1	36	34	285	
New York	8	-6	6	0	0	0	0	1	7	
North Dakota	7,323	-169	1,821	382	275	166	577	591	8,470	
Ohio	392	47	77	202	0	0	7	23	298	
Oklahoma	7,291	-222	1,136	1,181	181	650	1,548	557	8,484	
Pennsylvania	147	10	158	13	0	0	0	25	277	
Texas	25,642	1,011	6,256	4,562	1,301	2,275	3,435	2,675	30,081	
RRC District 1	4,507	-6	854	455	74	45	393	443	4,821	
RRC District 2 Onshore	2,074	348	532	757	290	270	398	317	2,258	
RRC District 3 Onshore	691	-24	113	168	7	89	7	73	628	
RRC District 4 Onshore	162	-12	105	10	2	0	1	20	224	
RRC District 5	119	-67	4	7	4	11	1	5	52	
RRC District 6	265	-38	54	46	4	2	0	62	171	
RRC District 7B	233	25	34	86	0	1	2	17	192	
RRC District 7C	4,143	19	1,185	421	332	529	835	407	5,551	
RRC District 8	9,990	633	2,953	2,041	502	918	1,772	998	12,725	
RRC District 8A	1,136	220	166	170	2	34	5	120	1,269	
RRC District 9	1,254	-46	154	153	0	92	1	110	1,192	
RRC District 10	1,068	-41	102	248	84	284	20	103	998	
State Offshore	0	0	0	0	0	0	0	0	0	

Table 12. Associated-dissolved natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016 (cont.)

billion cubic feet

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Estimated production (+)	Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)			
Utah	594	92	206	59	64	0	34	79	724	
West Virginia	30	-2	0	1	0	0	0	2	25	
Wyoming	867	-33	223	193	33	109	152	89	1,003	
Federal Offshore	4,601	6	871	904	125	71	114	770	3,864	
Pacific (California)	241	-9	3	202	0	0	0	3	30	
Gulf of Mexico (Central and Eastern) ^a	3,652	21	694	545	125	71	93	613	3,248	
Gulf of Mexico (Western)	708	-6	174	157	0	0	21	154	586	
Miscellaneous ^b	23	1	3	4	2	0	0	1	20	
U.S. Total	65,496	997	15,063	12,137	2,548	4,469	7,307	6,427	72,220	

^a Includes federal offshore Louisiana, Alabama, Mississippi, and Florida.^b Includes Arizona, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, Tennessee, and Virginia.

Notes: The production estimates in this table are based on data reported on Form EIA-23L, 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 2016 contained in the *Natural Gas Annual 2016*, DOE/EIA-0131(16).

See EIA Natural Gas Data at <http://www.eia.gov/naturalgas/data.cfm>

Natural gas is measured at 60 degrees Fahrenheit and 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 13. Shale natural gas proved reserves and production, 2013–16

billion cubic feet

State and subdivision	Reserves				Production			
	2013	2014	2015	2016	2013	2014	2015	2016
Alaska	0	0	0	0	0	0	0	0
Lower 48 states	159,115	199,684	175,601	209,809	11,415	13,447	15,213	17,032
Arkansas	12,231	11,695	7,164	6,262	1,026	1,038	923	733
California	756	44	31	41	89	3	2	6
Coastal Region Onshore	0	9	8	0	0	1	1	1
San Joaquin Basin Onshore	756	15	12	41	89	1	1	5
State Offshore	0	20	11	0	0	1	0	0
Colorado	136	3,775	3,115	2,032	18	236	325	164
Florida	0	0	0	0	0	0	0	0
Kansas	3	4	5	0	3	1	1	0
Kentucky	46	50	13	12	4	2	1	0
Louisiana	11,483	12,792	9,154	9,637	1,510	1,191	1,153	1,111
North	11,473	12,611	8,972	9,570	1,509	1,169	1,129	1,085
South	10	181	182	67	1	22	24	26
State Offshore	0	0	0	0	0	0	0	0
Michigan	1,418	1,432	1,006	1,128	101	96	65	84
Mississippi	37	19	11	7	5	2	3	2
Montana	229	482	360	213	19	42	39	19
New Mexico	258	646	1,044	5,581	16	28	46	497
East	178	604	938	5,510	13	25	44	491
West	80	42	106	71	3	3	2	6
New York	0	0	0	0	0	0	0	0
North Dakota	5,059	6,442	6,904	8,259	268	426	545	582
Ohio	2,319	6,384	12,430	15,472	101	441	959	1,386
Oklahoma	12,675	16,653	18,672	20,327	698	869	993	1,082
Pennsylvania	44,325	56,210	53,484	60,979	3,076	4,009	4,597	5,049
Texas	49,055	54,158	42,626	56,577	3,876	4,156	4,353	5,029
RRC District 1	7,357	11,729	10,503	7,493	630	822	892	690
RRC District 2 Onshore	5,595	6,648	4,445	4,126	474	649	793	642
RRC District 3 Onshore	24	106	125	125	2	10	17	23
RRC District 4 Onshore	4,377	4,991	4,558	11,001	316	381	500	706
RRC District 5	13,592	13,043	8,228	8,321	1,128	1,022	903	827
RRC District 6	4,633	3,979	3,474	3,249	409	270	238	339
RRC District 7B	2,802	2,204	1,329	1,562	218	165	143	116
RRC District 7C	409	1,183	1,350	5,661	13	111	140	451
RRC District 8	649	1,125	736	7,924	62	78	109	730
RRC District 8A	0	10	4	8	0	1	3	0
RRC District 9	9,580	9,074	7,824	7,107	619	639	608	505
RRC District 10	37	66	50	0	5	8	7	0
State Offshore	0	0	0	0	0	0	0	0
Utah	0	0	0	0	0	0	0	0
Virginia	126	84	76	45	3	3	3	4
West Virginia	18,078	28,311	19,226	23,146	498	869	1,163	1,270
Wyoming	856	380	204	17	102	29	36	5
Federal Offshore	0	0	0	0	0	0	0	0
Miscellaneous ^a	25	123	76	74	2	6	6	9
U.S. Total	159,115	199,684	175,601	209,809	11,415	13,447	15,213	17,032

^aIncludes Indiana, Missouri, South Dakota, and Tennessee.

Notes: The above table is based on shale natural gas proved reserves and production volumes 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 mis-identification of shale vs. non-shale reservoirs) the actual proved reserves and production of natural gas from shales may be higher or lower. The production estimates are 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 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, 2013–16

Table 14. Shale natural gas proved reserves, reserves changes, and production, wet after lease separation, 2016

billion cubic feet

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Estimated production (-)	Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)			
Alaska	0	0	0	0	0	0	0	0	0	
Lower 48 states	175,601	12,196	36,298	29,608	9,620	9,691	32,283	17,032	209,809	
Arkansas	7,164	0	168	399	0	0	62	733	6,262	
California	31	22	4	4	7	0	1	6	41	
Coastal Region Onshore	8	0	0	0	7	0	0	1	0	
San Joaquin Basin Onshore	12	33	4	4	0	0	1	5	41	
State Offshore	11	-11	0	0	0	0	0	0	0	
Colorado	3,115	-814	334	565	512	459	179	164	2,032	
Kansas	5	-5	0	0	0	0	0	0	0	
Kentucky	13	-1	0	0	0	0	0	0	12	
Louisiana	9,154	412	2,622	4,143	351	2,105	949	1,111	9,637	
North Onshore	8,972	440	2,617	4,077	351	2,105	949	1,085	9,570	
South Onshore	182	-28	5	66	0	0	0	26	67	
Michigan	1,006	622	143	402	157	0	0	84	1,128	
Mississippi	11	-6	4	0	0	0	0	2	7	
Montana	360	-139	39	26	5	1	2	19	213	
New Mexico	1,044	3,344	1,668	747	5	67	707	497	5,581	
East	938	3,400	1,652	731	5	67	680	491	5,510	
West	106	-56	16	16	0	0	27	6	71	
North Dakota	6,904	-54	1,795	268	262	160	566	582	8,259	
Ohio	12,430	96	3,057	2,558	275	0	4,108	1,386	15,472	
Oklahoma	18,672	-389	2,529	1,238	1,722	606	2,951	1,082	20,327	
Pennsylvania	53,484	-731	7,731	4,130	1,647	772	10,549	5,049	60,979	
Texas	42,626	8,392	14,404	9,610	3,937	4,508	5,223	5,029	56,577	
RRC District 1	10,503	96	1,316	4,465	73	38	768	690	7,493	
RRC District 2 Onshore	4,445	477	689	1,679	290	269	857	642	4,126	
RRC District 3 Onshore	125	22	42	51	2	6	6	23	125	
RRC District 4 Onshore	4,558	171	6,723	541	21	20	797	706	11,001	
RRC District 5	8,228	747	405	62	2,566	2,396	0	827	8,321	
RRC District 6	3,474	456	1,083	1,146	315	0	36	339	3,249	
RRC District 7B	1,329	-123	112	59	36	455	0	116	1,562	
RRC District 7C	1,350	3,314	1,158	314	524	411	717	451	5,661	
RRC District 8	736	4,353	2,077	947	110	503	2,042	730	7,924	
RRC District 8A	4	8	0	4	0	0	0	0	8	
RRC District 9	7,824	-1,079	799	342	0	410	0	505	7,107	
RRC District 10	50	-50	0	0	0	0	0	0	0	
Virginia	76	67	11	105	0	0	0	4	45	
West Virginia	19,226	613	1,786	4,468	740	1,013	6,986	1,270	23,146	
Wyoming	204	757	0	939	0	0	0	5	17	
Federal Offshore	0	0	0	0	0	0	0	0	0	
Miscellaneous ^a	76	10	3	6	0	0	0	9	74	
U.S. Total	175,601	12,196	36,298	29,608	9,620	9,691	32,283	17,032	209,809	

^a Includes Indiana, Missouri, New York, South Dakota, Tennessee, and Utah.

Notes: The above table is based on shale natural gas proved reserves and production volumes 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 mis-identification of shale vs. non-shale reservoirs) the actual proved reserves and production of natural gas from shales may be higher or lower. The production estimates are 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 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. Coalbed methane proved reserves and production, 2013–16

billion cubic feet

State and subdivision	Reserves				Production			
	2013	2014	2015	2016	2013	2014	2015	2016
Alaska	0	0	0	0	0	0	0	0
Lower 48 states	12,392	15,696	12,517	10,585	1,466	1,404	1,269	1,020
Alabama	413	978	975	985	62	78	72	45
Arkansas	13	15	5	9	2	2	1	1
California	0	0	0	0	0	0	0	0
Colorado	4,391	5,103	4,394	3,265	444	412	392	352
Florida	0	0	0	0	0	0	0	0
Kansas	189	211	170	55	30	27	25	11
Kentucky	0	7	6	6	0	0	0	0
Louisiana	0	0	0	1	0	0	0	0
North	0	0	0	1	0	0	0	0
South Onshore	0	0	0	0	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0
Michigan	0	0	0	0	0	0	0	0
Mississippi	0	0	0	0	0	0	0	0
Montana	16	11	3	7	1	0	0	0
New Mexico	2,856	4,120	3,189	2,210	356	373	344	253
East	5	273	194	200	26	24	23	22
West	2,851	3,847	2,995	2,010	330	349	321	231
New York	0	0	0	0	0	0	0	0
North Dakota	0	0	0	0	0	0	0	0
Oklahoma	440	602	328	320	65	61	48	43
Pennsylvania	161	158	135	206	13	11	10	10
Texas	57	61	63	84	8	9	10	11
RRC District 1	0	0	0	1	0	0	0	1
RRC District 2 Onshore	2	4	4	2	0	1	1	0
RRC District 3 Onshore	47	49	53	72	7	7	8	9
RRC District 4 Onshore	1	1	1	1	0	0	0	0
RRC District 5	0	0	0	0	0	0	0	0
RRC District 6	0	0	0	0	0	0	0	0
RRC District 7B	0	0	0	1	0	0	0	0
RRC District 7C	0	0	0	0	0	0	0	0
RRC District 8	0	0	0	0	0	0	0	0
RRC District 8A	0	0	0	0	0	0	0	0
RRC District 9	0	0	0	0	0	0	0	0
RRC District 10	7	7	5	7	1	1	1	1
State Offshore	0	0	0	0	0	0	0	0
Utah	523	538	352	332	50	47	42	39
Virginia	1,387	2,233	2,060	2,117	93	108	106	102
West Virginia	113	76	68	99	8	11	11	9
Wyoming	1,810	1,572	760	882	331	264	207	143
Federal Offshore	0	0	0	0	0	0	0	0
Miscellaneous ^a	23	11	9	7	3	1	1	1
U.S. Total	12,392	15,696	12,517	10,585	1,466	1,404	1,269	1,020

^a Includes Illinois, Indiana, and Ohio.

Notes: Natural gas is measured at 60 degrees Fahrenheit and 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, 2013–16

Table 16. Coalbed methane proved reserves, reserves changes, and production, 2016

billion cubic feet

State and subdivision	Published proved reserves 12/31/15	Changes in reserves during 2016							Proved reserves 12/31/16
		Adjustments (+,-)	Revision increases (+)	Revision decreases (-)	Sales (-)	Acquisitions (+)	Extensions & discoveries (+)	Estimated production (-)	
Alaska	0	0	0	0	0	0	0	0	0
Lower 48 states	12,517	-331	807	1,750	36	354	44	1,020	10,585
Alabama	975	-96	169	23	4	9	0	45	985
Arkansas	5	-1	6	0	0	0	0	1	9
California	0	0	0	0	0	0	0	0	0
Colorado	4,394	-306	60	697	6	166	6	352	3,265
Florida	0	0	0	0	0	0	0	0	0
Kansas	170	-76	3	22	9	0	0	11	55
Kentucky	6	-1	1	0	0	0	0	0	6
Louisiana	0	2	0	0	1	0	0	0	1
North Onshore	0	1	0	0	0	0	0	0	1
South Onshore	0	1	0	0	1	0	0	0	0
State Offshore	0	0	0	0	0	0	0	0	0
Michigan	0	0	0	0	0	0	0	0	0
Mississippi	0	0	0	0	0	0	0	0	0
Montana	3	5	0	1	0	0	0	0	7
New Mexico	3,189	-259	254	886	0	165	0	253	2,210
East	194	0	28	0	0	0	0	22	200
West	2,995	-259	226	886	0	165	0	231	2,010
New York	0	0	0	0	0	0	0	0	0
North Dakota	0	0	0	0	0	0	0	0	0
Oklahoma	328	49	72	74	12	0	0	43	320
Pennsylvania	135	77	5	1	0	0	0	10	206
Texas	63	32	0	0	0	0	0	11	84
RRC District 1	0	2	0	0	0	0	0	1	1
RRC District 2 Onshore	4	-2	0	0	0	0	0	0	2
RRC District 3 Onshore	53	28	0	0	0	0	0	9	72
RRC District 4 Onshore	1	0	0	0	0	0	0	0	1
RRC District 5	0	0	0	0	0	0	0	0	0
RRC District 6	0	0	0	0	0	0	0	0	0
RRC District 7B	0	1	0	0	0	0	0	0	1
RRC District 7C	0	0	0	0	0	0	0	0	0
RRC District 8	0	0	0	0	0	0	0	0	0
RRC District 8A	0	0	0	0	0	0	0	0	0
RRC District 9	0	0	0	0	0	0	0	0	0
RRC District 10	5	3	0	0	0	0	0	1	7
State Offshore	0	0	0	0	0	0	0	0	0
Utah	352	2	25	4	4	0	0	39	332
Virginia	2,060	-4	167	4	0	0	0	102	2,117
West Virginia	68	25	18	3	0	0	0	9	99
Wyoming	760	221	27	35	0	14	38	143	882
Federal Offshore	0	0	0	0	0	0	0	0	0
Miscellaneous ^a	9	-1	0	0	0	0	0	1	7
U.S. Total	12,517	-331	807	1,750	36	354	44	1,020	10,585

^a Includes Illinois, Indiana, and Ohio.

Notes: Natural gas is measured at 60 degrees Fahrenheit and 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 17. Estimated natural gas plant liquids and dry natural gas proved reserves, 2016

million barrels and billion cubic feet

State and subdivision	Total natural gas proved reserves		Estimated proved reserves	
	2016 billion cubic feet		Natural gas plant liquids million barrels	Dry natural gas billion cubic feet
Alaska	3,341		201	3,316
Lower 48 states	337,792		14,552	318,918
Alabama	1,855		48	1,791
Arkansas	7,420		3	7,416
California	1,433		68	1,340
Coastal Region Onshore	203		7	193
Los Angeles Basin Onshore	35		1	34
San Joaquin Basin Onshore	1,107		60	1,025
State Offshore	88		0	88
Colorado	19,086		943	17,761
Florida	1		0	1
Kansas	3,041		165	2,821
Kentucky	1,199		55	1,123
Louisiana	18,072		265	17,816
North	15,762		102	15,620
South Onshore	1,958		152	1,862
State Offshore	352		11	334
Michigan	1,301		14	1,286
Mississippi	359		2	357
Montana	586		13	569
New Mexico	14,372		649	13,527
East	6,868		394	6,394
West	7,504		255	7,133
New York	120		0	120
North Dakota	8,611		1,108	7,030
Ohio	15,945		556	15,143
Oklahoma	34,396		1,895	31,712
Pennsylvania	62,656		566	61,841
Texas	88,312		6,075	81,224
RRC District 1	7,980		192	7,701
RRC District 2 Onshore	4,965		1,050	4,177
RRC District 3 Onshore	2,052		161	1,812
RRC District 4 Onshore	15,019		352	14,503
RRC District 5	11,154		131	10,965
RRC District 6	7,351		233	7,057
RRC District 7B	1,945		225	1,672
RRC District 7C	6,915		523	6,159
RRC District 8	15,632		1,624	13,353
RRC District 8A	1,318		195	1,252
RRC District 9	7,661		559	6,843
RRC District 10	6,237		830	5,647
State Offshore	83		0	83
Utah	3,621		94	3,494
Virginia	2,447		0	2,447
West Virginia	24,745		1,225	23,025
Wyoming	21,533		511	20,818
Federal Offshore	6,564		293	6,144
Pacific (California)	30		0	30
Gulf of Mexico (Central and Eastern) ^a	5,722		268	5,338
Gulf of Mexico (Western)	812		25	776
Miscellaneous ^b	117		4	112
U.S. Total	341,133		14,753	322,234

^a Includes federal offshore Louisiana, Mississippi, Alabama, and Florida.^b Includes Arizona, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee

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 18. Reported proved nonproducing reserves of crude oil, lease condensate, nonassociated gas, associated-dissolved gas, and total gas (wet after lease separation), 2016

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	216	0	371	53	424
Lower 48 states	13,101	1,033	80,481	29,571	110,052
Alabama	2	1	177	1	178
Arkansas	2	0	365	5	369
California	476	0	27	374	401
Coastal Region Onshore	227	0	0	104	104
Los Angeles Basin Onshore	11	0	0	3	3
San Joaquin Basin Onshore	219	0	27	260	287
State Offshore	20	0	0	7	7
Colorado	870	15	3,484	5,268	8,752
Florida	5	0	0	0	0
Kansas	30	9	130	117	247
Kentucky	1	0	19	0	19
Louisiana	136	38	9,183	199	9,382
North	10	13	8,339	41	8,380
South Onshore	113	24	837	146	983
State Offshore	13	0	7	12	20
Michigan	7	2	16	10	26
Mississippi	36	0	69	1	70
Montana	63	0	10	44	54
New Mexico	807	51	865	2,638	3,503
East	797	45	374	2,612	2,986
West	10	6	491	27	517
New York	0	0	6	0	6
North Dakota	2,457	5	27	3,924	3,951
Ohio	17	64	7,284	55	7,339
Oklahoma	725	178	10,823	4,177	15,000
Pennsylvania	0	30	18,431	0	18,431
Texas	5,694	503	17,030	11,049	28,080
RRC District 1	1,259	53	1,371	2,185	3,557
RRC District 2 Onshore	564	155	894	1,057	1,951
RRC District 3 Onshore	238	12	386	197	583
RRC District 4 Onshore	7	104	8,003	53	8,056
RRC District 5	4	1	946	6	952
RRC District 6	15	12	2,407	18	2,425
RRC District 7B	12	0	236	28	264
RRC District 7C	483	0	108	1,577	1,685
RRC District 8	2,698	125	746	5,383	6,129
RRC District 8A	340	0	5	219	224
RRC District 9	18	2	452	35	488
RRC District 10	57	38	1,472	291	1,762
State Offshore	0	0	5	0	5
Utah	139	7	698	253	950
Virginia	0	0	248	0	248
West Virginia	0	31	7,744	0	7,744
Wyoming	184	41	2,686	179	2,864
Federal Offshore	1,442	60	1,141	1,279	2,420
Pacific (California)	2	0	0	7	7
Gulf of Mexico (Central and Eastern) ^a	1,372	57	1,075	1,080	2,155
Gulf of Mexico (Western)	68	2	66	192	258
Miscellaneous ^b	7	0	18	0	18
U.S. Total	13,317	1,033	80,851	29,625	110,476

^a Includes federal offshore Louisiana, Mississippi, Alabama, and Florida.

^b Includes Arizona, Idaho, Illinois, Indiana, Maryland, Missouri, Nebraska, Nevada, Oregon, South Dakota, and Tennessee.

Notes: One barrel = 42 U.S. gallons. Natural gas is measured at 60 degrees Fahrenheit and 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