US Working Gas in Underground Storage

Working natural gas in underground storage

billion cubic feet

Source: Form EIA-912, "Weekly Underground Natural Gas Storage Report"

January 2014-2015 Daily Natural Gas Consumed in Power Generation

Source: Bentek Energy

Source: Bentek Energy
Supplying Peak Day Nat Gas Demand
2007-2015

Source: Bentek Energy
生産量の変化, 2013-2020

Source: Bloomberg New Energy Finance

2014年12月10日
Incremental gas demand by year (Bcfd)

Source: Bloomberg New Energy Finance
Recent, announced, and modelled coal retirements by region (GW)

Note: Results are from our Coal retirements model and based on base-case assumptions for EPA emissions standards, control technologies, plant performance, and compliance costs. ‘Recent’ includes all coal capacity retired from 2011-12.
US gas demand from LNG exports (Bcfd)

Source: Bloomberg New Energy Finance
Demonstrated Commitment to Efficiency from Natural Gas Utilities
Natural gas systems represent a small share of annual GHGs

U.S. Greenhouse Gas Emissions

- Natural Gas System Methane Emissions: 2%
- Total GHG: 6,558 Tg CO2-eq

Source: EPA GHG Inventory 2013
Monthly Prices Per MMBtu

Energy Information Administration

Dollars Per MMBtu

Henry Hub Nat Gas

WTI Crude
US Working Gas in Underground Storage

Net US Working Gas Injections

US Natural Gas Total Consumption

January-February Daily Natural Gas Residential/Commercial Consumption

Source: Bentek Energy LLC
January-February Daily Natural Gas Industrial Consumption

Source: Bentek Energy LLC
January 2014-2015 Total Daily Natural Gas Consumption

Source: Bentek Energy
January 2014-2015 Daily Natural Gas Consumed in Power Generation

Source: Bentek Energy
January 2014-2015 Daily Natural Gas Industrial Consumption

Source: Bentek Energy

Source: Bentek Energy
Total Peak Day Natural Gas Consumption

2007-2015

Source: Bentek Energy
Peak Day Sector Consumption

2007-2015

Source: Bentek Energy
Supplying Peak Day Nat Gas Demand
2007-2015

Source: Bentek Energy
Supplying Peak day Natural Gas Demand

2007-2015

Source: Bentek Energy
US Natural Gas – Prices and Production

US Natural Gas – Key Trading Locations

Monthly average natural gas spot prices at key trading locations (2014)
dollars per million Btu

生産量の変化, 2013-2020

Source: Bloomberg New Energy Finance

2014年12月10日
North American Production Outlook by Area

Dry gas production (Bcf/d)

Rig count, select areas

Source: Bloomberg New Energy Finance.  Note: Rig count should not be viewed as comprehensive as not every play modelled.
US Natural Gas Proved Reserves Grow Again

Changes in natural gas proved reserves by state/area, 2012 to 2013

Total U.S. increase: +31.3 trillion cubic feet

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

US Shale Gas Production

Monthly dry shale gas production
billion cubic feet per day

- Marcellus (PA & WV)
- Haynesville (LA & TX)
- Eagle Ford (TX)
- Fayetteville (AR)
- Barnett (TX)
- Woodford (OK)
- Bakken (ND)
- Antrim (MI, IN, & OH)
- Utica (OH, PA & WV)
- Rest of US 'shale'

Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through November 2014 and represent EIA's official shale gas estimates, but are not survey data. State abbreviations indicate primary state(s).

Recent, announced, and modelled coal retirements by region (GW)

Note: Results are from our Coal retirements model and based on base-case assumptions for EPA emissions standards, control technologies, plant performance, and compliance costs. ‘Recent’ includes all coal capacity retired from 2011-12.

Source: Bloomberg New Energy Finance, EIA
North American industrial demand growth (Bcfd)

Note: More information on industrial projects and gas demand calculations can be found in our North American industrial project database.

Source: Bloomberg New Energy Finance
North American Gas Demand Growth by Sector

(Bcfd)

2014 2015 2016 2017

LNG exports
Other
Transport
Industrial
Oil sands
Power
ResComm

Source: Bloomberg New Energy Finance
## DOE/FERC, Free Trade Agreement/Non-FTA LNG Export Approvals

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Capacity (Bcf/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sabine Pass</td>
<td>2.20</td>
</tr>
<tr>
<td>Freeport LNG</td>
<td>1.80</td>
</tr>
<tr>
<td>Dominion Cove Point</td>
<td>0.77</td>
</tr>
<tr>
<td>Cameron LNG</td>
<td>1.70</td>
</tr>
<tr>
<td>Cheniere Corpus Christi (FERC Approved)</td>
<td>2.10</td>
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<tr>
<td>Lake Charles (DOE Approved Non-FTA)</td>
<td>2.00</td>
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<tr>
<td>Carib Energy (DOE Approved Non-FTA)</td>
<td>0.04</td>
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<tr>
<td>Jordan Cove (DOE Approved Non-FTA)</td>
<td>0.80</td>
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<tr>
<td>Oregon LNG (DOE Approved Non-FTA)</td>
<td>1.25</td>
</tr>
<tr>
<td>Received Both DOE And FERC Approvals/Under Construction</td>
<td>6.47</td>
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<tr>
<td>Non-FTA DOE Approved</td>
<td>9.76</td>
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<tr>
<td>Total Non-FTA Applications</td>
<td>38.07</td>
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</tbody>
</table>

* FERC approval up to 2.75 Bcf/d
** FTA approval up to 2.80 Bcf/d
*** FTA approval up to 1.0 Bcf/d
**** FTA approval up to 1.2 Bcf/d
US gas demand from LNG exports (Bcfd)

Source: Bloomberg New Energy Finance
Demonstrated Commitment to Efficiency from Natural Gas Utilities
Natural gas systems represent a small share of annual GHGs

U.S. Greenhouse Gas Emissions

- Natural Gas System Methane Emissions 2%
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Source: EPA GHG Inventory 2013
Natural Gas Energy Policy Future

• Social License to Consume Fossil Fuels
• Meaning of “Winning” the Energy Competition, Customer Savings, Infrastructure
• Success of Energy Efficiency Investments
• What Regulatory Structure Allows for Building that Last Mile of Infrastructure
• Implementation of EPA Rules for New and Existing Power Generation
• World Oil Prices
• Carbon Pricing in US Economy