Cruel Summer: Natural Gas Market Expectations for Summer 2017
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Introduction

Summer 2017 is on track to feature U.S. natural gas export growth and new pipeline projects coming online to move Marcellus and Utica production gas. Meanwhile, due to delays in new production, PointLogic anticipates storage levels by the end of the season will average only slightly higher than the 5 year average and lower than last year levels, despite lower power demand this summer than in 2016.

In this report, we will cover:
- The U.S. natural gas landscape headed into summer 2017.
- How did a mild winter affect demand, supply and prices?
- Where are storage levels today?

Summer 2017 demand drivers
- Power demand was a record in 2016. What’s in store for 2017?
- Mexico and LNG exports are rising. How fast will they grow?

Production response
- Will production recover this summer after a difficult 2016?
- Will Northeast pipeline projects uncork the bottleneck in the Marcellus and Utica?
- What will be production’s impact on storage trends?

And we will finish with…
- A comprehensive supply/demand/storage outlook – where the market is today and where it’s going.

Note: All forecasts have been updated as of June 12, 2017
Summer 2017: How Did We Get Here?

Three major factors affected U.S. gas markets in the winter 2016/17 season and set the stage for the “Cruel Summer,” in which prices could remain relatively flat and production not yet return to its era of rapid growth.

1. **Weak demand.** For the second consecutive winter, heating demand for gas in the residential/commercial sector was unexpectedly low. Domestic demand including residential/commercial, power and industrial averaged 77.0 Bcf/d, or 2.9 Bcf/d below the five-year average.

2. **Weak production.** Demand in winter 2016/17 did not encourage added gas production. In fact, Lower 48 dry gas production averaged just 70.3 Bcf/d, which was the first winter-on-winter decline since 2009/10.

3. **Inventories.** At the end of the winter season (April 1, 2017), U.S. gas storage stood at 2,051Bcf. While this was significantly lower than record-setting inventories at the end of the 2016 winter season, it was 265 Bcf (more than 10%) above the five-year average.

### Supply and Demand by Sector
**Winter 2016/17 vs. Winter 2015/16**

- **Production slowdown and demand flub leaves market 1.9 Bcf/d short vs. last winter**
- **Storage inventory remains elevated as only 295 Bcf incremental withdrawn vs. last winter**

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Summer Demand Drivers

As the summer 2017 season begins, all eyes are on demand, supply and inventories. How they interact will determine whether gas prices will maintain their strong gains over summer 2016 or even increase, as well as whether new production is incentivized.

Domestic and Export Demand Factors

Demand will be influenced most heavily by two factors:
- Domestic demand for electric power for summer cooling.
- Exports, both pipeline gas to Mexico and via tankers in the form of liquefied natural gas (LNG).

Domestic Demand

Power demand is projected to decline in the key summer months of 2017, as compared to 2016. The decline is a significant 2.8 Bcf/d for the 92 days of June-August, or a total of 258 Bcf lower demand.

Why will gas demand be weaker in summer 2017? Simple economics.

The relative price of gas-fired generation versus coal-fired generation will affect how each fuel is utilized to provide cooling relief from summer temperatures. The warmer winter of 2016/17 left coal stockpiles higher than a year ago. Plus, the price of natural gas this summer will also be more expensive, upward of 60-75 cents per MMBtu on average (about 25%). So, in key markets in the Midwest, Mid-Atlantic and Northeast (known as the PJM and MISO power markets), coal will be more competitive to gas.

Summer 2017 Power Demand

<table>
<thead>
<tr>
<th>Month</th>
<th>Forecast</th>
<th>Year Ago</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr-17</td>
<td>25.0</td>
<td>27.8</td>
</tr>
<tr>
<td>May-17</td>
<td>28.0</td>
<td>31.0</td>
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<tr>
<td>Jun-17</td>
<td>31.0</td>
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<td>Jul-17</td>
<td>34.0</td>
<td>37.0</td>
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<tr>
<td>Aug-17</td>
<td>37.0</td>
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<tr>
<td>Sep-17</td>
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<td>40.0</td>
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<tr>
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<td>Nov-17</td>
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<tr>
<td>Dec-17</td>
<td>28.0</td>
<td>31.0</td>
</tr>
<tr>
<td>Jan-18</td>
<td>25.0</td>
<td>27.8</td>
</tr>
<tr>
<td>Feb-18</td>
<td>22.0</td>
<td>24.8</td>
</tr>
<tr>
<td>Mar-18</td>
<td>20.0</td>
<td>22.8</td>
</tr>
</tbody>
</table>

Avg Summer 17 Pow = 27.3 Bcf/d
Avg Summer 16 Pow = 30.1 Bcf/d

Source: PointLogic Supply/Demand and Two Season Balanced Forecast

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Impact of Renewable Power

Renewables are the other domestic factor to watch. Although the retirement of coal-fired plants in the last decade has favored greater use of natural gas, the trend is starting to shift. As the graph below shows, new capacity installed since July 2016 of renewables (especially wind and solar) is equal to that of natural gas, even though natural gas has a huge lead in total installed capacity.

Installed power capacity for solar and wind combined by the end of 2017 will be 15 GW higher than it was in 2016 – and after installation, renewables are cheaper to operate than gas.

**Summer Brings More Natural Gas Generation Capacity**

*Summer Capacity in GW – July 2016 vs. July 2017*

Exports are the second part of the demand picture. U.S. exports of natural gas have reached record levels, and expectations are that exports will continue to rise through summer 2017 and beyond. This is a strongly positive factor for demand in summer 2017.

**LNG**

One U.S. LNG export facility is operating – Sabine Pass in Louisiana. Its exports have been averaging nearly 2 Bcf/d in 2017. More growth is coming as Sabine Pass has commerced commercial operations at an additional liquefaction unit (Train 3) and in early June asked for permission to start operations at Train 4. Also, Cove Point LNG in Maryland will begin operations later in the year. The net effect will be to raise LNG exports to an average of 2.5 Bcf/d through the end of 2017.

**Mexico**

The other fast-growing segment of the market is gas exports by pipeline to Mexico. This has been facilitated by extensive new pipelines from U.S. gas-producing areas to the border, as well as new pipelines built to bring gas deep into Mexico’s population and industrial centers. From exports of about 2 Bcf/d in early 2015, volumes have increased to about 4 Bcf/d today.

**LNG Demand vs. Capacity (Bcf/d)**

![LNG Demand vs. Capacity Chart](image)
Will Production Respond?

Natural gas production reached a three-year low in January 2017, averaging 69.9 Bcf/d. This unexpected decline was due to continued modest gas prices, a steeper curve to replace declines in existing production and a lack of takeaway capacity from the high-producing Marcellus and Utica Shale regions to demand centers within and from the Northeast.

Will summer 2017 mark the turning point for production – or will it be a cruel summer of unfilled promises?

PointLogic is forecasting that the summer will show only a mild rebound: Production will average a disappointing 71.7 Bcf/d, up from 71.3 Bcf/d in summer 2016.

2017 Production Delayed: Is this the Bottom?
Lower 48 Dry Gas Production (Bcf/d)
But as the graph below shows, regional variance in production will be significant, with Northeast producers continuing to increase output steadily, and growing oil production in the Permian in Texas bringing along with it rising volumes of “associated” gas. However, production declines in other parts of Texas and elsewhere remain challenged in today’s hydrocarbon price landscape.

Production: Summer 2017 vs. Summer 2016

Lower 48 production to increase 0.4 Bcf/d from summer 2016 to 71.7 Bcf/d.
Production Solutions for Summer 2017

One key issue to watch for gas production is the impact of new Northeast pipeline takeaway capacity.

For several years, producers in the Utica and Marcellus have awaited new pipeline capacity so that they can move their gas to high-demand areas and improve their pricing. And 2017 is shaping up to be a good year, with about 8.4 Bcf/d of new takeaway capacity set to come online.

This is only a taste of what's to come, as projects for nearly 9 Bcf/d are scheduled to come online in 2018-2019.

New pipeline capacity will uncork constraints in some portions of the Marcellus and Utica plays, enabling gas to leave Appalachia. But takeaway issues will remain for other routes.

Escape Routes From Appalachia

Annual Takeaway Capacity

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>13.9 Bcf/d Avg</td>
</tr>
<tr>
<td>2017</td>
<td>8.4 Bcf/d*</td>
</tr>
<tr>
<td>2018</td>
<td>5.0 Bcf/d</td>
</tr>
<tr>
<td>2019</td>
<td>3.7 Bcf/d</td>
</tr>
<tr>
<td>Total</td>
<td>17.1 Bcf/d</td>
</tr>
</tbody>
</table>

Cumulative takeaway > 31 Bcf/d

*Assumes projects enter in-service dates as announced

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Storage Remains Above Average

Where does the supply-demand picture leave storage inventories?

With lower power demand, rising exports and a small dip in supply, PointLogic is forecasting that net storage inventories will end summer 2017 at 3,955 Bcf. This is only 70 Bcf below end-summer 2016, and well above the five-year average.

As with supply and demand, the storage picture differs in various regions.

Storage Deltas to the Five-Year Average

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Price Impact

Price impacts will be felt regionally, too. With the new takeaway capacity coming out of the Northeast, as well as new pipelines serving the Southeast, prices for Marcellus and Utica gas prices will increase relative to Henry Hub – the spread will get tighter.

However, some of those flows, particularly into the Chicago-area hub, will depress prices for competing gas. To put it another way, PointLogic is forecasting that the spread for gas coming from the Midcontinent or from Canada to the Midwest will increase – think “supply” hub vs. “demand” hub.

And on the West Coast, where hydropower is expected to be especially strong this year, anticipated power demand for gas will keep a lid on gas demand, too.

Price Impact: Summer 2017 vs. 2016 Henry Hub and Location Basis
The Bottom Line: A Cruel Summer

PointLogic is forecasting that lower demand for power to drive down total demand for summer 2017 by 1.8 Bcf/d from summer 2016. Despite an increase in rig count, producers will only slightly surpass last summer’s production levels by 0.4 Bcf/d for the period.

Summer 2017 vs. Summer 2016

**Supply**
- Dry Prod: 0.4 Bcf/d
- LNG Im: -0.2 Bcf/d
- Can Imports: -0.3 Bcf/d
- Supply: -0.1 Bcf/d

**Demand**
- Power: -2.6 Bcf/d
- Industrial: 0.0 Bcf/d
- Res/Com: -0.3 Bcf/d
- Mex Ex: 0.3 Bcf/d
- LNG Ex: 1.6 Bcf/d
- Demand: -1.8 Bcf/d

**Vs. Summer 2016**
- Market 1.7 Bcf/d Long
- Injections up by 362 Bcf.
- Summer injection of 1,883 Bcf (vs. 1,527 Bcf).
Reasons for Optimism

But the picture is not all negative. While the short-term supply and demand picture represents a fairly slow summer, we see stronger demand growth compared to the five-year average, which will push inventories closer to the five-year average at summer’s end.

The bottom line: Unless production achieves 2016 levels, the drawdown in inventories will be significant enough to keep upward price pressure on the market heading into winter 2017/18.

Summer 2017 vs. Five-Year Summer Average

Vs. Five-Yr Avg
- Market 0.2 Bcf/d Short.
- Injections down by 41 Bcf.
- Erosion of surplus by late September.

This report is an example of the depth and breadth of the data and analysis PointLogic Energy customers receive every day. Our Data Suite allows you to see natural gas fundamentals data in real time. See the big picture on interactive maps and click on meter points for detail.

Give us a try ... sign up for a free trial of our full Data Suite today at www.pointlogicenergy.com/offers/datasuite-PLE-EVG17004.html