



*Independent Statistics & Analysis*  
U.S. Energy Information  
Administration

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# Weekly Natural Gas Storage Report

Performance Evaluation for 2017 through 2019

December 2020



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## Introduction

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The U.S. Energy Information Administration (EIA) submits this report under the Office of Management and Budget's (OMB) Statistical Policy Directive Number 3, which requires each agency that issues a Principal Federal Economic Indicator (PFEI) to report every three years on its performance. OMB Directive Number 3 requires that this performance evaluation address

- The accuracy and reliability of the series
- The effects of revisions
- Performance relative to established benchmarks<sup>1</sup>
- Standards for documentation
- Timeliness of releases
- Avoidance of premature disclosure

EIA is the statistical and analytical agency within the U.S. Department of Energy (DOE). EIA collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of the energy industry and its interaction with the economy and the environment. EIA is the United States' premier source of energy information. EIA data, analyses, and forecasts are independent of approval by any other officer or employee of the U.S. government.

The *Weekly Natural Gas Storage Report* (WNGSR) is DOE's only report designated as a PFEI. The WNGSR collects inventories of natural gas in underground storage, and it was designated as a PFEI in January 2008 because it is a key source of weekly natural gas supply data for the natural gas market. After EIA releases the WNGSR, the natural gas market reacts to the net change in inventory levels from the previous week. This information on the net changes between weekly inventory data reports help market participants make trading decisions that often move natural gas prices 3¢ per million British thermal units (MMBtu) to 5¢/MMBtu each week when the WNGSR is released.

Currently, the WNGSR collects data on the amount of working natural gas<sup>2</sup> in underground storage facilities as of every Friday at 9:00 a.m. Central Time. EIA compiles and processes these data and releases the data on its website the following [Thursday at 10:30 a.m. Eastern Time \(ET\)](#). EIA classifies the summary totals of working gas inventories and the derived net change from the previous week's inventory for the Lower 48 states by five regions: the East, Midwest, Mountain, Pacific, and the South Central regions ([Figure 1](#)). EIA further subdivides totals for the South Central region into salt and nonsalt subregions according to facility type.

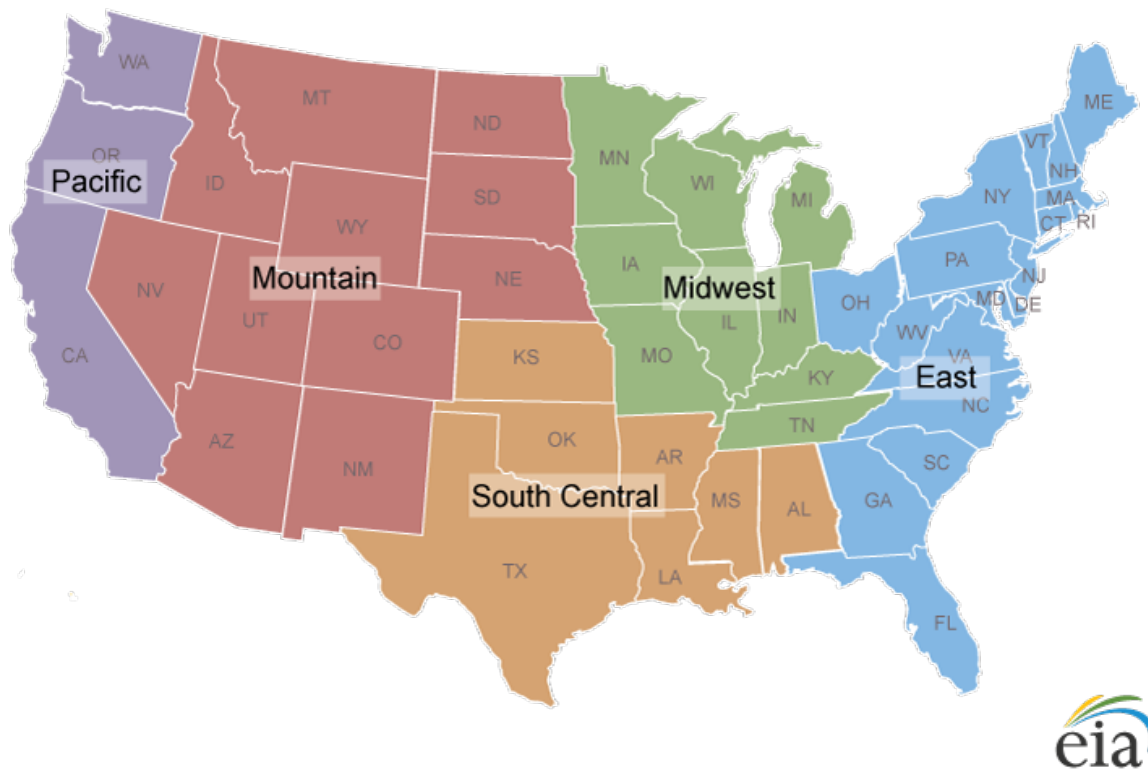
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<sup>1</sup> Federal Register, Vol. 50, No. 186, Office of Management and Budget (September 25, 1985), pp. 38932-34, [https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/inforeg/statpolicy/dir\\_3\\_fr\\_09251985.pdf](https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/inforeg/statpolicy/dir_3_fr_09251985.pdf)

<sup>2</sup> *Working natural gas* is natural gas in storage that is currently available to be withdrawn.

Figure 1. Regional breakdown of the Lower 48 states for the *Weekly Natural Gas Storage Report*

## Natural gas storage regions



Source: U.S. Energy Information Administration

## Changes to the WNGSR Since 2017

### Changes introduced in 2017

On January 26, 2017, EIA began including estimated measures of sampling variability both for weekly estimates of working natural gas stocks and for the net change in working natural gas stocks in the WNGSR, starting with data for the week ending January 20, 2017. EIA also published a new table of historical estimated measures of sampling variability starting with data for the week ending April 10, 2015, which coincided with the first collected data for the sample based on the new five-region format. By publishing estimated measures of sampling variability, EIA increased transparency of the statistical properties of the working natural gas estimates reported in the WNGSR.

### Changes introduced in 2018

EIA introduced a new sample in August 2018. The methodology for selecting the new sample was similar to the process EIA used to select operators for the previous sample. However, three new features were included when EIA implemented the new sample:

- The new sample included all eight operators in the Pacific region each week, increasing coverage in that region to 100%.
- Data collection from the South Central region operators explicitly separates salt and nonsalt volumes in the survey submissions.
- EIA performs independent rounding for all published weekly estimates of working gas stocks. Previously, EIA calculated weekly estimates of working gas stocks for the Lower 48 states by summing the corresponding weekly estimates by region.

## Census of the Pacific region

Because of the small number of operators in the Pacific region and because they all operate differently, EIA opted to survey all of them (that is, complete a census) rather than selecting a sample as is done in other regions. Only eight operators exist in the entire region, which ranges from Southern California to the Pacific Northwest, including merchant operators and utilities.

The established sampling methodology uses a size cutoff to determine the largest operators selected for the sample with certainty, and the remaining companies are sampled with probability proportional to size. The small number of operators in this region limits the number of possible selections that can occur. Under the established sampling methodology, four operators would have been included in the sample with certainty because they exceeded the size cutoff for the region. At least two of the remaining four operators would have been included as non-certainty companies that were selected with probability proportional to size sampling. To eliminate sampling error for the nonhomogeneous Pacific region, EIA opted to collect data from all eight operators in this region.

Although a census survey may be subject to other sources of error (such as coverage error, measurement error, or processing error) selecting a full census in the Pacific region means that sampling error will not be a factor in working natural gas estimates in the region. As a result, estimated measures of sampling variability for estimates in the Pacific region equal zero.

## Separate data collection for salt and nonsalt facilities in the South Central region

The estimates from the new sample reflect a change in data collection practices for operators reporting working natural gas in the South Central region on the Form EIA-912, *Weekly Underground Natural Gas Storage Report*. Previously, for most respondents operating both salt and nonsalt fields in the South Central region, EIA internally classified the entire inventory reported based on the majority field type. The most recent version of the Form EIA-912, approved by OMB in late 2017, requires storage operators in the South Central region to report the volumes of working natural gas held in salt facilities and nonsalt facilities as separate volumes.<sup>3</sup> By February 2018, all survey respondents completing the Form EIA-912 had transitioned to the newest version of the form. By implementing the new sample, EIA can more accurately allocate storage between salt and nonsalt fields. As a result, the weekly estimates for the salt and nonsalt regions now reflect the new sample selection and the effect of the new data

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<sup>3</sup> Federal Register, Vol. 82, No. 202, Office of Management and Budget (October 20, 2017), pg. 48, 809, <https://www.federalregister.gov/documents/2017/10/20/2017-22801/agency-information-collection-activities-extension>

collection practices.

EIA conducted internal testing and validation of the new sample design between February and August 2018 before publishing estimates, and it announced and documented the methodological changes in August 2018.<sup>4</sup> In addition, EIA published a report comparing the new and outgoing samples during the overlapping collection period between February and August 2018 so that data users could familiarize themselves with the new sampling changes.<sup>5</sup> EIA conducted public testing of the release procedures to ensure a smooth transition by allowing data users to practice downloading the data from the modified report tables.

EIA phased in the new sample by revising previously published data over eight weeks to transition from the outgoing sample to the new sample. EIA calculated working natural gas values as a weighted average of the estimates from the outgoing sample and the new sample during the transition period. It calculated the published stock values as a weighted average of the estimates based on both samples, and for each ensuing week, EIA used a decreasing weight on the estimates from the old sample and an increasing weight on the estimates from the new sample.

EIA released transition period estimates based on this weighted average combination as revisions to the WNGSR historical database on Monday, September 10, 2018. EIA also revised and published estimated measures of sampling variability during the transition period at that time. The first WNGSR report based entirely on the new sample covered data for the week ending September 7, 2018, which was published on September 13, 2018.

## Accuracy and Reliability of the Weekly Working Gas Inventory Series

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EIA collects weekly survey data from a sample of operators of underground storage facilities selected with certainty from the largest operators in each region and with probability proportional to size for the smaller operators.<sup>6</sup> The WNGSR survey form, Form EIA-912, *Weekly Underground Natural Gas Storage Report*, collects data on the volumes of working gas in storage. The survey frame for the Form EIA-912 is the list of respondents that report on Form EIA-191, *Monthly Underground Natural Gas Storage Report*, which is a census of operators of underground natural gas storage fields in the United States. EIA aggregates Form EIA-191 data by state and storage region and reports the data with a two-month lag in the *Natural Gas Monthly*.

### Sampling error

EIA uses a bootstrap method<sup>7</sup> to compute standard errors for the weekly underground storage inventory

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<sup>4</sup> U.S. Energy Information Administration, *Notice of Sample Reselection for the Weekly Natural Gas Storage Report*, August 16, 2018, <http://ir.eia.gov/ngs/notice.html>.

<sup>5</sup> U.S. Energy Information Administration, *Discussion of Sample Reselection for the Weekly Natural Gas Storage Report*, August 16, 2018, <http://ir.eia.gov/ngs/samplechanges2018.html>.

<sup>6</sup> U.S. Energy Information Administration, *Methodology for EIA Weekly Underground Natural Gas Storage Estimates*, September 10, 2018, <http://ir.eia.gov/ngs/methodology.html>

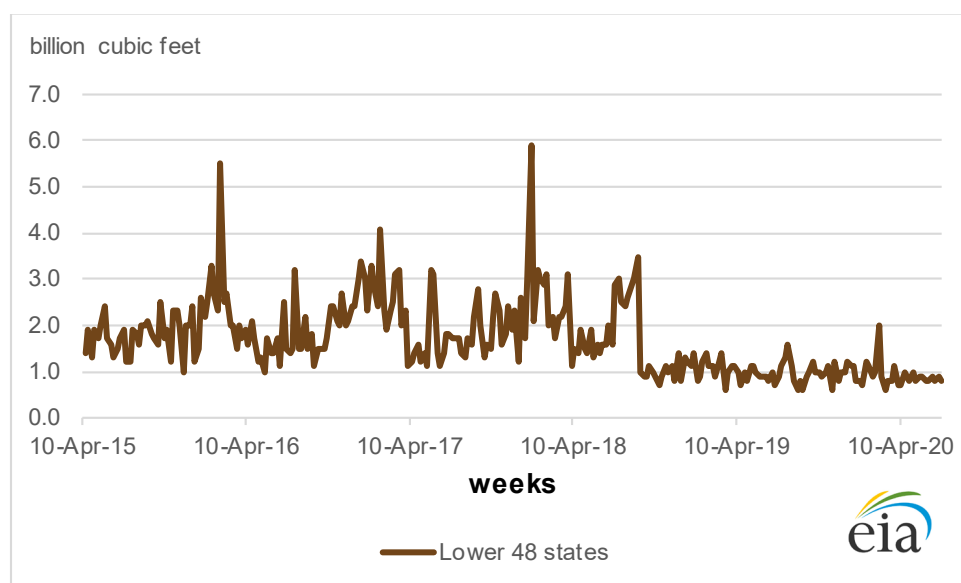
<sup>7</sup> Efron, B., and Tibshirani, R. J., *An Introduction to the Bootstrap*, (New York: Chapman & Hall, 1993).



data reported on the WNGSR. EIA chose this method because of its flexibility in managing the Form EIA-912's small sample sizes and nonsmooth estimator. EIA calculates coefficients of variation for the inventory estimates reported for the East, Midwest, Mountain, Pacific, and the South Central regions, as well as for the Lower 48 states (Table A1). The estimated coefficients of variation for the Lower 48 states averaged approximately 0.7% of average working gas volumes of 2,552 billion cubic feet (Bcf) during the period. For each region, EIA designed the sample for WNGSR using a threshold for the target coefficient of variation of 5% for the inventory estimate of total working gas in storage. Regionally, estimated coefficients of variation from Form EIA-912 are generally less than 5% in all regions, although the Pacific region had 10 weeks in 2017 when estimated coefficients of variation exceeded 5%. However, coefficients of variation have equaled zero in the Pacific region since EIA completed phasing in the full census for the region starting with the data week ending August 31, 2018.

In addition to computing estimated coefficients of variation for the weekly underground storage inventory data, EIA also computes estimated standard errors for weekly net changes in working natural gas storage levels (Table A2). For the Lower 48 states, the estimated standard errors for weekly net changes have averaged about 1.6 Bcf. Regionally, the estimated standard errors for weekly net changes have ranged between 0.0 Bcf and 5.1 Bcf, where the maximum of this range was associated with a record withdrawal in the South Central region for the data week ending January 5, 2018.

Figure 2. Standard error of weekly net changes in underground working gas inventory data in Lower 48 states, 2015–2020



Source: U.S. Energy Information Administration, Form EIA-912, *Weekly Underground Natural Gas Storage Report*, 2015–20

The standard error of the net change for the Lower 48 states decreased after EIA introduced the new sample design in September 2018 (Figure 2). Since September 7, 2018, the average standard error of the net change has declined by 53% to 1.0 Bcf, compared with the period from April 10, 2015, to August 31, 2018, when it was 2.0 Bcf. All regions reported declines, but the South Central and Pacific regions reported the largest declines. The transition to a weekly census eliminated sampling error in the Pacific

region. The new sample design with updated size information from the Form EIA-191 census, combined with the change in the Form EIA-912 data collection that required respondents in the South Central region to report their salt and nonsalt inventories separately, resulted in the average standard error of the net changes in underground working gas inventory decreasing by 54% in the region.

## Differences between monthly and interpolated weekly values

Comparing the WNGSR series (Form EIA-912) with monthly working gas inventories reported in the *Natural Gas Monthly* (Form EIA-191) provides an additional benchmark to evaluate the performance of the WNGSR. Form EIA-191 is a census survey (unlike Form EIA-912 which is a sample survey), and EIA generally considers the monthly data more accurate than the weekly data because the monthly data have no sampling errors. In addition, because respondents have more time to report their data and EIA has more time to review and validate it, errors in measurement are less likely to occur. To perform the weekly-to-monthly comparison, EIA uses a simple average daily interpolation to transform the weekly series into a monthly series that coincides with the last calendar day of the month.

On a national level, the average absolute difference between the weekly and the monthly series for the period from January 2017 to December 2019 was 0.5% of monthly working gas levels (10 Bcf), and the root mean square error was 12 Bcf (Table A3).

Factors contributing to the difference between the weekly and monthly working gas series include:

- Limitations of the weekly-to-monthly interpolation method, which does not take into account daily variability of storage activity
- Revisions or resubmissions of data on the Form EIA-912 that are lower than the WNGSR publication threshold of 4 Bcf
- Respondents' reclassifications between base gas<sup>8</sup> and working gas, or other inventory adjustments, during the two-month lag between collecting the two series
- Estimates of weekly volumes for those monthly operators not selected for the weekly sample that differ from their actual values
- Preliminary weekly estimates reported by respondents on the Form EIA-912 that may differ from the final data reported on the Form EIA-191

## Revisions

EIA publishes revisions to the WNGSR when respondents submit revised data for the previous week that differ by 4 Bcf or greater at the regional or national level. EIA announced WNGSR's revision posting policy in a November 2002 Federal Register Notice and subsequently updated the policy in an August 2015 announcement.<sup>9</sup> Form EIA-912 resubmissions that EIA receives after the WNGSR release are

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<sup>8</sup> Base gas is the volume of natural gas needed to maintain adequate reservoir pressures and deliverability rates. Base gas is not typically available for withdrawal.

<sup>9</sup> *Federal Register*, Vol. 67, No. 218, U.S. Energy Information Administration (November 12, 2002), pp. 68581-83, (<http://www.eia.gov/survey/frn/naturalgas/WNGSR-Revision-Policy-Nov12-2002.pdf>); and *Federal Register*, Vol. 70, No. 79, U.S. Energy Information Administration (April 26, 2005), pp 21406-08, (<http://www.eia.gov/survey/frn/naturalgas/WNGSR-Unscheduled->,

entered into the database for editing, imputation, and other analytical purposes, but the changes only lead to a published revision when they affect working gas storage levels by a net total of at least 4 Bcf at either a regional or national level.

Once the 4 Bcf revision publication threshold is met in any region, EIA reports all resubmissions of data for any region during the report week, regardless of size. Consequently, published revisions for the Lower 48 states may net less than 4 Bcf as a result of potential offsetting revisions in other regions.

Table 1. Published revisions to the *Weekly Natural Gas Storage Report, 2017–19*

Date published	Week ending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states	
8/10/2017	30-Jun-17	-	-	-	-	10	9	-	10	0.30%
	7-Jul-17	-	-	-	-	9	9	-	9	0.30%
	14-Jul-17	-	-	-	-	10	11	-	10	0.30%
	21-Jul-17	-	1	-	-	9	10	-	10	0.30%
	28-Jul-17	-	-	-	-	11	10	1	11	0.40%
	4-Aug-17	-	-	-	-	9	9	-	9	0.30%
6/21/2018	15-Jun-18	-	-	-	-	-4	-	-4	-4	-0.20%
9/10/2018	13-Jul-18	-	-	-	-	-	-1	1	1	0.00%
	20-Jul-18	-	-1	-	1	-	-1	1	1	0.00%
	27-Jul-18	-	-	-	1	1	-3	3	3	0.10%
	3-Aug-18	1	-1	-	1	-1	-4	3	1	0.00%
	10-Aug-18	2	-1	-	1	-1	-5	4	1	0.00%
	17-Aug-18	2	-1	-	1	-1	-5	4	-	0.00%
	24-Aug-18	3	-2	-	1	-1	-5	4	1	0.00%
	31-Aug-18	3	-3	-	-	-	-5	6	1	0.00%
3/14/2019	8-Mar-19	-	-	-	-	-4	-	-4	-4	-0.30%

Source: U.S. Energy Information Administration, Form EIA-912, *Weekly Underground Natural Gas Storage Report, 2017–19*

From 2017 to 2019, EIA revised published working gas stock data on four separate occasions, covering 15 weeks of revised data in all. EIA reported these revisions to the public on separate publication dates as noted in Table 1. Typically, EIA reports only revisions from data resubmissions to the public. However, EIA revised estimates for the eight-week period from July 13, 2018, to August 31, 2018, when it phased in the new sample design, did not result from resubmissions of data. The revised estimates of working gas stocks for the Lower 48 states differed by less than 1% of the original published estimates.

According to published EIA policies, EIA must issue unscheduled releases of revisions to the weekly estimates when the cumulative sum of data changes or corrections to working gas and the net change between the two most recent report weeks is at least 10 Bcf. In this situation, at 1:00 p.m. ET on a

[Release-Policy-Final-April2005.pdf](http://ir.eia.gov/ngs/notice_08_31_2015.html). Notice of Changes to the Weekly Natural Gas Storage Report  
[http://ir.eia.gov/ngs/notice\\_08\\_31\\_2015.html](http://ir.eia.gov/ngs/notice_08_31_2015.html)

federal workday, EIA notifies the public of an impending release, and it releases the revised report on that same day at 2:00 p.m. ET. Although the revisions published on August 10, 2017, for the six-week period from June 30, 2017, to August 4, 2017, exceeded 10 Bcf in some weeks, it did not result in an out-of-cycle revision because net change for the most recent week was not affected. EIA has never issued an unscheduled revision.

EIA also occasionally receives small revisions that do not meet the publication threshold. EIA enters these revisions into the Form EIA-912 database for analytical and record-keeping purposes, but they are not reflected in published weekly data. Between 2017 and 2019, EIA received 110 such revisions, with an average absolute difference of 992 million cubic feet (MMcf). EIA received 83 unpublished revisions between 0 MMcf and 1,999 MMcf and 27 revisions between 2,000 MMcf and 3,999 MMcf (Table 2).

Table 2. Unpublished revisions to the *Weekly Natural Gas Storage Report*, 2017–19

Range (million cubic feet)	Count	Average absolute difference (million cubic feet)
0 to 1,999	83	598
2,000 to 3,999	27	2,204

Source: U.S. Energy Information Administration, Form EIA-912, *Weekly Underground Natural Gas Storage Report*, 2014–16

## Response rates

Form EIA-912 response rates, measured as a percentage of the total number of sampled companies, have never been less than 95% for any week, and they exceeded 98% for all but one week between 2017 and 2019 (Table 3). EIA has never needed to publish a revision to WNGSR as a result of nonresponse.

Table 3. Response rates for the Form EIA-912 survey, 2017–19

Response rate (Percentage of total number of sample companies)	Frequency count
0%–93%	0
94%–97%	1
98%–99%	5
100%	150

Source: U.S. Energy Information Administration, Form EIA-912, *Weekly Underground Natural Gas Storage Report*, 2017–19

## Accuracy, Completeness, and Accessibility of Documentation

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The methodological documentation for the WNGSR is available on [EIA's website](#).<sup>10</sup> This document contains information about the WNGSR's processing, sampling, estimation, imputation for nonresponse, computation of estimated measures of sampling variability and summary statistics, and derivation of historical estimates that predate Form EIA-912.

## Release Schedule Performance and Avoidance of Early Disclosure

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### Use of storage estimates before official release

EIA releases the WNGSR each Thursday at 10:30 a.m. ET except on federal holidays or for other preapproved reasons. EIA publishes specific release times and dates for each calendar year in advance and has consistently met these deadlines. EIA has never had an unauthorized release of the WNGSR data before the scheduled release time.

Access to WNGSR estimates before release is limited to project managers and analysts who work on the WNGSR project team. The information is only available to EIA employees outside the WNGSR project team with the approval of the survey manager and as specified by OMB in its Statistical Policy Directive: Compilation, Release, and Evaluation of Principal Federal Economic Indicators.<sup>11</sup>

Beginning with data submitted for the first report period after April 1, 2004, EIA used the information related to Form EIA-912 for statistical purposes only, as required in the *Confidential Information Protection and Statistical Efficiency Act of 2002* (Title 5 of Public Law 107-347), which was reauthorized as part of the Foundations for Evidence-Based Policymaking Act of 2018, and other applicable federal laws. No other use of the estimates has been approved, and any other use is strictly prohibited by law. EIA does not disclose data in any identifiable form without the respondent's consent. By law, every EIA employee, as well as every agent, is subject to a jail term, a fine, or both if they make public any identifiable information reported through the Form EIA-912.

### Timing of data release

EIA releases WNGSR data at 10:30 a.m. ET each Thursday, except on federal holidays or under certain extenuating circumstances, such as extreme weather or inability to access the DOE Forrestal Building. From 2017 to 2019, EIA released the WNGSR every week according to the established schedule.

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<sup>10</sup> U.S. Energy Information Administration, *Methodology*, January 26, 2017, <http://ir.eia.gov/ngs/methodology.html>.

<sup>11</sup> Office of Management and Budget, *Statistical Policy Directive on Compilation, Release, and Evaluation of Principal Federal Economic Indicators*, [https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/inforeg/statpolicy/dir\\_3\\_fr\\_09251985.pdf](https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/omb/inforeg/statpolicy/dir_3_fr_09251985.pdf)

## Protection of Market Sensitive Information

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The Form EIA-912 system is located at the Forrestal Building, 1000 Independence Avenue SW, Washington, DC 20585. To gain access to the Forrestal Building, one must have a DOE employee badge or must receive a visitor's badge from the DOE security office. DOE security controls access to and from the Forrestal Building.

The Form EIA-912 processing and estimation occur in a dedicated secure room in the Forrestal Building. The processing system in the secure room is only accessible to designated EIA employees and contractors who work on the WNGSR team. EIA is reviewing ways to upgrade the WNGSR security and processing environment to take advantage of technologies that have been developed since WNGSR began. The current WNGSR processing system is not connected to any other system or to the Internet. All removable system components (hard drives and laptops), media (thumb drives), and printed documents are stored when not in use in a General Services Administration-approved safe that is located within the secure room.

Authorized staff members hold an estimation and data validation meeting with recorded attendance in the secure room, typically the day before the scheduled release. WNGSR staff review the data submissions and other validating information and then run the software to generate the final report. The final report is first verified by several staff members and then verified again before the WNGSR team delivers it for posting on the day of release.

## Appendix

Table A1. Estimated coefficients of variation for the underground storage working gas inventory data reported on the *Weekly Natural Gas Storage Report, 2017–19*

Week ending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
06-Jan-17	1.7%	1.6%	1.6%	3.1%	1.6%	3.1%	1.9%	0.9%
13-Jan-17	1.7%	1.6%	1.6%	3.3%	1.7%	3.1%	1.9%	0.9%
20-Jan-17	1.7%	1.5%	1.6%	3.6%	1.7%	3.2%	2.0%	0.9%
27-Jan-17	1.7%	1.5%	1.6%	4.0%	1.7%	3.3%	2.0%	0.9%
03-Feb-17	1.7%	1.4%	1.7%	3.0%	1.8%	3.3%	2.0%	0.9%
10-Feb-17	1.7%	1.3%	1.9%	3.1%	1.8%	3.6%	2.1%	0.9%
17-Feb-17	1.8%	1.4%	2.1%	3.3%	1.9%	3.8%	2.1%	1.0%
24-Feb-17	1.8%	1.5%	2.4%	3.9%	1.9%	3.9%	2.2%	1.0%
03-Mar-17	1.9%	1.5%	2.8%	4.4%	2.0%	3.9%	2.2%	1.1%
10-Mar-17	2.0%	1.5%	3.2%	5.2%	2.0%	4.0%	2.2%	1.1%
17-Mar-17	2.2%	1.4%	3.4%	5.5%	2.0%	4.0%	2.2%	1.2%
24-Mar-17	2.5%	1.2%	3.5%	5.8%	2.0%	4.1%	2.2%	1.2%
31-Mar-17	2.4%	1.2%	3.7%	6.0%	2.1%	4.2%	2.3%	1.2%
07-Apr-17	2.4%	1.2%	4.0%	5.8%	2.0%	4.2%	2.3%	1.2%
14-Apr-17	2.2%	1.3%	4.0%	5.8%	2.0%	4.1%	2.2%	1.2%
21-Apr-17	2.1%	1.3%	3.9%	5.7%	2.0%	4.1%	2.2%	1.2%
28-Apr-17	1.9%	1.3%	3.9%	5.5%	1.9%	3.9%	2.2%	1.2%
05-May-17	1.9%	1.3%	3.9%	5.4%	1.9%	3.9%	2.1%	1.1%
12-May-17	1.9%	1.3%	3.8%	5.1%	1.9%	3.9%	2.1%	1.1%
19-May-17	1.8%	1.4%	3.7%	5.0%	1.9%	3.9%	2.0%	1.1%
26-May-17	1.8%	1.4%	2.4%	4.4%	1.8%	3.8%	2.0%	1.0%
02-Jun-17	1.8%	1.4%	2.3%	3.9%	1.8%	3.9%	2.0%	1.0%
09-Jun-17	1.8%	1.4%	2.2%	3.8%	1.8%	3.9%	2.0%	1.0%
16-Jun-17	1.7%	1.4%	2.2%	3.6%	1.8%	3.9%	2.0%	1.0%
23-Jun-17	1.7%	1.4%	2.0%	3.4%	1.8%	3.9%	2.0%	0.9%
30-Jun-17	1.6%	1.4%	2.0%	3.3%	1.8%	3.8%	2.0%	0.9%
07-Jul-17	1.6%	1.4%	1.9%	3.1%	1.7%	3.7%	1.9%	0.9%
14-Jul-17	1.6%	1.4%	1.8%	2.9%	1.7%	3.5%	1.9%	0.9%
21-Jul-17	1.5%	1.5%	1.7%	2.7%	1.7%	3.5%	1.9%	0.9%
28-Jul-17	1.5%	1.5%	1.7%	2.6%	1.7%	3.5%	1.9%	0.8%
04-Aug-17	1.4%	1.5%	1.6%	2.8%	1.7%	3.6%	1.9%	0.8%
11-Aug-17	1.4%	1.4%	1.6%	2.7%	1.7%	3.5%	1.9%	0.8%
18-Aug-17	1.4%	1.4%	1.6%	2.9%	1.7%	3.5%	1.9%	0.8%
25-Aug-17	1.4%	1.5%	1.7%	2.9%	1.7%	3.5%	2.0%	0.8%
01-Sep-17	1.4%	1.5%	1.7%	3.2%	1.7%	3.5%	2.0%	0.8%
08-Sep-17	1.5%	1.5%	1.8%	3.3%	1.7%	3.4%	2.0%	0.9%
15-Sep-17	1.5%	1.6%	1.9%	3.3%	1.7%	3.4%	2.0%	0.9%
22-Sep-17	1.5%	1.6%	1.8%	3.2%	1.7%	3.3%	2.0%	0.9%

Table A1. Estimated coefficients of variation for the underground storage working gas inventory data reported on the *Weekly Natural Gas Storage Report, 2017–19* (continued)

Weekending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
29-Sep-17	1.4%	1.6%	1.8%	3.2%	1.7%	3.3%	2.0%	0.8%
06-Oct-17	1.4%	1.7%	1.8%	3.1%	1.7%	3.3%	2.0%	0.9%
13-Oct-17	1.4%	1.6%	1.8%	2.9%	1.7%	3.3%	2.0%	0.8%
20-Oct-17	1.4%	1.7%	1.7%	2.6%	1.7%	3.3%	2.0%	0.8%
27-Oct-17	1.4%	1.8%	1.7%	2.5%	1.7%	3.4%	1.9%	0.9%
03-Nov-17	1.4%	1.8%	1.8%	2.4%	1.7%	3.4%	1.9%	0.9%
10-Nov-17	1.4%	1.7%	1.8%	2.2%	1.7%	3.5%	1.9%	0.8%
17-Nov-17	1.5%	1.7%	1.8%	2.4%	1.7%	3.5%	1.9%	0.8%
24-Nov-17	1.5%	1.6%	1.7%	2.3%	1.7%	3.6%	1.9%	0.8%
01-Dec-17	1.4%	1.6%	1.6%	2.3%	1.7%	3.7%	1.9%	0.8%
08-Dec-17	1.4%	1.6%	1.6%	2.4%	1.7%	3.6%	1.9%	0.8%
15-Dec-17	1.4%	1.7%	1.6%	2.3%	1.8%	3.7%	2.0%	0.9%
22-Dec-17	1.4%	1.7%	1.6%	2.7%	1.7%	3.5%	2.0%	0.9%
29-Dec-17	1.4%	1.7%	1.6%	2.5%	1.7%	3.4%	2.0%	0.9%
05-Jan-18	1.5%	1.7%	1.6%	2.4%	1.7%	3.1%	2.0%	0.8%
12-Jan-18	1.5%	1.7%	1.6%	2.6%	1.8%	3.4%	2.1%	0.9%
19-Jan-18	1.5%	1.8%	1.6%	2.9%	1.9%	3.9%	2.2%	0.9%
26-Jan-18	1.5%	1.7%	1.6%	3.2%	1.9%	3.5%	2.2%	0.9%
02-Feb-18	1.5%	1.7%	1.5%	3.3%	1.9%	3.2%	2.3%	0.9%
09-Feb-18	1.5%	1.9%	1.5%	3.1%	1.9%	3.3%	2.3%	1.0%
16-Feb-18	1.5%	1.9%	1.4%	2.9%	2.0%	3.4%	2.5%	1.0%
23-Feb-18	1.6%	1.9%	1.4%	2.6%	2.1%	3.6%	2.5%	1.0%
02-Mar-18	1.6%	1.9%	1.4%	2.6%	2.1%	3.6%	2.6%	1.0%
09-Mar-18	1.8%	1.8%	1.5%	2.5%	2.1%	3.4%	2.7%	1.1%
16-Mar-18	2.0%	1.7%	1.6%	2.6%	2.1%	3.0%	2.7%	1.1%
23-Mar-18	2.1%	1.9%	1.7%	2.6%	2.1%	2.9%	2.8%	1.1%
30-Mar-18	2.2%	1.7%	2.0%	2.6%	2.1%	2.6%	2.8%	1.1%
06-Apr-18	2.3%	1.8%	2.2%	2.5%	2.1%	2.6%	2.8%	1.1%
13-Apr-18	2.5%	1.7%	2.3%	2.4%	2.1%	2.5%	2.7%	1.1%
20-Apr-18	2.6%	1.7%	2.3%	2.2%	2.1%	2.6%	2.7%	1.1%
27-Apr-18	2.4%	1.4%	2.3%	2.2%	2.0%	2.7%	2.6%	1.1%
04-May-18	2.3%	1.4%	2.2%	2.3%	1.9%	2.5%	2.5%	1.1%
11-May-18	2.1%	1.4%	2.2%	2.3%	1.9%	2.4%	2.5%	1.0%
18-May-18	1.9%	1.5%	2.3%	2.1%	1.8%	2.2%	2.4%	1.0%
25-May-18	1.7%	1.5%	2.2%	1.8%	1.8%	2.1%	2.4%	0.9%
01-Jun-18	1.5%	1.5%	2.1%	1.8%	1.7%	2.0%	2.3%	0.9%
08-Jun-18	1.5%	1.5%	2.0%	1.8%	1.7%	2.0%	2.3%	0.9%
15-Jun-18	1.5%	1.5%	1.8%	1.9%	1.6%	2.1%	2.2%	0.8%
22-Jun-18	1.5%	1.6%	1.6%	2.1%	1.6%	2.1%	2.1%	0.8%
29-Jun-18	1.4%	1.7%	1.7%	2.5%	1.6%	2.1%	2.1%	0.8%
06-Jul-18	1.3%	1.7%	1.6%	2.5%	1.5%	2.0%	2.0%	0.8%
13-Jul-18	1.1%	1.5%	1.5%	2.2%	1.3%	1.8%	1.7%	0.7%
20-Jul-18	1.0%	1.4%	1.4%	1.9%	1.1%	1.6%	1.4%	0.6%



Table A1. Estimated coefficients of variation for the underground storage working gas inventory data reported on the Weekly Natural Gas Storage Report, 2017–19 (continued)

Week ending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
27-Jul-18	0.9%	1.2%	1.3%	1.8%	1.0%	1.4%	1.2%	0.5%
03-Aug-18	0.8%	1.0%	1.3%	1.6%	0.8%	1.3%	1.0%	0.5%
10-Aug-18	0.8%	0.9%	1.2%	1.4%	0.7%	1.5%	0.8%	0.4%
17-Aug-18	0.8%	0.8%	1.2%	1.1%	0.6%	1.7%	0.6%	0.4%
24-Aug-18	0.9%	0.8%	1.3%	0.6%	0.6%	2.0%	0.5%	0.4%
31-Aug-18	1.0%	0.9%	1.6%	0.0%	0.7%	2.3%	0.5%	0.4%
07-Sep-18	1.0%	0.9%	1.7%	0.0%	0.7%	2.3%	0.5%	0.4%
14-Sep-18	1.0%	0.9%	1.7%	0.0%	0.6%	2.3%	0.5%	0.4%
21-Sep-18	1.0%	0.9%	1.7%	0.0%	0.6%	2.4%	0.5%	0.4%
28-Sep-18	0.9%	0.9%	1.8%	0.0%	0.6%	2.3%	0.5%	0.4%
05-Oct-18	0.9%	0.9%	1.7%	0.0%	0.6%	2.3%	0.5%	0.4%
12-Oct-18	0.9%	0.9%	1.6%	0.0%	0.6%	2.2%	0.5%	0.4%
19-Oct-18	0.9%	0.9%	1.6%	0.0%	0.6%	2.1%	0.5%	0.4%
26-Oct-18	0.9%	0.9%	1.6%	0.0%	0.6%	2.0%	0.4%	0.4%
02-Nov-18	0.9%	0.9%	1.6%	0.0%	0.6%	1.9%	0.4%	0.4%
09-Nov-18	0.9%	0.9%	1.4%	0.0%	0.6%	1.9%	0.4%	0.4%
16-Nov-18	0.9%	0.9%	1.5%	0.0%	0.6%	1.9%	0.4%	0.4%
23-Nov-18	0.9%	0.9%	1.5%	0.0%	0.6%	1.9%	0.5%	0.4%
30-Nov-18	1.0%	0.9%	1.4%	0.0%	0.7%	1.9%	0.5%	0.4%
07-Dec-18	1.0%	1.0%	1.3%	0.0%	0.7%	1.9%	0.6%	0.4%
14-Dec-18	1.0%	0.9%	1.3%	0.0%	0.7%	1.9%	0.6%	0.4%
21-Dec-18	1.0%	0.9%	1.3%	0.0%	0.7%	1.8%	0.6%	0.4%
28-Dec-18	1.1%	0.9%	1.2%	0.0%	0.7%	1.8%	0.6%	0.4%
04-Jan-19	1.1%	0.8%	1.2%	0.0%	0.8%	1.8%	0.6%	0.5%
11-Jan-19	1.2%	0.9%	1.1%	0.0%	0.8%	1.8%	0.7%	0.5%
18-Jan-19	1.2%	0.9%	0.9%	0.0%	0.8%	1.8%	0.7%	0.5%
25-Jan-19	1.3%	0.9%	0.8%	0.0%	0.8%	1.8%	0.7%	0.5%
01-Feb-19	1.3%	1.0%	0.6%	0.0%	0.8%	1.9%	0.7%	0.5%
08-Feb-19	1.3%	1.0%	0.3%	0.0%	0.8%	1.9%	0.7%	0.5%
15-Feb-19	1.4%	1.0%	0.5%	0.0%	0.9%	2.1%	0.8%	0.5%
22-Feb-19	1.5%	1.1%	0.8%	0.0%	1.0%	2.3%	0.8%	0.6%
01-Mar-19	1.6%	1.1%	1.2%	0.0%	1.0%	2.5%	0.9%	0.6%
08-Mar-19	1.7%	1.2%	1.6%	0.0%	1.1%	3.2%	0.9%	0.6%
15-Mar-19	1.8%	1.2%	1.9%	0.0%	1.1%	3.1%	0.9%	0.7%
22-Mar-19	1.8%	1.3%	2.0%	0.0%	1.1%	3.0%	0.8%	0.7%
29-Mar-19	1.9%	1.3%	2.0%	0.0%	1.0%	2.8%	0.7%	0.6%
05-Apr-19	1.9%	1.2%	1.9%	0.0%	1.0%	2.7%	0.7%	0.6%
12-Apr-19	1.8%	1.1%	1.8%	0.0%	0.9%	2.5%	0.6%	0.6%
19-Apr-19	1.7%	1.0%	1.5%	0.0%	0.9%	2.3%	0.6%	0.6%
26-Apr-19	1.5%	0.9%	1.3%	0.0%	0.9%	2.2%	0.7%	0.5%
03-May-19	1.4%	0.8%	1.2%	0.0%	0.9%	2.2%	0.7%	0.5%
10-May-19	1.4%	0.8%	1.1%	0.0%	0.8%	2.2%	0.6%	0.5%
17-May-19	1.3%	0.7%	1.0%	0.0%	0.8%	2.1%	0.6%	0.5%
24-May-19	1.3%	0.7%	1.0%	0.0%	0.8%	2.1%	0.6%	0.5%

Table A1. Estimated coefficients of variation for the underground storage working gas inventory data reported on the Weekly Natural Gas Storage Report, 2017–19 (continued)

Week ending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
31-May-19	1.3%	0.7%	1.0%	0.0%	0.8%	2.1%	0.6%	0.5%
07-Jun-19	1.3%	0.7%	1.0%	0.0%	0.7%	2.0%	0.6%	0.4%
14-Jun-19	1.3%	0.6%	1.1%	0.0%	0.7%	2.0%	0.6%	0.4%
21-Jun-19	1.3%	0.6%	1.1%	0.0%	0.7%	2.0%	0.6%	0.4%
28-Jun-19	1.2%	0.6%	1.2%	0.0%	0.7%	2.0%	0.6%	0.4%
05-Jul-19	1.2%	0.6%	1.3%	0.0%	0.7%	2.0%	0.6%	0.4%
12-Jul-19	1.2%	0.7%	1.3%	0.0%	0.7%	2.0%	0.6%	0.4%
19-Jul-19	1.1%	0.7%	1.3%	0.0%	0.7%	2.0%	0.6%	0.4%
26-Jul-19	1.0%	0.7%	1.3%	0.0%	0.7%	2.1%	0.7%	0.4%
02-Aug-19	0.9%	0.7%	1.2%	0.0%	0.8%	2.2%	0.7%	0.4%
09-Aug-19	0.9%	0.7%	1.1%	0.0%	0.8%	2.3%	0.7%	0.4%
16-Aug-19	0.8%	0.7%	1.2%	0.0%	0.8%	2.3%	0.7%	0.4%
23-Aug-19	0.8%	0.7%	1.2%	0.0%	0.8%	2.4%	0.7%	0.4%
30-Aug-19	0.8%	0.7%	1.2%	0.0%	0.7%	2.4%	0.7%	0.4%
06-Sep-19	0.8%	0.7%	1.3%	0.0%	0.7%	2.4%	0.7%	0.4%
13-Sep-19	0.8%	0.7%	1.3%	0.0%	0.8%	2.5%	0.7%	0.4%
20-Sep-19	0.8%	0.8%	1.3%	0.0%	0.7%	2.4%	0.7%	0.4%
27-Sep-19	0.9%	0.8%	1.3%	0.0%	0.7%	2.2%	0.7%	0.4%
04-Oct-19	0.9%	0.8%	1.3%	0.0%	0.7%	2.1%	0.7%	0.4%
11-Oct-19	0.9%	0.8%	1.3%	0.0%	0.7%	2.0%	0.7%	0.4%
18-Oct-19	0.9%	0.8%	1.3%	0.0%	0.7%	1.9%	0.7%	0.4%
25-Oct-19	1.0%	0.8%	1.2%	0.0%	0.7%	1.8%	0.7%	0.4%
01-Nov-19	1.0%	0.8%	1.2%	0.0%	0.7%	1.7%	0.7%	0.4%
08-Nov-19	1.0%	0.8%	1.1%	0.0%	0.7%	1.7%	0.7%	0.4%
15-Nov-19	1.1%	0.8%	1.1%	0.0%	0.7%	1.7%	0.7%	0.4%
22-Nov-19	1.1%	0.8%	1.1%	0.0%	0.7%	1.7%	0.7%	0.4%
29-Nov-19	1.1%	0.8%	1.1%	0.0%	0.7%	1.7%	0.7%	0.4%
06-Dec-19	1.1%	0.8%	1.1%	0.0%	0.7%	1.6%	0.7%	0.4%
13-Dec-19	1.1%	0.8%	0.9%	0.0%	0.7%	1.7%	0.7%	0.4%
20-Dec-19	1.1%	0.8%	0.9%	0.0%	0.7%	1.7%	0.7%	0.4%
27-Dec-19	1.1%	0.8%	0.9%	0.0%	0.7%	1.6%	0.7%	0.4%

Source: U.S. Energy Information Administration, Form EIA-912, *Weekly Underground Natural Gas Storage Report*, 2017–19

Table A2. Estimated standard errors in billion cubic feet for the weekly net changes in underground storage working gas inventory data reported on the *Weekly Natural Gas Storage Report, 2017–19*

Week ending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
06-Jan-17	1.1	1.1	0.2	0.5	1.5	1.3	0.8	2.3
13-Jan-17	1.1	1.2	0.3	2.0	2.1	1.7	1.1	3.3
20-Jan-17	1.1	2.4	0.2	0.3	1.1	1.0	0.6	2.9
27-Jan-17	0.7	1.2	0.3	1.1	1.7	1.2	1.2	2.4
03-Feb-17	1.0	1.6	0.3	3.5	0.8	0.4	0.7	4.1
10-Feb-17	1.1	1.3	0.3	1.2	0.9	0.7	0.6	2.3
17-Feb-17	0.6	0.6	0.5	0.5	1.5	1.0	1.2	1.9
24-Feb-17	0.4	0.8	0.6	1.4	1.5	0.9	1.1	2.3
03-Mar-17	0.5	0.8	0.7	1.9	1.2	0.9	0.8	2.5
10-Mar-17	0.7	0.7	0.7	2.6	1.0	0.4	0.9	3.1
17-Mar-17	1.4	1.8	0.4	1.0	2.0	1.9	0.6	3.2
24-Mar-17	0.8	1.3	0.3	0.9	1.0	0.4	0.9	2.0
31-Mar-17	0.9	0.8	0.4	0.8	1.7	1.2	1.3	2.3
07-Apr-17	0.3	0.5	0.3	0.3	0.8	0.5	0.6	1.1
14-Apr-17	0.5	0.6	0.2	0.3	0.9	0.6	0.7	1.2
21-Apr-17	0.8	0.6	0.2	0.3	0.8	0.6	0.6	1.4
28-Apr-17	1.1	0.6	0.2	0.3	0.9	0.6	0.7	1.6
05-May-17	0.7	0.4	0.3	0.4	0.7	0.6	0.3	1.2
12-May-17	0.5	0.4	0.1	0.9	0.7	0.6	0.3	1.4
19-May-17	0.5	0.8	0.1	0.2	0.6	0.4	0.4	1.1
26-May-17	1.0	0.8	2.6	1.2	0.8	0.6	0.5	3.2
02-Jun-17	2.3	1.4	0.3	1.3	0.9	0.6	0.7	3.1
09-Jun-17	0.8	0.8	0.2	0.4	0.6	0.5	0.3	1.4
16-Jun-17	0.4	0.7	0.3	0.5	0.5	0.4	0.3	1.1
23-Jun-17	0.4	0.6	0.4	1.0	0.4	0.3	0.3	1.4
30-Jun-17	0.6	0.8	0.4	0.8	1.2	1.0	0.7	1.8
07-Jul-17	0.5	0.8	0.2	0.6	1.3	1.3	0.4	1.8
14-Jul-17	0.4	0.8	0.5	0.8	1.1	1.0	0.3	1.7
21-Jul-17	0.5	0.6	0.4	0.4	1.4	1.2	0.7	1.7
28-Jul-17	0.3	0.8	0.5	0.6	1.3	1.1	0.7	1.7
04-Aug-17	0.4	0.4	0.4	0.8	0.9	0.7	0.6	1.4
11-Aug-17	0.6	0.8	0.3	0.3	0.7	0.7	0.2	1.3
18-Aug-17	0.7	0.9	0.5	0.7	0.9	0.7	0.5	1.7
25-Aug-17	0.3	1.0	0.4	0.6	0.9	0.7	0.7	1.6
01-Sep-17	0.8	1.1	0.5	1.2	1.1	0.5	0.9	2.2
08-Sep-17	1.6	1.0	0.4	1.7	1.0	0.9	0.5	2.8
15-Sep-17	0.7	1.0	0.3	0.5	1.5	1.2	0.8	2.0
22-Sep-17	0.3	0.9	0.2	0.6	0.6	0.5	0.3	1.3
29-Sep-17	0.5	1.1	0.2	0.5	0.9	0.8	0.3	1.6
06-Oct-17	0.5	1.2	0.3	0.1	0.7	0.6	0.4	1.5
13-Oct-17	0.8	1.4	0.2	1.1	1.1	0.7	0.9	2.2
20-Oct-17	0.5	2.2	0.2	1.2	0.9	0.8	0.5	2.7

Table A2. Estimated standard errors in billion cubic feet for the weekly net changes in underground storage working gas inventory data reported on the *Weekly Natural Gas Storage Report, 2017–19* (continued)

Weekending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
27-Oct-17	0.6	1.2	0.2	1.4	1.2	1.0	0.7	2.3
03-Nov-17	0.3	0.5	0.4	0.9	1.2	1.0	0.7	1.6
10-Nov-17	0.2	1.0	0.3	1.0	1.1	0.9	0.6	1.8
17-Nov-17	0.3	2.0	0.2	1.1	0.7	0.2	0.7	2.4
24-Nov-17	0.3	1.2	0.2	1.3	0.8	0.7	0.4	1.9
01-Dec-17	1.5	0.9	0.5	0.8	1.1	0.9	0.6	2.3
08-Dec-17	0.3	0.7	0.2	0.2	0.8	0.6	0.6	1.2
15-Dec-17	0.8	1.5	0.2	1.0	1.8	1.6	0.7	2.6
22-Dec-17	0.5	0.9	0.1	0.8	1.2	1.0	0.6	1.7
29-Dec-17	0.7	1.4	0.4	1.2	2.2	1.6	1.5	3.0
05-Jan-18	1.3	2.3	0.2	1.2	5.1	4.7	2.1	5.9
12-Jan-18	0.8	1.2	0.2	0.5	1.5	1.0	1.1	2.1
19-Jan-18	1.0	1.6	0.4	0.6	2.4	2.0	1.4	3.2
26-Jan-18	0.7	2.1	0.2	0.5	1.9	1.8	0.8	3.0
02-Feb-18	0.7	1.7	0.4	0.5	2.1	1.7	1.2	2.9
09-Feb-18	1.1	2.5	0.2	0.4	1.3	0.5	1.2	3.1
16-Feb-18	0.7	1.2	0.4	1.2	0.8	0.3	0.8	2.0
23-Feb-18	0.4	0.8	0.3	1.4	1.4	1.0	1.1	2.2
02-Mar-18	0.4	1.1	0.2	0.5	1.2	1.0	0.7	1.7
09-Mar-18	1.0	1.1	0.4	0.6	1.5	1.3	0.7	2.2
16-Mar-18	0.9	1.3	0.2	0.3	1.6	1.4	0.7	2.2
23-Mar-18	0.5	2.2	0.2	0.1	0.9	0.8	0.5	2.4
30-Mar-18	0.4	1.1	0.3	1.1	2.7	1.8	2.1	3.1
06-Apr-18	0.3	0.4	0.3	0.7	0.6	0.4	0.4	1.1
13-Apr-18	0.6	0.5	0.1	0.2	1.3	1.2	0.3	1.5
20-Apr-18	0.1	0.5	0.1	0.6	1.2	0.9	0.7	1.4
27-Apr-18	0.4	1.0	0.2	0.9	1.3	0.9	0.9	1.9
04-May-18	0.5	0.6	0.2	0.9	1.0	0.7	0.7	1.5
11-May-18	0.4	0.8	0.4	0.5	0.8	0.6	0.6	1.4
18-May-18	0.3	0.6	1.4	0.3	1.1	0.7	0.8	1.9
25-May-18	0.7	0.6	0.1	0.5	0.8	0.6	0.5	1.3
01-Jun-18	0.5	0.8	0.2	0.7	1.0	0.8	0.6	1.6
08-Jun-18	0.4	0.6	0.3	0.5	1.0	0.9	0.5	1.4
15-Jun-18	0.4	0.7	0.5	0.4	1.2	0.8	0.9	1.6
22-Jun-18	0.4	1.0	0.3	0.9	0.8	0.5	0.7	1.6
29-Jun-18	0.4	0.9	0.3	1.6	0.6	0.4	0.5	2.0
06-Jul-18	0.4	0.8	0.4	0.7	1.0	0.6	0.8	1.6
13-Jul-18	1.0	0.9	0.7	1.2	2.1	0.9	1.9	2.9
20-Jul-18	1.1	0.9	0.5	1.2	2.3	1.1	2.0	3.0
27-Jul-18	1.1	1.0	0.4	0.6	1.9	1.1	1.5	2.5
03-Aug-18	1.1	1.2	0.4	0.6	1.6	0.9	1.4	2.4
10-Aug-18	1.2	1.4	0.5	0.5	1.8	0.9	1.5	2.6
17-Aug-18	1.3	1.6	0.5	0.9	1.7	0.7	1.6	2.9

Table A2. Estimated standard errors in billion cubic feet for the weekly net changes in underground storage working gas inventory data reported on the Weekly Natural Gas Storage Report, 2017–19 (continued)

Weekending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
24-Aug-18	1.3	1.8	0.6	1.1	1.6	0.7	1.5	3.0
31-Aug-18	1.4	2.2	0.8	1.5	1.7	0.7	1.6	3.5
07-Sep-18	0.3	0.8	0.2	0.0	0.4	0.1	0.3	1.0
14-Sep-18	0.5	0.6	0.2	0.0	0.5	0.1	0.5	0.9
21-Sep-18	0.2	0.6	0.1	0.0	0.6	0.4	0.5	0.9
28-Sep-18	0.8	0.5	0.2	0.0	0.7	0.6	0.3	1.1
05-Oct-18	0.8	0.4	0.2	0.0	0.4	0.3	0.2	1.0
12-Oct-18	0.6	0.5	0.3	0.0	0.4	0.2	0.3	0.9
19-Oct-18	0.2	0.4	0.2	0.0	0.5	0.4	0.3	0.7
26-Oct-18	0.5	0.7	0.1	0.0	0.3	0.3	0.2	0.9
02-Nov-18	0.4	0.9	0.1	0.0	0.5	0.4	0.3	1.1
09-Nov-18	0.3	0.4	0.4	0.0	0.8	0.6	0.5	1.0
16-Nov-18	0.4	0.7	0.1	0.0	0.8	0.7	0.4	1.1
23-Nov-18	0.3	0.4	0.1	0.0	0.6	0.3	0.5	0.8
30-Nov-18	0.9	0.8	0.1	0.0	0.6	0.3	0.5	1.4
07-Dec-18	0.5	0.5	0.4	0.0	0.3	0.2	0.3	0.8
14-Dec-18	0.4	1.2	0.1	0.0	0.5	0.2	0.4	1.3
21-Dec-18	0.3	0.9	0.2	0.0	0.8	0.4	0.7	1.2
28-Dec-18	0.2	0.7	0.2	0.0	0.7	0.5	0.4	1.1
04-Jan-19	0.6	0.8	0.2	0.0	1.0	0.8	0.7	1.4
11-Jan-19	0.2	0.4	0.2	0.0	0.6	0.1	0.6	0.8
18-Jan-19	0.5	0.5	0.3	0.0	0.5	0.2	0.4	0.9
25-Jan-19	0.6	0.7	0.2	0.0	0.8	0.5	0.6	1.2
01-Feb-19	0.7	0.7	0.2	0.0	0.9	0.7	0.6	1.4
08-Feb-19	0.3	0.4	0.9	0.0	0.5	0.4	0.4	1.1
15-Feb-19	0.7	0.6	0.2	0.0	0.5	0.4	0.3	1.1
22-Feb-19	0.6	0.5	0.3	0.0	0.3	0.1	0.3	0.9
01-Mar-19	0.8	0.7	0.3	0.0	0.4	0.2	0.3	1.2
08-Mar-19	1.0	0.5	0.2	0.0	0.8	0.8	0.4	1.4
15-Mar-19	0.3	0.4	0.2	0.0	0.3	0.1	0.3	0.6
22-Mar-19	0.3	0.4	0.1	0.0	0.9	0.8	0.3	1.0
29-Mar-19	0.4	0.4	0.1	0.0	1.0	0.7	0.7	1.1
05-Apr-19	0.4	0.5	0.1	0.0	0.8	0.5	0.6	1.1
12-Apr-19	0.5	0.6	0.1	0.0	0.5	0.3	0.4	1.0
19-Apr-19	0.4	0.5	0.2	0.0	0.3	0.2	0.3	0.7
26-Apr-19	0.5	0.5	0.2	0.0	0.7	0.4	0.5	1.0
03-May-19	0.3	0.4	0.1	0.0	0.6	0.5	0.3	0.8
10-May-19	0.9	0.5	0.1	0.0	0.4	0.2	0.3	1.1
17-May-19	0.8	0.6	0.2	0.0	0.3	0.3	0.2	1.1
24-May-19	0.6	0.6	0.2	0.0	0.4	0.3	0.2	1.0
31-May-19	0.3	0.6	0.3	0.0	0.6	0.4	0.5	0.9
07-Jun-19	0.4	0.5	0.3	0.0	0.6	0.4	0.4	0.9
14-Jun-19	0.6	0.4	0.3	0.0	0.4	0.1	0.4	0.9
21-Jun-19	0.3	0.4	0.2	0.0	0.6	0.3	0.5	0.8

Table A2. Estimated standard errors in billion cubic feet for the weekly net changes in underground storage working gas inventory data reported on the Weekly Natural Gas Storage Report, 2017–19 (continued)

Weekending	East region	Midwest region	Mountain region	Pacific region	South Central region	Salt	Nonsalt	Total Lower 48 states
28-Jun-19	0.3	0.5	0.2	0.0	0.8	0.2	0.8	1.0
05-Jul-19	0.3	0.4	0.2	0.0	0.5	0.2	0.4	0.7
12-Jul-19	0.2	0.5	0.1	0.0	0.7	0.3	0.6	0.9
19-Jul-19	0.2	0.4	0.1	0.0	1.0	0.8	0.6	1.1
26-Jul-19	1.1	0.4	0.2	0.0	0.6	0.3	0.4	1.3
02-Aug-19	1.2	0.5	0.2	0.0	0.9	0.4	0.8	1.6
09-Aug-19	0.8	0.5	0.1	0.0	0.5	0.3	0.4	1.1
16-Aug-19	0.5	0.4	0.1	0.0	0.4	0.3	0.3	0.8
23-Aug-19	0.3	0.4	0.1	0.0	0.3	0.2	0.2	0.6
30-Aug-19	0.4	0.4	0.1	0.0	0.5	0.2	0.4	0.8
06-Sep-19	0.3	0.4	0.2	0.0	0.3	0.1	0.2	0.6
13-Sep-19	0.5	0.3	0.2	0.0	0.7	0.6	0.3	0.9
20-Sep-19	0.6	0.5	0.2	0.0	0.6	0.4	0.4	1.0
27-Sep-19	0.8	0.5	0.2	0.0	0.6	0.4	0.4	1.2
04-Oct-19	0.7	0.5	0.1	0.0	0.7	0.5	0.4	1.0
11-Oct-19	0.8	0.4	0.1	0.0	0.6	0.5	0.3	1.0
18-Oct-19	0.5	0.3	0.0	0.0	0.7	0.6	0.3	0.9
25-Oct-19	0.6	0.5	0.1	0.0	0.6	0.4	0.5	1.0
01-Nov-19	0.7	0.5	0.2	0.0	0.6	0.4	0.5	1.1
08-Nov-19	0.2	0.2	0.1	0.0	0.5	0.4	0.3	0.6
15-Nov-19	0.7	0.4	0.1	0.0	0.9	0.8	0.4	1.2
22-Nov-19	0.5	0.6	0.1	0.0	0.4	0.1	0.4	0.8
29-Nov-19	0.6	0.6	0.1	0.0	0.6	0.5	0.3	1.0
06-Dec-19	0.8	0.4	0.2	0.0	0.5	0.4	0.2	1.0
13-Dec-19	0.8	0.5	0.6	0.0	0.4	0.2	0.4	1.2
20-Dec-19	0.5	0.7	0.2	0.0	0.6	0.3	0.5	1.1
27-Dec-19	0.8	0.6	0.2	0.0	0.4	0.1	0.4	1.1

Source: U.S. Energy Information Administration, Form EIA-912, *Weekly Underground Natural Gas Storage Report*, 2017–19

Note: Estimated measures of the standard error of the weekly net change are rounded to the nearest tenth. As a result, values that may be rounded down to 0.0 billion cubic feet do not represent the absence of sampling error. The only region with no sampling error is the Pacific region because it is based on a census of all operators in the region.

Table A3. Monthly to weekly differences in underground storage estimates (billion cubic feet [Bcf])

Month end	Natural Gas Monthly (Bcf)						Differences (Bcf)					
	East	Midwest	Mountain	Pacific	South Central	Total Lower 48 states	East	Midwest	Mountain	Pacific	South Central	Total Lower 48 states
Jan-17	528	699	159	210	1,006	2,602	13	5	0	4	0	22
Feb-17	406	590	141	201	981	2,318	6	1	1	2	-5	6
Mar-17	259	478	142	219	948	2,045	9	1	0	-3	-2	6
Apr-17	334	525	151	238	1,024	2,272	-2	-5	3	-4	4	-3
May-17	448	609	167	270	1,112	2,606	-2	-3	3	-4	1	-5
Jun-17	562	702	184	288	1,139	2,875	2	-3	3	-1	2	3
Jul-17	662	764	197	295	1,102	3,021	-2	-3	4	-4	-4	-9
Aug-17	777	869	202	297	1,068	3,213	-1	-2	3	0	-3	-2
Sep-17	866	994	218	314	1,137	3,529	-2	0	2	-2	-7	-9
Oct-17	924	1,101	221	318	1,214	3,778	1	9	4	-1	-8	6
Nov-17	867	1,055	221	311	1,241	3,695	2	4	0	2	-9	0
Dec-17	710	834	178	264	1,017	3,003	8	13	0	-1	-1	20
Jan-18	492	555	135	216	707	2,106	7	3	-2	-1	1	6
Feb-18	363	380	101	181	612	1,638	3	5	-3	-1	0	3
Mar-18	229	261	87	169	612	1,358	-2	2	-1	-2	-4	-7
Apr-18	231	235	91	190	649	1,396	1	-6	-2	0	-8	-15
May-18	348	343	120	226	775	1,813	0	-6	0	4	-6	-9
Jun-18	465	459	140	253	846	2,162	-2	-1	0	4	-5	-3
Jul-18	569	571	148	244	814	2,346	-4	-3	-1	2	-6	-14
Aug-18	664	705	163	246	803	2,580	-5	-3	-1	0	-4	-13
Sep-18	778	846	179	263	846	2,912	-7	0	0	-1	-10	-20
Oct-18	830	971	183	264	947	3,195	0	2	-2	0	-7	-6
Nov-18	750	908	168	252	915	2,992	2	6	0	1	-10	-1
Dec-18	659	777	145	214	880	2,676	-2	6	-4	-1	-8	-10
Jan-19	467	521	103	172	696	1,961	9	13	3	1	7	33
Feb-19	311	337	73	111	563	1,393	6	8	1	2	0	18
Mar-19	216	242	63	115	520	1,156	-6	-1	1	0	-12	-18
Apr-19	293	305	76	158	696	1,528	-3	-4	1	0	-11	-17
May-19	418	439	102	214	826	2,000	-4	-3	-1	-1	-5	-14
Jun-19	537	579	135	259	917	2,427	-6	-3	1	-2	-4	-14
Jul-19	611	696	158	272	942	2,679	-3	-2	2	-1	-3	-7
Aug-19	725	834	178	276	949	2,962	-7	-2	0	0	0	-9
Sep-19	845	990	200	294	1,049	3,378	-7	-2	1	-1	-9	-18
Oct-19	932	1,103	206	292	1,191	3,724	-3	4	2	1	-4	0

Table A3. Monthly to weekly differences in underground storage estimates (billion cubic feet [Bcf]) (continued)

Month end	<b>Natural Gas Monthly (Bcf)</b>						<b>Differences (Bcf)</b>					
	East	Midwest	Mountain	Pacific	South Central	Total Lower 48 states	East	Midwest	Mountain	Pacific	South Central	Total Lower 48 states
Nov-19	886	1,030	196	283	1,180	3,575	2	6	3	2	-7	6
Dec-19	764	885	167	245	1,095	3,156	-2	9	2	2	0	11

Source: U.S. Energy Information Administration, Form EIA-912, *Natural Gas Monthly* 2017–19