

NATURAL GAS BASIS

PREVIEW | FundamentalEdge Report | August 2018

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This is a **PREVIEW** of a 20+ Page Report

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Introduction and Key Takeaways

This monthly update of the FundamentalEdge report presents an analysis of the fundamentals of the natural gas market and its impact to natural gas basis.

- Production of natural gas continues at record highs, however, storage inventories are expected to end the season at a record low. Despite the projected low inventory levels, winter 2018/19 gas prices are currently trading at an average \$3/MMBtu.
- At the regional level, some fundamental changes are causing price basis to blow out and trade significantly different compared to historical levels:
 - **Permian** gas is constrained, causing depressed basis prices. Projects coming online starting in mid-2019 will provide some relief.
 - **Northeast** basis is starting to strengthen as bottlenecks are being relieved by additional pipeline capacity coming to market.
 - **Rockies** basis weakness is a result of Midwest demand market competition with Marcellus/Utica supply and overall weakness at Waha.
 - **SoCal** basis prices have blown out during summer 2018 due to strong demand and limited access to supply from storage (Aliso Canyon leak) and pipeline interconnect outages at El Paso and Transwestern.

Storage Inventories and Price Impact

DI expects the 2018 injection season inventory to end at ~3.37 Tcf. This level of inventory is a record low since 2010.

Even with the record-low inventory, prices remain low, with Henry Hub prices averaging ~\$3.04 for winter 2018/19 as of 8/24/2018. This signals that the market is comfortable with production expectations and that production will be able to meet any supply deficit as a result of the lower-than-historical storage level.

Winter 17/18 dry gas production averaged just over 77 Bcf/d, while DI expects winter 2018/19 production to average over 83 Bcf/d, an additional 6 Bcf/d of available supply for the market.

Chart 2 shows a level shift in winter gas prices around 2014-15 when US gas production reached the 71 Bcf/d mark. Between 2011-14, winter gas prices traded at an average \$3.80/MMBtu followed by a low of \$2.40 in 2015. And starting in 2016, winter gas prices have traded at about \$3.00/MMBtu.

CHART 2

End-of-Season Inventories and Winter Prices

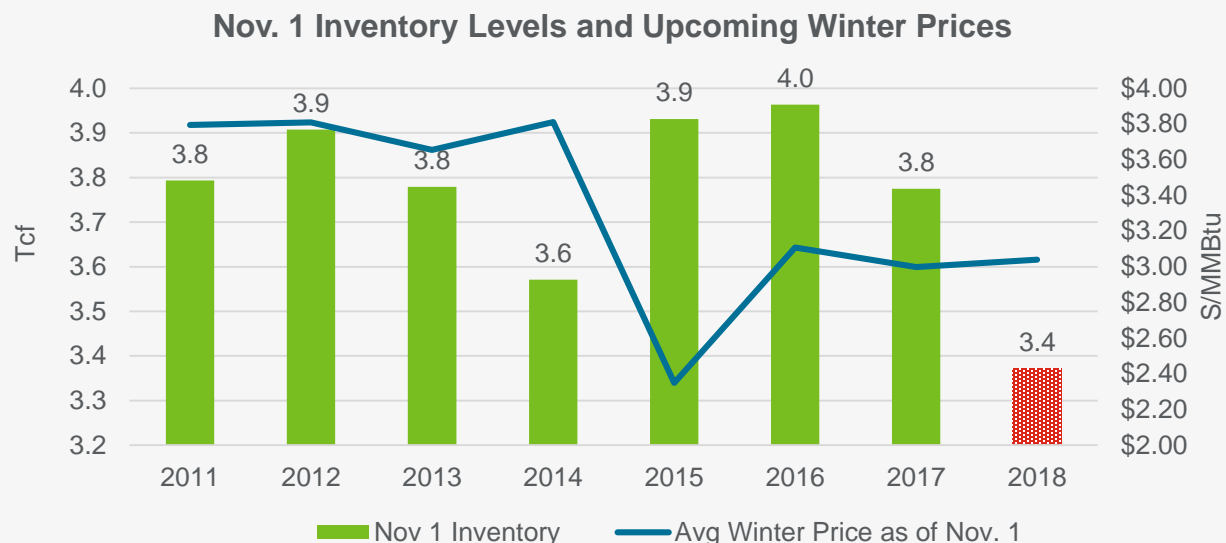


TABLE 1

Historical Winter Production Levels

In Bcf/d	W11/12	W12/13	W13/14	W14/15	W15/16	W16/17	W17/18	W18/19 (Fcst.)
Production	62.3	63.1	65.3	71.7	71.7	69.9	77.2	83.2
Change	+4.0	+0.8	+2.1	+6.4	-	-1.8	+7.3	+6.0

Source: SNL, ProdCast, DI Analysis

Summer 2018 – July Weather Review

Weather temperatures in Texas and California have been hotter than normal, particularly during the month of July.

This has caused an increase in power burn and price volatility at these markets.

In Texas, temperatures in July 2018 were only 1 degree hotter than July 2017. However, power burn is up 0.8 Bcf/d. The significant increase in power burn is a result of coal retirements (down 4 GW), while wind capacity only increased by 1 GW compared to last summer.

In California, record-high temperatures did not result in higher power burn due to the use of renewables.

CHART 3

Texas: July Temperatures and Power Burn

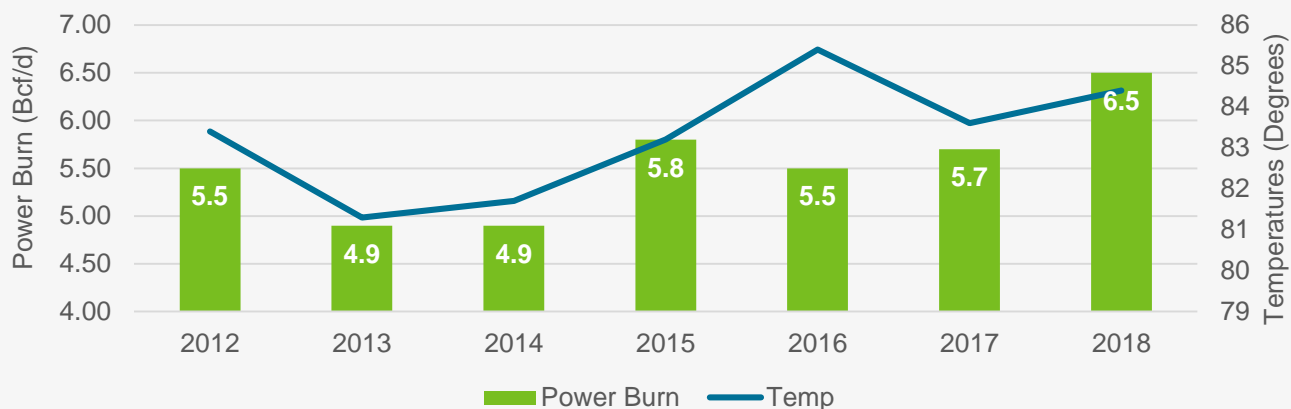
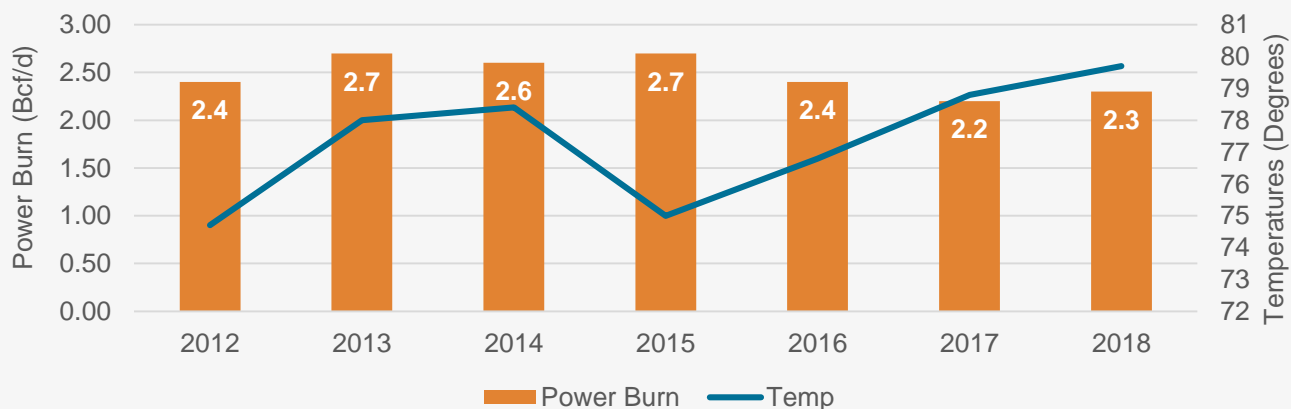


CHART 4

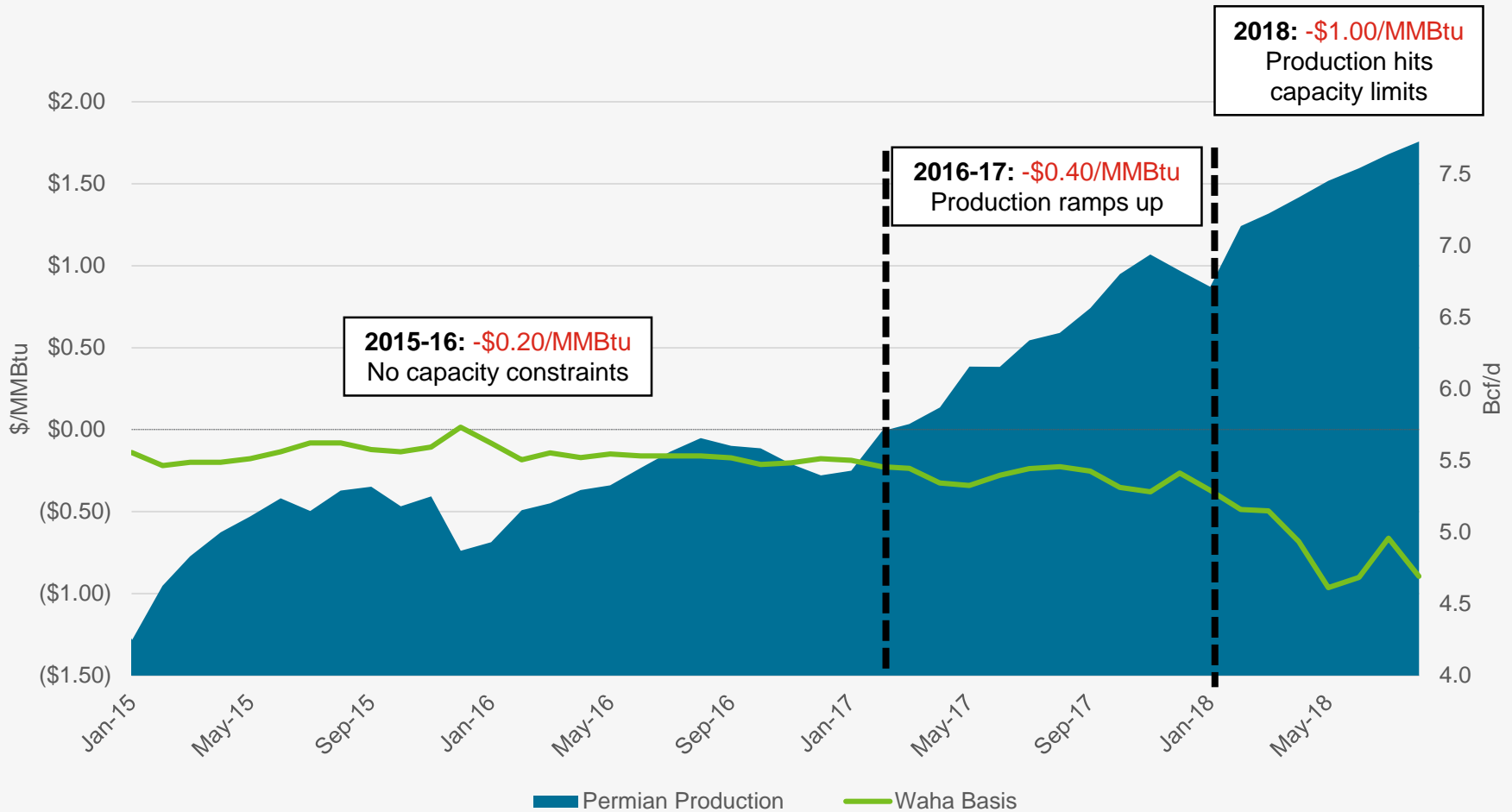
California: July Temperatures and Power Burn



Historical Waha Basis (2015-2018TD)

CHART 6

Waha Historical Basis and Production



Source: SNL prices, DI Production

Northeast Production and Takeaway Capacity

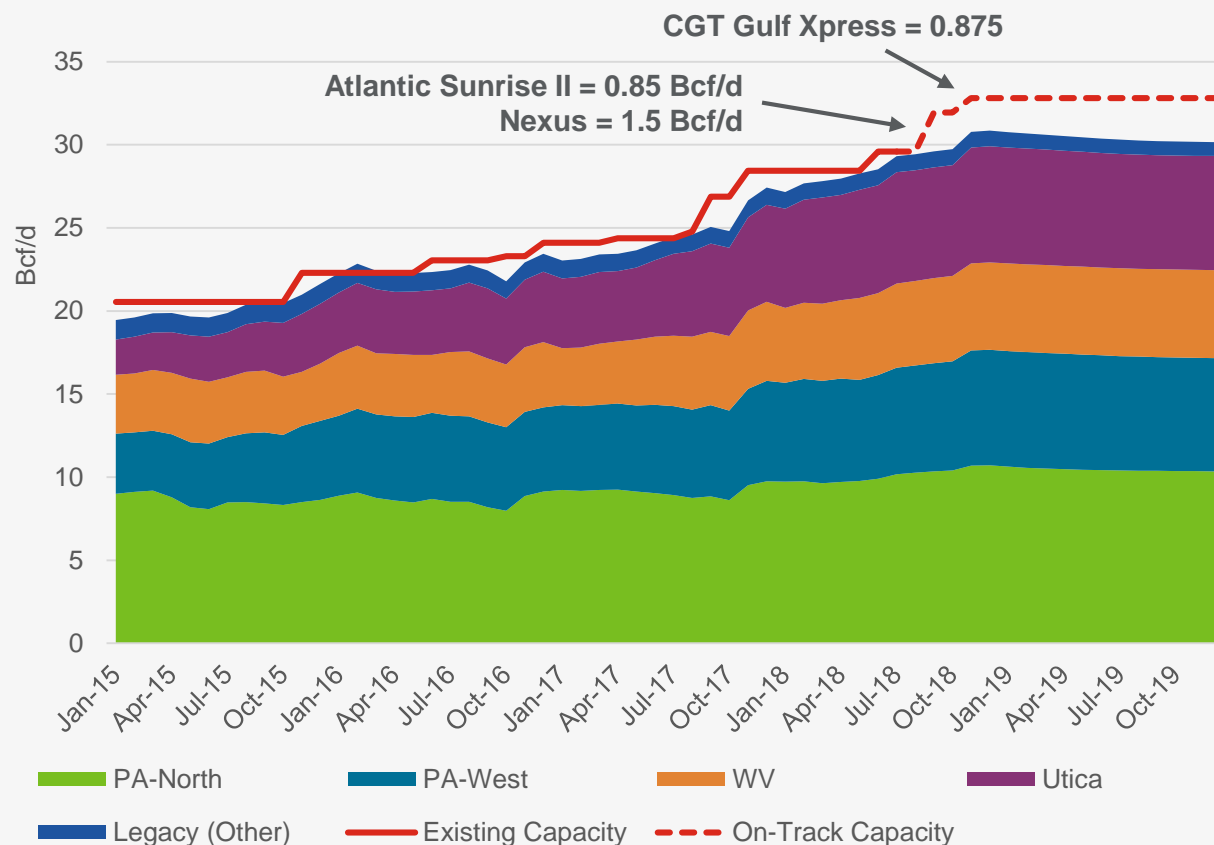
Production growth in the Appalachian Basin has been significant despite the lack of takeaway capacity. The growth was possible as pipeline expansions took place and production filled them up as soon as they became available.

In 2015, the Marcellus and Utica shales combined for a total gas production of ~20 Bcf/d. By the end of 2017, levels have reached ~28 Bcf/d, roughly an 8 Bcf/d growth in just 2 years.

DI expects gas production in the Marcellus/Utica to grow to over 30 Bcf/d by the end of 2018 as 3 key projects are placed online during 4Q2018: Nexus, Transco's Atlantic Sunrise Phase II and CGT Gulf Xpress.

CHART 8

Northeast Dry Gas Production and Takeaway Capacity

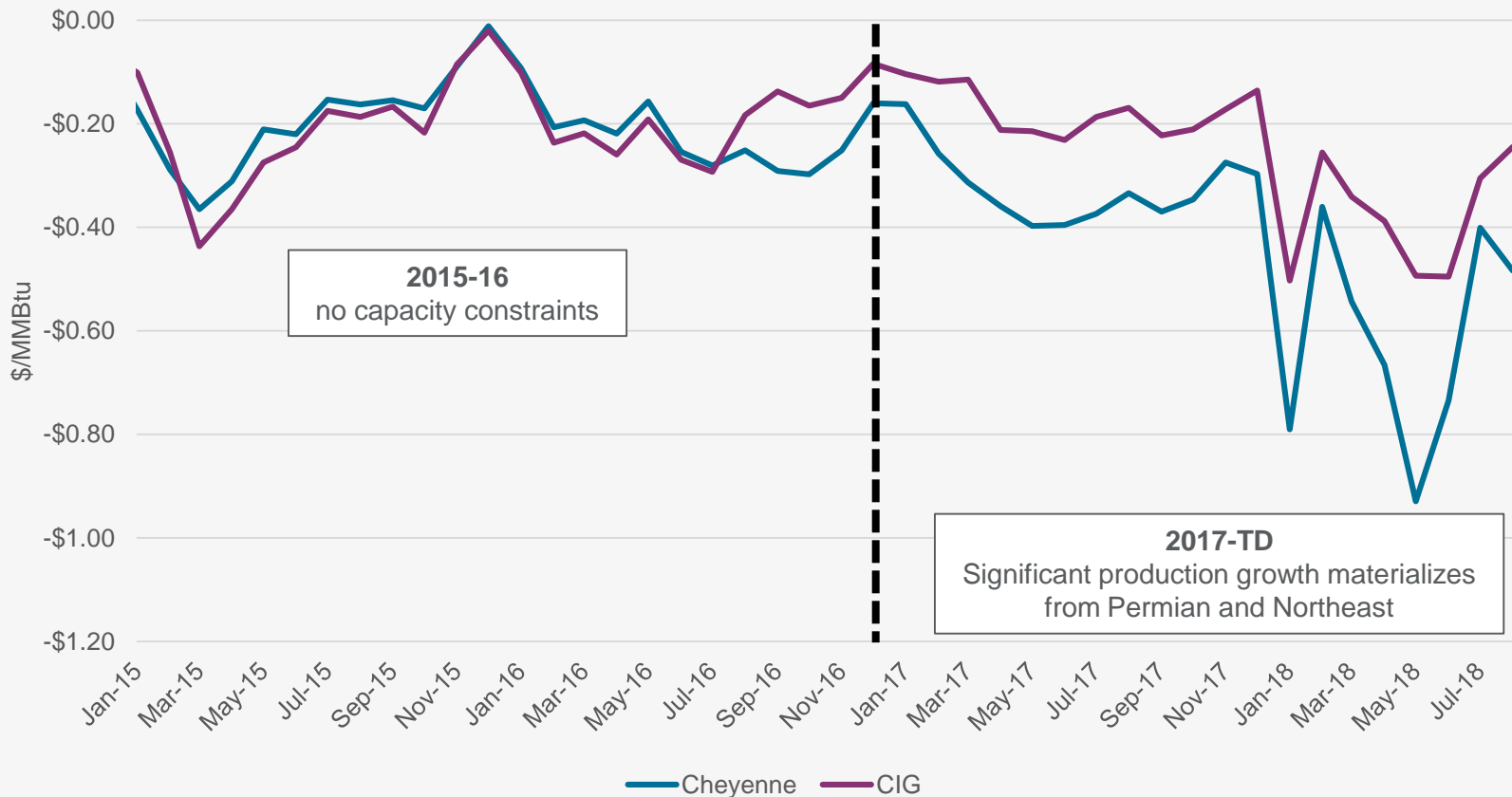


Source: ProdCast, DI Analysis

Historical Rockies Basis (2015-2018TD)

CHART 16

Rockies Historical Basis



Source: SNL

SoCal Storage

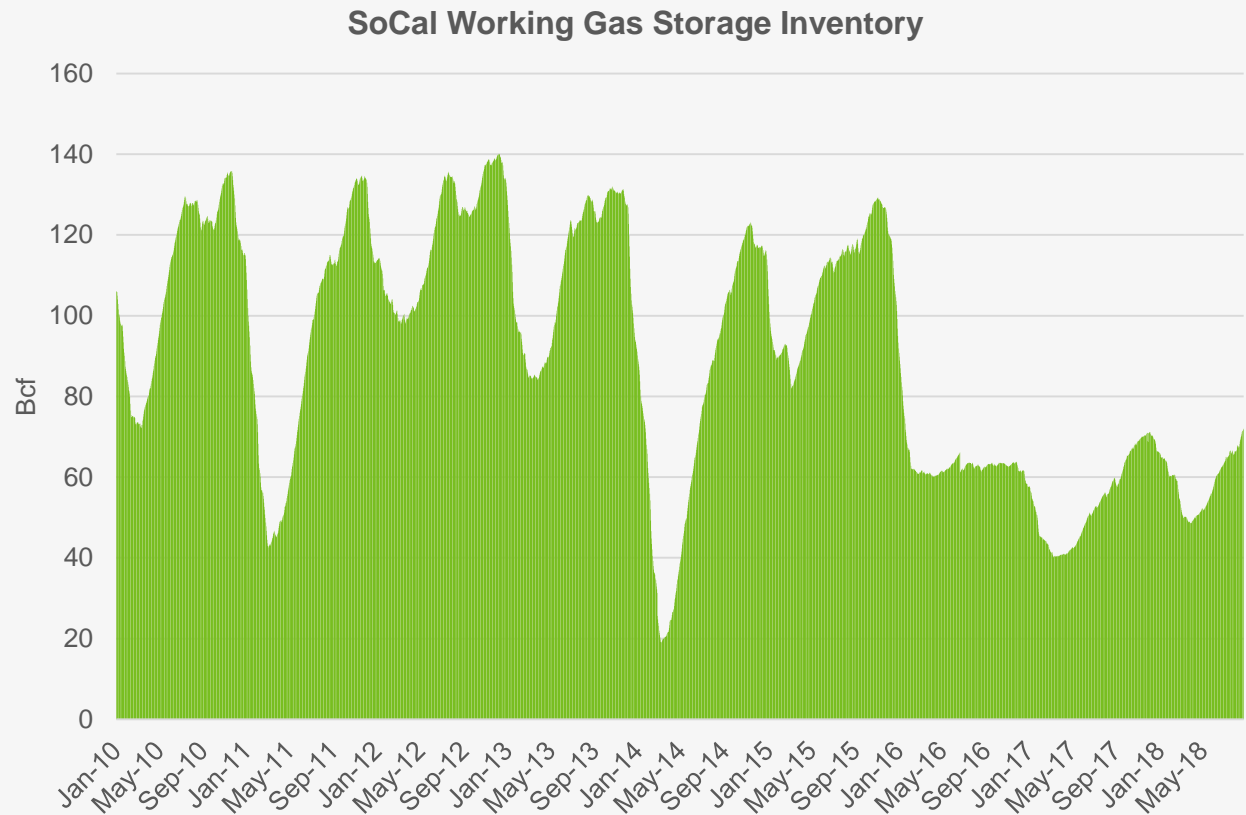
Storage levels on the SoCal system dramatically decreased since late 2015 due to the leak at Aliso Canyon storage facility near Los Angeles.

In summer 2015, the average daily ending inventory for SoCal storage was ~113 Bcf. So far this summer, the average ending inventory has only been ~60 Bcf.

This summer, Southern California experienced higher-than-normal temperatures, causing power demand to spike, due in part to the lack of supply from storage.

CHART 20

SoCal Historical Storage Levels



Source: EIA, DI Analysis

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Thank you!

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