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Week Ending November 24, 2017

Please contact me to review a joint RBN Energy daily publication detailing natural gas fundamentals.

Price Action: The December contract fell 28.4 cents (9.2%) to $2.813 on a 29.2 cent range.

Price Outlook: **Prices collapsed as the weather forecasts turned incredibly bearish. Based on weather changes only, 116.3 bcf was added to storage projections. That is 9th largest weekly addition from the 306 weeks in our database. Combined with moderate current temperatures and a noticeable Thanksgiving effect, the fundamentals were bearish. However, it is just the end of November and the heart of winter is still to come. From current price levels, even a slight bullish change in the weather forecasts could result in a notable price rise. The current 15-day forecast is warmer than 8 of the previous 10 years. CFTC data was not updated due to the Thanksgiving Holiday. Aggregated CME futures open interest rose to 1.430 million as of November 24, the highest since June 14. Open interest in the February $4.00 call fell (624) to 89,858. Open interest in the March $4.00 call fell (13,031) to 74,959. Open interest in the January $2.75 put fell (5,884) to 39,085.**

Weekly Storage: US working gas storage for the week ending November 17 indicated a working gas storage withdrawal of (46) bcf. Working gas inventories fell to 3,726 bcf. Current inventories fall (319) bcf (7.9%) below last year and (136) bcf (3.5%) below the 5-year average.

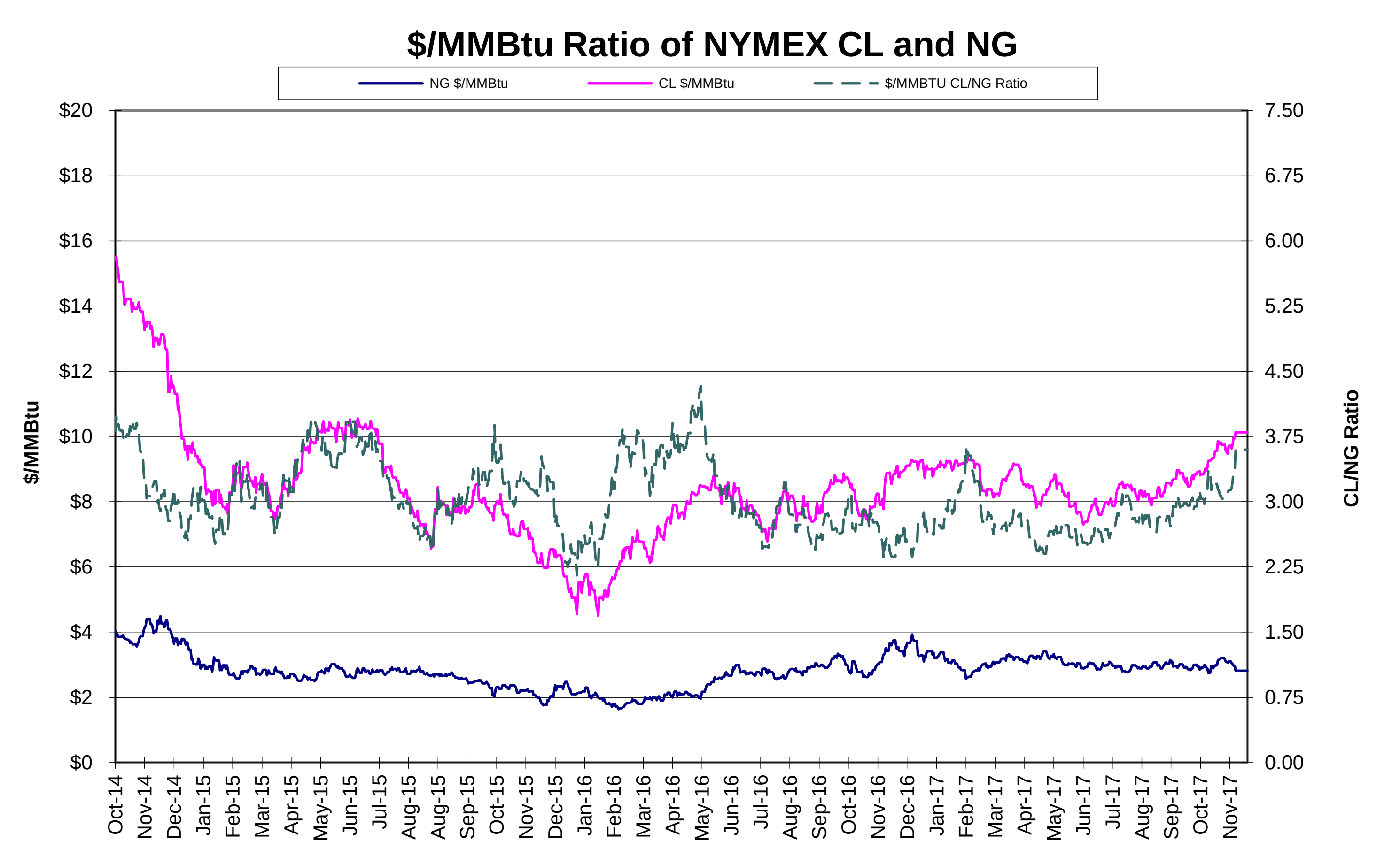
Storage Outlook: **Our EIA weekly storage estimate was mathematically 5 bcf larger than the actual EIA implied flow and is at the upper end of our tolerance range. The 5-week summation of our error fell to 8 bcf and is also within our tolerance. The EIA has reported a net implied flow of +80 bcf over the last 5 weeks compared to our estimated +72 bcf. The forecasts use a 10-year rolling temperature profile past the 15-day forecast.**

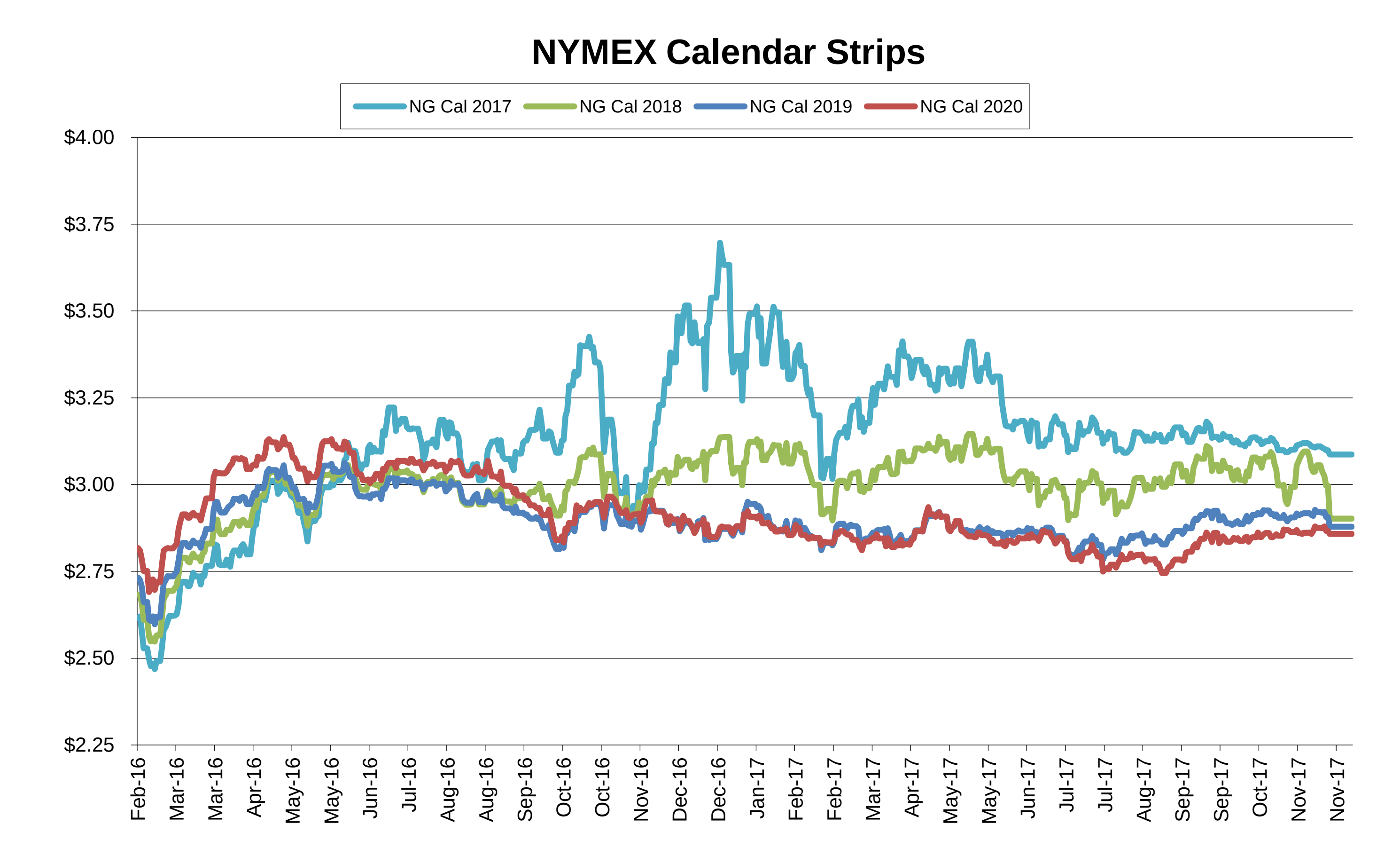
Supply Trends: Total supply rose +0.9 bcf to 74.7 bcf/d. US production and Canadian imports. Mexican exports and LNG exports fell. LNG imports were unchanged. The US Baker Hughes rig count rose +8 with oil activity higher and natural gas lower. The total US rig count now stands at 923. The Canadian rig count rose +7 to 215. Thus, the total North American rig count rose +15 to 1,138 and now exceeds last year by 371. **The higher efficiency US horizontal rig count rose 10 to 786 and rises 311 above last year.**

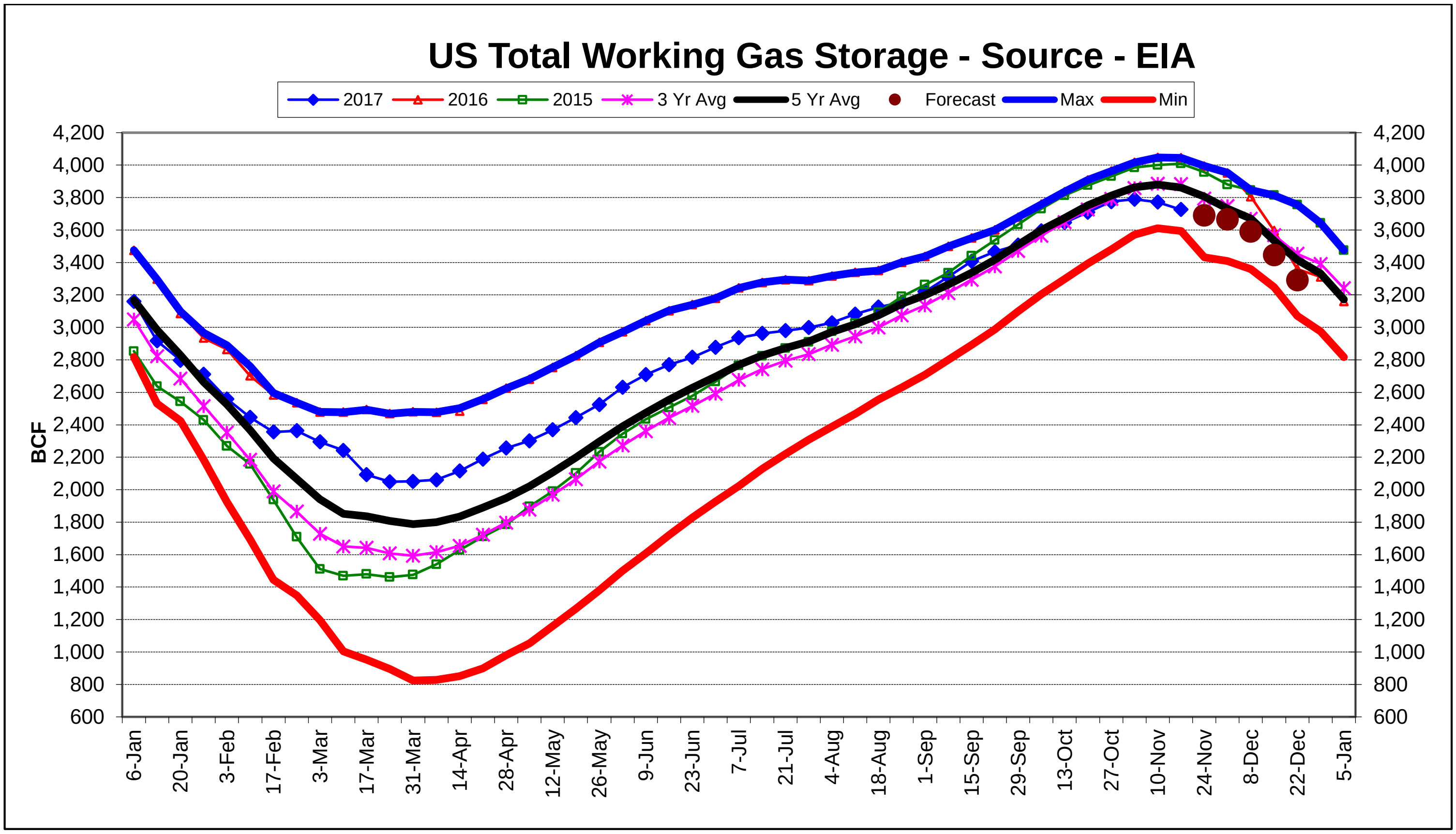
Demand Trends: Total demand rose +6.6 bcf/d to 82.0 bcf/d. Higher R&C and industrial demand easily outpaced lower power demand. Electricity demand rose +267 gigawatt-hrs to 72,678 which exceeds last year by 3,843 (5.6%) and the 5-year average by 1,898 (2.7%).

Nuclear Generation: Nuclear generation rose +4,859 MW in the reference week to 88,919 MW. This is 2,084 MW higher than last year and 5,795 MW higher than the 5-year average. **Recent output was at 91,736 MW.**

- The heating season has begun. With a forecast through December 8 the 2018 total heating index is at 530 compared to 382 for 2017, 460 for 2016, 638 for 2015, 667 for 2014, 550 for 2013, 545 for 2012 and 646 for 2011.


$/MMBtu Ratio of NYMEX CL and NG
NG $/MMBtu
CL $/MMBtu
$/MMBTU CL/NG Ratio
$/MMBtu
CL/NG Ratio
$20
$18
$16
$14
$12
$10
$8
$6
$4
$2
$0
7.50
6.75
6.00
5.25
4.50
3.75
3.00
2.25
1.50
0.75
0.00
Oct-14 Nov-14 Dec-14 Jan-15 Feb-15 Mar-15 Apr-15 May-15 Jun-15 Jul-15 Aug-15 Aug-15 Sep-15 Oct-15 Nov-15 Dec-15 Jan-16 Feb-16 Mar-16 Apr-16 May-16 Jun-16 Jul-16 Aug-16 Sep-16 Oct-16 Nov-16 Dec-16 Jan-17 Feb-17 Mar-17 Apr-17 May-17 Jun-17 Jul-17 Aug-17 Sep-17 Oct-17 Nov-17


NYMEX Calendar Strips
NG Cal 2017
NG Cal 2018
NG Cal 2019
NG Cal 2020
$4.00
$3.75
$3.50
$3.25
$3.00
$2.75
$2.50
$2.25
Feb-16 Mar-16 Mar-16 Apr-16 May-16 May-16 Jun-16 Jul-16 Aug-16 Aug-16 Sep-16 Oct-16 Oct-16 Nov-16 Dec-16 Dec-16 Jan-17 Feb-17 Feb-17 Mar-17 Apr-17 May-17 May-17 Jun-17 Jul-17 Jul-17 Aug-17 Sep-17 Sep-17 Oct-17 Nov-17 Nov-17


US Total Working Gas Storage - Source - EIA
2017
2016
2015
3 Yr Avg
5 Yr Avg
Forecast
Max
Min
BCF
4,200
4,000
3,800
3,600
3,400
3,200
3,000
2,800
2,600
2,400
2,200
2,000
1,800
1,600
1,400
1,200
1,000
800
600
6-Jan
20-Jan
3-Feb
17-Feb
3-Mar
17-Mar
31-Mar
14-Apr
28-Apr
12-May
26-May
9-Jun
23-Jun
7-Jul
21-Jul
4-Aug
18-Aug
1-Sep
15-Sep
29-Sep
13-Oct
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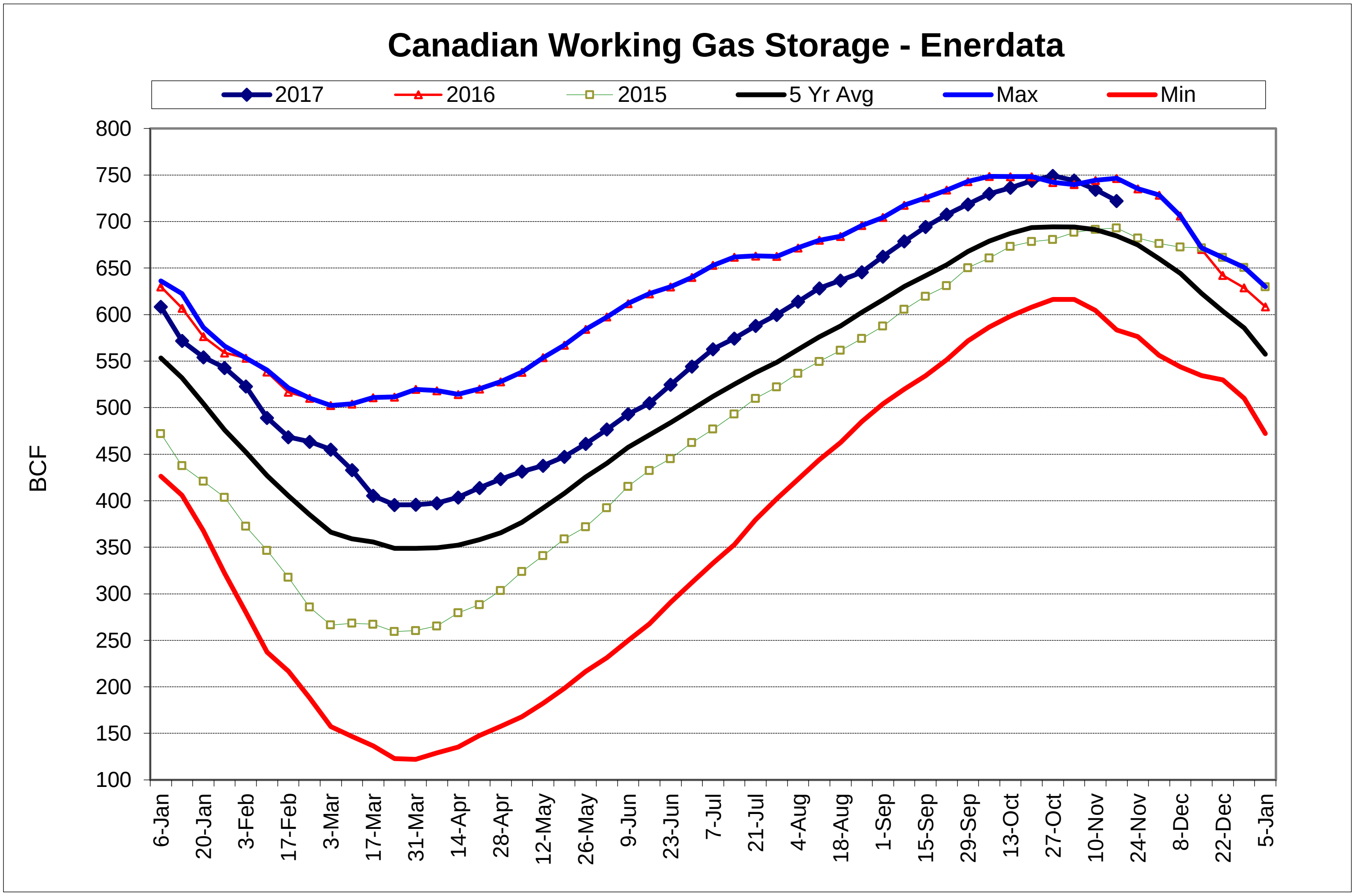
10-Nov
24-Nov
8-Dec
22-Dec
5-Jan


Canadian Working Gas Storage - Enerdata
2017
2016
2015
5 Yr Avg
Max
Min
BCF
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
6-Jan
20-Jan
3-Feb
17-Feb
3-Mar
17-Mar
31-Mar
14-Apr
28-Apr
12-May
26-May
9-Jun
23-Jun
7-Jul
21-Jul
4-Aug
18-Aug
1-Sep
15-Sep
29-Sep
13-Oct
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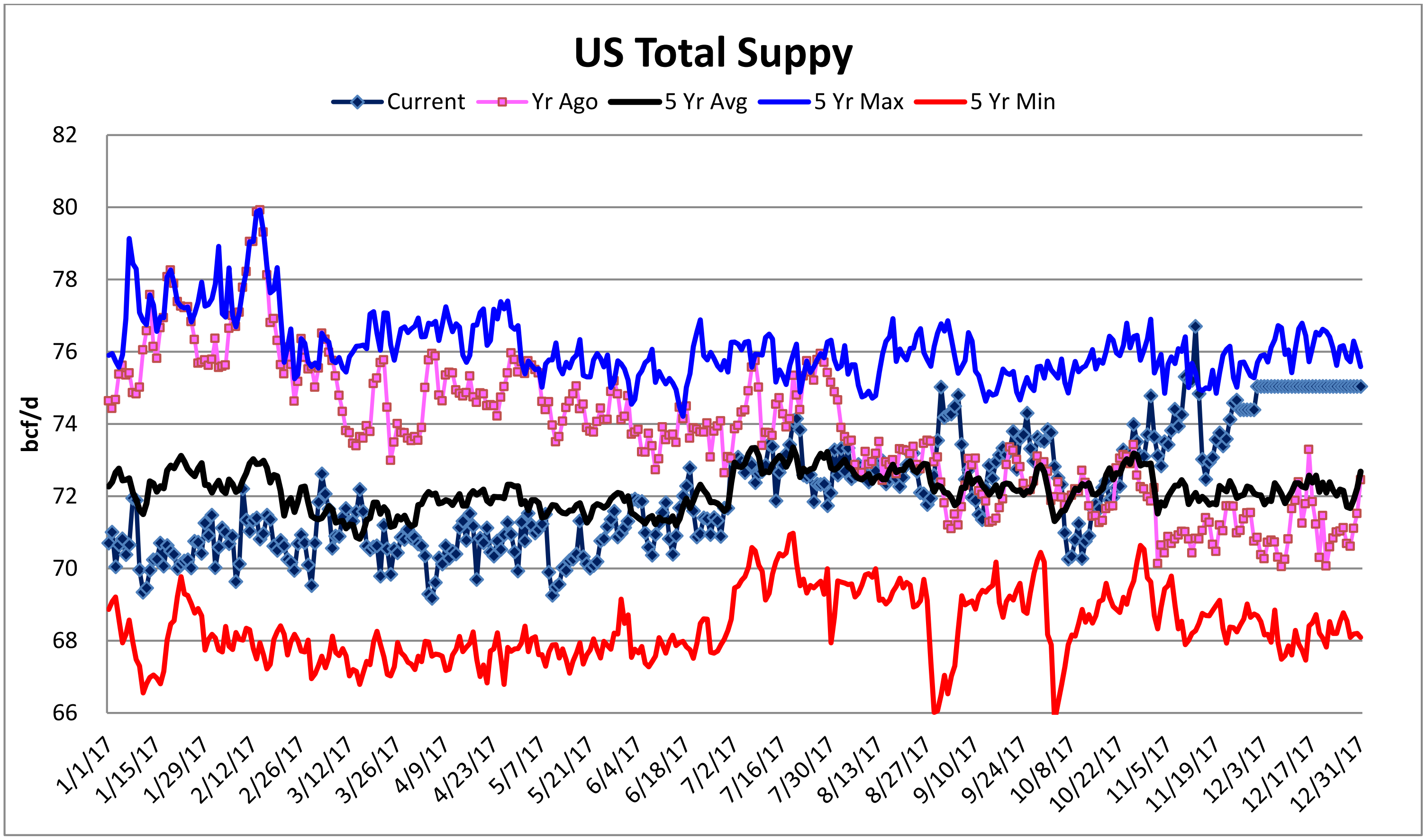
10-Nov
24-Nov
8-Dec
22-Dec
5-Jan


US Total Suppy
Current
Yr Ago
5 Yr Avg
5 Yr Max
5 Yr Min
bcf/d
82
80
78
76
74
72
70
68
66
1/1/17
1/15/17
1/29/17
2/12/17
2/26/17
3/12/17
3/26/17
4/9/17
4/23/17
5/7/17
5/21/17
6/4/17
6/18/17
7/2/17
7/16/17
7/30/17
8/13/17
8/27/17
9/10/17
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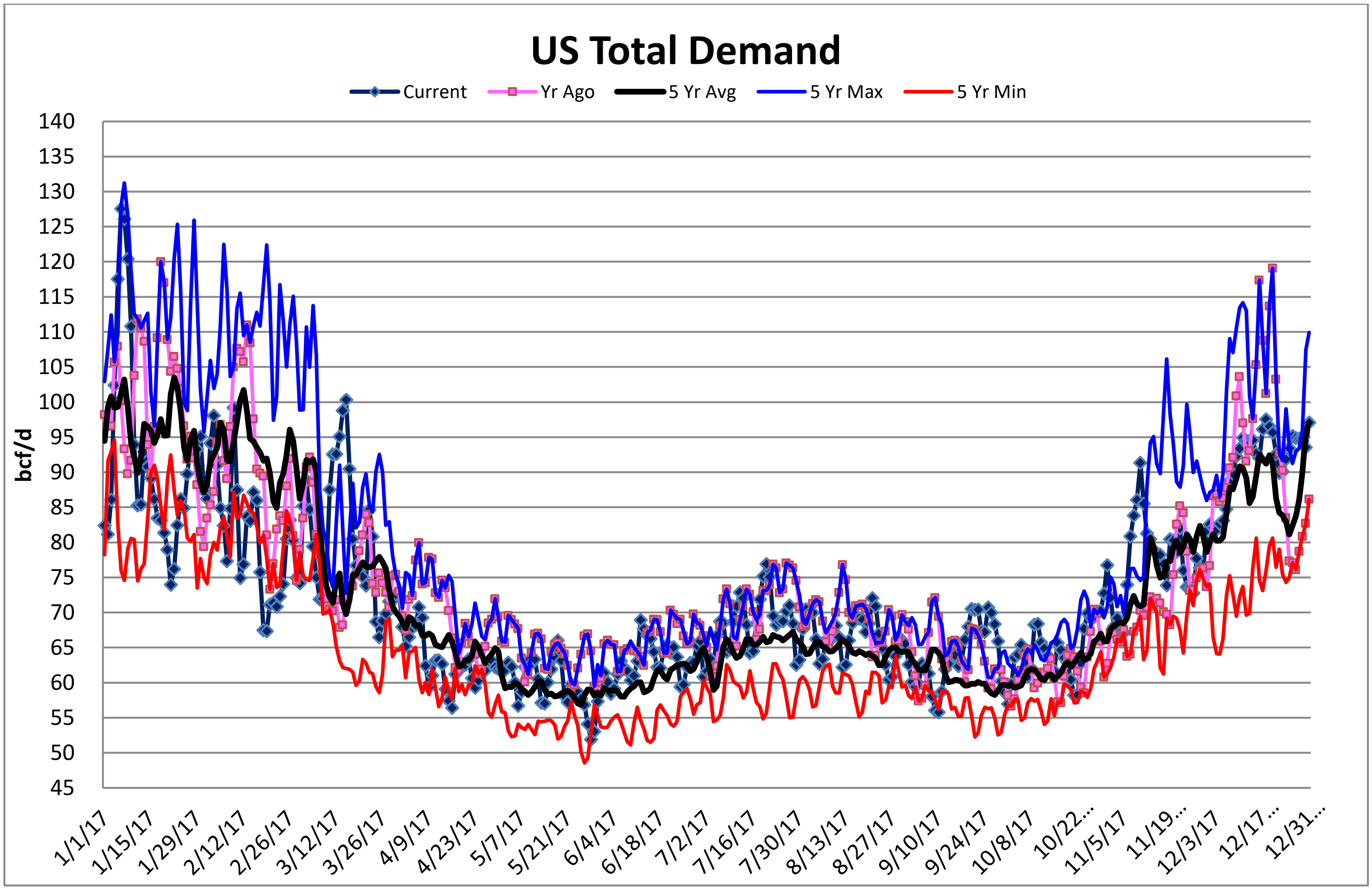
11/5/17
11/19/17
12/3/17
12/17/17
12/31/17


US Total Demand
Current
Yr Ago
5 Yr Avg
5 Yr Max
5 Yr Min
bcf/d
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
1/1/17
1/15/17
1/29/17
2/12/17
2/26/17
3/12/17
3/26/17
4/9/17
4/23/17
5/7/17
5/21/17
6/4/17
6/18/17
7/2/17
7/16/17
7/30/17
8/13/17
8/27/17
9/10/17
9/24/17
10/8/17
10/22…
11/5/17
11/19…
12/3/17
12/17…
12/31…

ADDITIONAL INFORMATION AVAILABLE UPON REQUEST