

Estimate of Maximum Underground Working Gas Storage Capacity in the United States: 2007 Update

This report provides an update to an estimate for U.S. aggregate natural gas storage capacity that was released in 2006. Although the concept of maximum capacity seems quite straightforward, there are numerous issues that preclude the determination of a definitive maximum volume. The earlier report provides additional details on the initial estimation and related issues. It is available at http://www.eia.doe.gov/pub/oil_gas/natural_gas/analysis_publications/ngcapacity/ngcapacity.pdf. Questions or comments on the contents of this article should be directed to William Trapmann at william.trapmann@eia.doe.gov or (202) 586-6408.

In September 2006, the Energy Information Administration (EIA) released an analysis of maximum working gas storage capacity based on data available in early 2006. This paper presents updated capacity estimates that reflect changes to capacity in 2006 through the end of August 2007, including new fields, expansion of or data adjustments to existing fields, and reclassifications. Using a measure based primarily on non-coincident peak storage volumes between 2000 and 2004, which is the most conservative of the three capacity measures discussed in the September 2006 paper, the revised estimate of working gas capacity is 3,703 billion cubic feet (Bcf), roughly 110 Bcf higher than the earlier estimate.

Methodology

The incremental gain to peak working gas storage capacity from new fields, expansions, or data adjustments is assumed to equal 90 percent of their design capacity. This assumption reflects the relative magnitude of peak capacity and design capacity estimated for last year: 3.6 Tcf of peak capacity and 4.0 of design capacity. Reclassifications between base gas and working gas are assumed to contribute one-for-one to peak capacity with no adjustment due to industry practices.

The estimates for incremental capacity are added to capacity estimates for 2006 to yield the revised capacity estimates. The previous estimates from the September 2006 paper provide the basis for the updated capacity estimates for the East and Producing regions. The 2006 capacity estimate for the West is the peak volume recorded in 2006, which slightly exceeded the previously estimated 2006 capacity for this region. As a recorded peak, the West volume reflects the coincident peak for fields in the region during a given week. Based primarily on the non-coincident peaks by field or the coincident peaks for a region, this approach yields conservative estimates for maximum capacity.

Estimates

The EIA-191 annual census of all underground natural gas storage fields serves as the basis for the changes to existing fields. Expansion and data adjustments constitute 54 Bcf of new working gas design capacity. New fields contribute an additional 27 Bcf. This change to total working gas design capacity after adjustment results in an incremental 81 Bcf added to the peak working gas capacity estimate. Combined with reclassifications of 29 Bcf, peak capacity is estimated to have increased 110 Bcf.

The updated estimate for peak working gas capacity as of mid-2007 is 3,703 Bcf, with the largest share of capacity in the East (Table 1). The updated estimates, which are based heavily on non-coincident peak volumes for all fields or coincident peaks for a region, constitute conservative estimates for maximum working gas capacity, since some facilities during the 5-year reference period may not have been at their practical maxima.

Table 1. Estimates of Maximum Working Gas Capacity by Region Using Most Conservative Methodology (Billion Cubic Feet)

East	Producing	West	Total
2,130	1,096	477	3,703

Note: Owing to disclosure restrictions associated with data collected on the EIA-191, "Monthly Underground Gas Storage Report," and the EIA-912, "Weekly Underground Natural Gas Storage Report," further disaggregation of the regional data is not allowed.

Source: Energy Information Administration (EIA), Natural Gas Division.

Comparison of Maximum Storage Estimates

The updated conservative estimate of 3,703 Bcf is below estimates based on alternate methods that were discussed in the September 2006 paper.¹ An estimate of aggregate working gas capacity based on the design capacity of the fields obtained by deducting the sum of base gas volumes from the sum of total design capacity for all fields yields a value of 4,099 Bcf as of the end of July 2007.² This measure is likely to overstate practical capacity. Another approach to estimating maximum working gas capacity is to reduce design capacity using a recognized industry 'rule-of-thumb.' One such rule, drawn from industry practice prior to unbundling, is that the industry may be assumed to operate with at least a 5-percent cushion of unutilized storage capacity as of October 31.³ Applying this guideline to the most recent storage data yields a maximum effective working gas capacity estimate of 3,894 Bcf for all fields as of the end of July 2007.

Revised: October 25, 2007

¹ Details on the methodologies are available in the EIA report, *Estimates of Maximum Underground Working Gas Storage Capacity in the United States* (September 2006),

http://www.eia.doe.gov/pub/oil_gas/natural_gas/analysis_publications/ngcapacity/ngcapacity.pdf.

² Total storage capacity and base gas volumes are reported in Table 12 of the *Natural Gas Monthly* (September 2006),

http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/natural_gas_monthly/current/pdf/table_12.pdf.

³ Cambridge Energy Research Associates, "Gas Storage: How High Can Inventories Go?" *CERA Insight* (May 2, 2006).