Independent Statistics & Analysis
U.S. Energy Information Administration

Explanatory notes, sources, and related links: EIA Natural Gas Storage Dashboard

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Natural Gas Storage Background – Description of Sections

Commentary

EIA will occasionally include short posts on the Natural Gas Storage Dashboard (Dashboard) discussing changes in natural gas storage activity or related natural gas market conditions. EIA may publish new commentary to provide context about market conditions that influence storage operations on days when Dashboard weekly data are not scheduled to be updated.

Links

EIA provides storage-related links to guide users to resources at EIA, the Federal Energy Regulatory Commission (FERC), and other third parties that provide storage or related information.

Underground working natural gas storage summary

This visualization summarizes current working gas stocks and estimated storage capacity utilization (based on the most recent five years) by storage region (shown on the map) and for the Lower 48 states.

The Lower 48 states include all U.S. states except Alaska and Hawaii. The regions are defined as

East region: Connecticut, Delaware, District of Columbia, Florida, Georgia, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia

Midwest region: Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Tennessee, and Wisconsin

Mountain region: Arizona, Colorado, Idaho, Montana, Nebraska, New Mexico, Nevada, North Dakota, South Dakota, Utah, and Wyoming

Pacific region: California, Oregon, and Washington

South Central region: Alabama, Arkansas, Kansas, Louisiana, Mississippi, Oklahoma, and Texas

The bar chart also provides data on the 52-week minimum and maximum levels and the five-year minimum and maximum levels by region and for the Lower 48 states. EIA updates relevant ranges and averages each week. The colors of the bars correspond to the colors for the regions shown in the mini-map insert.

The fuel gauge underneath the stocks chart indicates how *full* the regional natural gas storage is. This visualization provides a national and regional snapshot each week of changes in natural gas storage inventories for the Lower 48 states and by region. Utilization is calculated by dividing the storage stocks by estimates of storage capacity published in Underground Natural Gas Working Storage Capacity.

Weather maps

The heat map displays weekly and daily average temperatures based on National Oceanic and Atmospheric Administration (NOAA) population-weighted heating degree day and cooling degree day data by NOAA state climate divisions with EIA storage region overlays. This feature has three options:

- A map of average temperatures for the current storage reporting week compared with the 30-year (e.g., 1981–2010) normal for the same period
- A map showing how average temperatures varied for the current storage reporting week compared with the previous week
- An animation showing the daily absolute temperatures during the past two weeks

Users can zoom in on any of the maps and pause the animation.

Lower 48 underground working gas stocks

This chart shows EIA's latest Lower 48 weekly estimates of working natural gas in underground storage facilities for different time periods:

- The current year (blue line)
- The previous year (green line)
- The most recent five-year average (black line)
- The most recent five-year minimum/maximum range (gray band)

Lower 48 daily temperatures

This chart shows the past actual and near-future forecasts of daily average temperatures for the Lower 48 states with the normal and record high/low averages for each day. For the winter, temperatures are a good measure of likely furnace load for space heating needs. During the summer, warmer-than-normal temperatures can affect working natural gas storage activity by reducing the amount of natural gas available to inject into storage fields. The daily data are population-weighted. The vertical dashed line separates data from the report week data from the upcoming (current) storage report week data. Filled diamonds show actual temperatures. Unfilled diamonds show forecasted temperatures.

Net inventory change

This chart shows week-over-week changes in activity in three ways:

- Storage inventory from the previous week (blue dot)
- Average storage inventory activity for the current week during the past five years (the dark gray diamond)
- Minimum/maximum ranges for the current reporting week for the most current five-year range (the gray-filled area)

The methodology to compute the five-year average and minimum/maximum range summary statistics was modified in November 2018. The historical summary statistics on the weekly net changes for 2018 were revised as a result of the methodological change. The historical ranges will be updated each January to reflect the rollover to the new calendar year and to reflect the latest five-year range.

Daily Lower 48 natural gas consumption for electricity generation

This chart shows daily changes during the 14-day period in natural gas consumption for electricity generation. Data are shown for the current storage reporting period and the upcoming storage reporting period. This chart is based on IHS Markit estimates of Lower 48 natural gas use for the electric power sector. The dashed vertical line separates the report week from the upcoming (current) storage

report week. The chart shows trends for the current year, the previous year, and the most recent five-year minimum/maximum ranges. The units are billion cubic feet per day. Warmer-than-normal weather in the summer can increase air conditioning use, which often leads to higher natural gas consumption to generate electricity and may reduce the amount of natural gas available to inject into storage.

Daily Lower 48 residential and commercial natural gas consumption

This chart shows daily changes in natural gas consumption for the residential and commercial sectors covering the 14-day period for the current storage reporting period and the upcoming storage reporting period. This chart is based on IHS Markit estimates of Lower 48 natural gas use for the combined residential and commercial sectors. The dashed vertical line separates the report week from the upcoming (current) week. The chart shows trends for the current year, the previous year, and the most recent five-year minimum/maximum range. The units are billion cubic feet per day. Colder-than-normal temperatures in the winter can lead to increases in daily and even weekly natural gas consumption, which in turn may result in substantial withdrawals from storage fields.

Weekly working gas stocks and futures prices

This scatterplot shows the weekly relationship between the surplus or deficit of current working gas to the most recent five-year average and the near-month price of natural gas at the Henry Hub, based on Nymex futures contracts. The x-axis indicates the current working gas level compared with the current five-year average. Values to the left of the zero marker on the x-axis indicate stocks are lower than the current five-year average, and x-axis values to the right of the zero marker indicate stocks are higher than the current five-year average (in billion cubic feet).

The y-axis shows the near-month futures prices of natural gas. Each dot reflects one week in the selected year. To make the chart less cluttered, users can hide the dots for the selected year by clicking on the year label in the legend. The curve fitted by these points or weeks tends to slope downward, meaning that when natural gas inventories have a large deficit compared with the five-year average, natural gas prices tend to be higher than normal. When natural gas inventories have a relative surplus compared with the five-year average, natural gas prices tend to be lower than normal. Rising shale gas production in the United States has tended to lower near-month, natural gas futures prices—even when working natural gas is lower than the five-year average.

Daily nuclear generating capacity outages by unit

This chart shows daily nuclear generating capacity outages (planned and unplanned) based on information from the Nuclear Regulatory Commission. Outages at nuclear generating plants can affect which fuels are needed to meet regional power loads. When nuclear outages occur, natural gas-fired plants may operate instead of nuclear power plants, which can affect natural gas storage requirements. Data cover the current year, previous year, and most recent five-year minimum/maximum ranges. Planned nuclear plant outages are highly seasonal and cyclical. Nuclear plant operators routinely take plants down for maintenance in the spring and fall (called shoulder periods), when electric loads tend to be lower. Further, most nuclear generating plants require fuel recycling every 18–24 months, which can affect the availability of nuclear generation.

Regional natural gas inventories

Because of the regional variation in weather, infrastructure availability, and other market issues, EIA provides several options to chart natural gas storage inventories by reporting region and type of facility. For each natural gas storage reporting region, the dashboard shows a chart of:

- The current-year weekly underground natural gas inventories
- The previous-year weekly underground natural gas inventories
- The five-year average of underground natural gas inventories
- The minimum/maximum range of inventory levels for the most current five-year period

EIA provides charts for these estimates for each of the five storage regions, including breakouts for salt and nonsalt facilities in the South Central region.

Net inventory change by region

EIA provides several options to chart weekly net natural gas storage inventory changes by reporting region and type of facility because of regional variation in weather, infrastructure availability, and other market issues. EIA provides charts indicating the weekly net change in natural gas stocks by storage region. These charts include a breakout of the changes in stocks for the salt and nonsalt facilities within the South Central region and for the South Central region as a whole. Net activity is the absolute change in storage working gas levels measured week over week. Three regional net changes are reported:

- Current year values (blue dot)
- The five-year average (black dot)
- The five-year minimum/maximum range for a reporting week (gray-filled area)

The methodology to compute the five-year average and minimum/maximum range summary statistics was modified in November 2018. The historical summary statistics on the weekly net changes for 2018 were revised as a result of the methodological change. The historical ranges will be updated each January to reflect the rollover to the new calendar year and to reflect the latest five-year range.

Differences in inventories from week to week are usually greater in the winter and smaller in the summer.

Net exports of natural gas

This chart summarizes the net natural gas export position of the Lower 48 states each day. It shows total natural gas exports to Canada and Mexico by pipeline and also adds natural gas feedstock delivered to U.S. liquefied natural gas (LNG) export terminals (treated as a proxy for exports) minus any LNG imports and any pipeline imports from Canada and Mexico. Deliveries or send-out at U.S. LNG regasification terminals are a proxy for daily LNG imports. The net of total exports and imports indicates whether the United States is an exporter or an importer of natural gas. EIA provides this data for the current two-week period, the same two-week period for the previous year, and the current five-year range. The disposition of natural gas exports can affect natural gas storage balances. The dashed vertical line separates the recent from the upcoming (current) storage reporting periods. The United States is a net exporter of natural gas on most days as a result of the rise in the LNG exports from U.S. export

terminals, the increasing U.S. natural gas exports to Mexico, and the reduced demand to import natural gas from Canada.

Heat table

The heat table shows actual and forecasted daily average temperatures in each storage region and the Lower 48 states, as well as how temperatures varied from 30-year normal average temperatures based on NOAA data. The population-weighted data are aggregated and averaged by storage region and for the Lower 48 states. Warmer-than-normal temperatures appear as a shade of brown, and cooler-than-normal temperatures appear as a shade of blue.

Natural gas futures

The natural gas futures price curves partly reflect changes in weekly natural gas storage inventories as a result of shifts in natural gas supply and demand. This chart illustrates Nymex natural gas futures settlement prices for the next 12 months (also referred to as a strip) following the current *Weekly Natural Gas Storage Report* (WNGSR) release. Three lines are shown:

- The 12-month strip of settlement prices formed on the day before the current WNGSR release
- The 12-month strip of settlement prices from the previous week's WNGSR release day
- The 12-month strip of settlement prices established a year ago on the WNGSR release day

This chart helps explain how changes in natural gas supply and demand fundamentals, as shown by changes in the natural gas stocks, may affect expectations for natural gas prices during the next year.

Sources

Data used to prepare the Natural Gas Storage Dashboard (Dashboard) come from these sources:

Bloomberg, L.P. (www.bloomberg.com) Bloomberg has prices on natural gas forward curves.

Weekly data come from EIA's Form EIA-912, *Weekly Underground Natural Gas Storage Report*. Storage capacity estimates are from the report *Underground Natural Gas Working Storage Capacity*.

CME Group (https://www.cmegroup.com/trading/why-futures/welcome-to-nymex-henry-hub-natural-gas-futures.html) Nymex reports daily settlement futures prices for the natural gas futures contract at Henry Hub.

National Oceanic and Atmospheric Administration (www.noaa.gov) The Dashboard uses NOAA heating degree day (HDD) and cooling degree day (CDD) data by climate division and by state to create average temperature visualizations such as heat maps, bar charts, and heat tables. The NOAA HDD and CDD data used are weighted by population.

Nuclear Regulatory Commission (https://www.nrc.gov/reading-rm/doc-collections/event-status/reactor-status/) The Nuclear Regulatory Commission (NRC) is the source of daily power reactor status reports for the U.S. nuclear generating fleet.

IHS Markit (www.pointlogicenergy.com) is the source of daily natural gas consumption estimates for the residential and commercial sector and the electric power sector. Several kinds of IHS Markit data were combined to produce daily estimates of the U.S. net natural gas exports:

- Liquefied natural gas send-out at U.S. regasification terminals
- The net of natural gas pipeline exports and imports with Canada
- Natural gas feedstock deliveries to LNG liquefaction terminals
- Net of natural gas pipeline exports and imports with Mexico

U.S. Energy Information Administration (www.eia.gov) EIA is the primary source of information for the Dashboard. EIA data include:

- Estimates of weekly underground natural gas storage inventories for the Lower 48 states and by storage region
- Estimates of weekly net changes in underground natural gas storage inventories for the Lower 48 states and by storage region
- Natural gas storage capacity
- Estimates of natural gas storage utilization for the Lower 48 states and by storage region

Related links

Additional information related to natural gas storage is available at the following sources:

U.S. Energy Information Administration (EIA)

- Storage Activity and Operations
  - Weekly Natural Gas Storage Report
  - Weekly Working Gas in Underground Storage
  - Monthly Underground Natural Gas Storage by All Operators
  - Southern California Daily Energy Report
  - LNG withdrawals and additions to storage
- Infrastructure
  - Latest storage capacity data (monthly)
  - Storage capacity map
  - Underground natural gas storage capacity (annual report)
  - Natural gas storage field-level data (monthly query)
- Background
  - EIA storage landing page
  - Basics of underground natural gas storage
  - Natural Gas Weekly Update
  - Weekly Natural Gas Storage Report Methodology and EIA-912 survey

National Oceanic and Atmospheric Administration (NOAA)

- NOAA 6-10 day outlook
- NOAA 8-14 day outlook
- NOAA one-month outlook
- NOAA three-month outlook