OE ENERGY
MARKET SNAPSHOT
National – Data Through May 2017

Office of Enforcement
Federal Energy Regulatory Commission
June 2017
2017 Summer Assessment
Natural Gas Futures Rise Relative to Coal

Source: Price data from NYMEX & ICE; Power burn from Bentek Energy
Natural Gas Prices Rise Compared to Previous Summer

Source: NYMEX & ICE
Summer Basis Swaps Narrow between Marcellus and Markets

Source: NYMEX
Reserve Margins Adequate in Most Regions

Source: NERC
August 21 Solar Eclipse

Anticipated Solar Production

- 6603 MWs @ 9:00
- 7878 MWs @ 10:22
- 8141 MWs @ 11:56

$\Delta -46 \text{ MWs/min (3775 MWs)}$

$\Delta +56 \text{ MWs/min (5313 MWs)}$

2828 MWs @ 10:22

Source: California ISO
National Slides
NOAA June 2017 Through August 2017 Outlook
Cumulative HDDs by City
Nov 2016– Mar 2017

Source: Bloomberg Weather (daily data summed quarterly)
Cumulative CDDs by City
Apr 2017 – May 2017

Source: Bloomberg Weather (daily data summed quarterly)
Nov 2016-Mar 2017 Spot Power Prices ($/MWh)

- Mid-Columbia: $24.97, 31%
- Indiana Hub: $34.43, 31%
- Mass Hub: $40.80, 24%
- NP 15: $33.64, 19%
- Palo Verde: $23.85, 17%
- PJM West: $33.52, 7%
- SPP South: $29.74, 36%
- NYISO ZJ: $39.76, 26%
- ERCOT North: $24.80, 20%
- SOCO: $28.70, 18%

$ = Average 2016/2017 Spot Price
% Decrease from year prior
% Increase from year prior

*Average On-Peak Day-Ahead from November to March
SPP Price is an average of the North and South Hubs
Source: RTO/ISO and ICE Data
Spot Natural Gas Prices Average ($/MMBtu) Nov 2016 – Mar 2017

- Pricing Point
  - BOLD – This Year
  - Green – % increase from previous year
  - Red – % decrease from previous year

Source: ICE

Updated Jun-2017
Spot Average Natural Gas Trading Volumes (MMBtus)
Nov 2016 – Mar 2017

Pricing Point
BOLD – 16/17 Winter Average
Green – % increase from previous winter
Red – % decrease from previous winter

Source: Bloomberg and ICE

Updated Jun-2017
U.S. NG Supply and Demand


US Natural Gas Supply
Total Change in Supply -1.9%

- Net Pipeline Imports
  - LNG Imports: -1.1%
  - Net Dry Gas Production: -2.1%

US Natural Gas Demand
Total Change in Demand -2.8%

- Power Generation: -12.6%
- Industrial: 1.8%
- Residential/Commercial: 3.7%

Note: Balance includes all amounts not attributable to other categories.
Source: Derived from Bentek Energy data
Updated Jun-2017
Regional Imports from Canada

Source: Derived from Bentek Energy data

Updated: Jun-2017
Total U.S. Natural Gas Demand All Sectors

Source: Derived from Bentek Energy data, derived from interstate pipeline flow and modeled data.

Updated June 2017
U.S. Natural Gas Consumption for Power Generation

Source: Derived from Bentek Energy data

Updated Jun-2017
EIA Regional Storage Inventories

Source: Derived from Bloomberg Data

Updated: Jun-2017
Monthly U.S. Dry Gas Production – Lower 48 States

Bcf/d

Dry Production

Jan-08  May-08  Sep-08  Jan-09  May-09  Sep-09  Jan-10  May-10  Sep-10  Jan-11  May-11  Sep-11  Jan-12  May-12  Sep-12  Jan-13  May-13  Sep-13  Jan-14  May-14  Sep-14  Jan-15  May-15  Sep-15  Jan-16  May-16  Sep-16  Jan-17  May-17

Note: Prior to July 2010, chart was derived from a combination of EIA and Bentek Energy data
Source: Derived from Bentek Energy data
Updated Jun-2017
National Natural Gas Market Overview: Rig Count by Type

Rigs by Type

Baker Hughes Rig Count (Rigs)

- Oil Rigs
- Gas Rigs

Source: Derived from Bloomberg data

Notes:

Updated Jun-2017
National Natural Gas Market Overview: Competing Fuels

Compared to the Nymex Henry Hub and WTI Crude Oil, the Big Sandy Barge (Low Sulfur Coal) shows a lower price trend. The chart illustrates the competing fuel prices from June 2015 to June 2017, with key data points indicating the fluctuations in price over time.

Source: Derived from Bloomberg data

Updated Jun-2017
Notes: Everett data includes flows onto the AGT and TGP interstate lines, plus estimates of flows to the Mystic 7 power plant, Keyspan Boston Gas, and LNG trucked out of the terminal. Excludes flows to the Freeport LNG which flows via intrastate pipelines and flows to the Mystic 8 and 9 power plants.

Source: Derived from Bentek Energy data

Updated Jun-2017
Note: Includes information and Data supplied by IHS Global Inc. and its affiliates ("IHS"); Copyright (publication year) all rights reserved.
Landed prices are the monthly average of weekly trades from the prior month.
Historical and World Gas Futures Prices

- Henry Hub
- TZ6 NY
- Algonquin Citygates
- UKNBP
- Japanese LNG Spot Price

$/MMBtu

Source: Derived from Bloomberg data

Updated: Jun-2017
National Natural Gas Market Overview: WTI vs Brent Oil Price

WTI vs Brent Crude Oil Price

Source: Derived from Bloomberg data
Updated: Jun-2017
National Natural Gas Market Overview: Nymex Futures Curve

Source: Derived from Bloomberg data

Updated: Jun-2017
Infrastructure Report

Office of Energy Projects Energy Infrastructure Update
http://www.ferc.gov/legal/staff-reports.asp

(see “Energy Infrastructure” tab)
# Natural Gas Highlights

## Natural Gas Activities in April 2017

<table>
<thead>
<tr>
<th>Status</th>
<th>No. of Projects</th>
<th>Storage Capacity (Bcf)</th>
<th>Deliverability (MMcf/d)</th>
<th>Capacity (MMcf/d)</th>
<th>Miles of Pipeline</th>
<th>Compression (HP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline</td>
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## Natural Gas Activities through April 30, 2017

### January through April 30, 2016

<table>
<thead>
<tr>
<th>Status</th>
<th>No. of Projects</th>
<th>Storage Capacity (Bcf)</th>
<th>Deliverability (MMcf/d)</th>
<th>Capacity (MMcf/d)</th>
<th>Miles of Pipeline</th>
<th>Compression (HP)</th>
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<tr>
<td>Placed in Service through April 30, 2016</td>
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<td>4,569.3</td>
<td>65.3</td>
<td>199,850</td>
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<td>Certificated through April 30, 2016</td>
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<td>2,291.6</td>
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<td>9,827.9</td>
<td>1,253.2</td>
<td>618,584</td>
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<tr>
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<td>24</td>
<td></td>
<td></td>
<td>7,797.9</td>
<td>863.8</td>
<td>687,125</td>
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<tr>
<td>Storage</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Placed in Service through April 30, 2016</td>
<td>0</td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Certificated through April 30, 2016</td>
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<td>0</td>
<td>0</td>
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<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>LNG (Import &amp; Export)</td>
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<tr>
<td>Placed in Service through April 30, 2016</td>
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<td>0</td>
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<td>Certificated through April 30, 2016</td>
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<td>(Import/Export)</td>
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<td>6.8</td>
<td>1,080</td>
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Source: Staff Database
## Electric Generation Highlights

### New Generation In-Service (New Build and Expansion)

<table>
<thead>
<tr>
<th>Primary Fuel Type</th>
<th>April 2017</th>
<th>January – April 2017 Cumulative</th>
<th>January – April 2016 Cumulative</th>
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<tbody>
<tr>
<td></td>
<td>No. of Units</td>
<td>Installed Capacity (MW)</td>
<td>No. of Units</td>
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<tr>
<td>Coal</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Natural Gas</td>
<td>14</td>
<td>1,814</td>
<td>36</td>
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<tr>
<td>Nuclear</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Oil</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Wind</td>
<td>4</td>
<td>428</td>
<td>25</td>
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<tr>
<td>Biomass</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Geothermal Steam</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Solar</td>
<td>10</td>
<td>225</td>
<td>100</td>
</tr>
<tr>
<td>Waste Heat</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other *</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>29</strong></td>
<td><strong>2,467</strong></td>
<td><strong>172</strong></td>
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</tbody>
</table>

Sources: Data derived from Velocity Suite, ABB Inc. and The C Three Group LLC which include plants with nameplate capacity of 1 MW or greater. The data may be subject to update.
Electric Transmission Highlights

Transmission Projects Completed

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<tr>
<td>≤230</td>
<td>0.0</td>
<td>62.4</td>
<td>38.1</td>
<td>479.2</td>
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<td>2,331.9</td>
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<td>3,558.3</td>
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<tr>
<td>≥500</td>
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<td>273.4</td>
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<td>750.4</td>
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<td>Total U.S.</td>
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<td>73.6</td>
<td>38.1</td>
<td>1,073.1</td>
<td>4,926.8</td>
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<td>8,192.3</td>
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</table>

Sources: Data derived from Staff Database and U.S. Electric Transmission Projects ©2017 The C Three Group, LLC.
### Installed Generating Capacity

<table>
<thead>
<tr>
<th>Source</th>
<th>Installed Capacity (GW)</th>
<th>% of Total Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>287.64</td>
<td>24.17%</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>514.90</td>
<td>43.26%</td>
</tr>
<tr>
<td>Nuclear</td>
<td>108.15</td>
<td>9.09%</td>
</tr>
<tr>
<td>Oil</td>
<td>44.81</td>
<td>3.76%</td>
</tr>
<tr>
<td>Water</td>
<td>100.73</td>
<td>8.46%</td>
</tr>
<tr>
<td>Wind</td>
<td>85.22</td>
<td>7.16%</td>
</tr>
<tr>
<td>Biomass</td>
<td>16.77</td>
<td>1.40%</td>
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<tr>
<td>Geothermal Steam</td>
<td>3.90</td>
<td>0.33%</td>
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<tr>
<td>Solar</td>
<td>26.38</td>
<td>2.22%</td>
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<tr>
<td>Waste Heat</td>
<td>1.04</td>
<td>0.09%</td>
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<tr>
<td>Other*</td>
<td>0.75</td>
<td>0.06%</td>
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<tr>
<td>Total</td>
<td>1,190.29</td>
<td>100.00%</td>
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</tbody>
</table>

Sources: Data derived from Velocity Suite, ABB Inc. and The C Three Group LLC which include plants with nameplate capacity of 1 MW or greater. The data may be subject to update.

* “Other” includes purchased steam, tires, and miscellaneous technology such as batteries, fuel cells, energy storage, and fly wheel.