

# Chelan PUD

## Energy Resources Quarterly Board Update 2<sup>nd</sup> Quarter 2017

August 7, 2017



CHELAN COUNTY  
**POWER**

[www.chelanpud.org](http://www.chelanpud.org)

# Energy Planning & Trading

## 2017 Q2

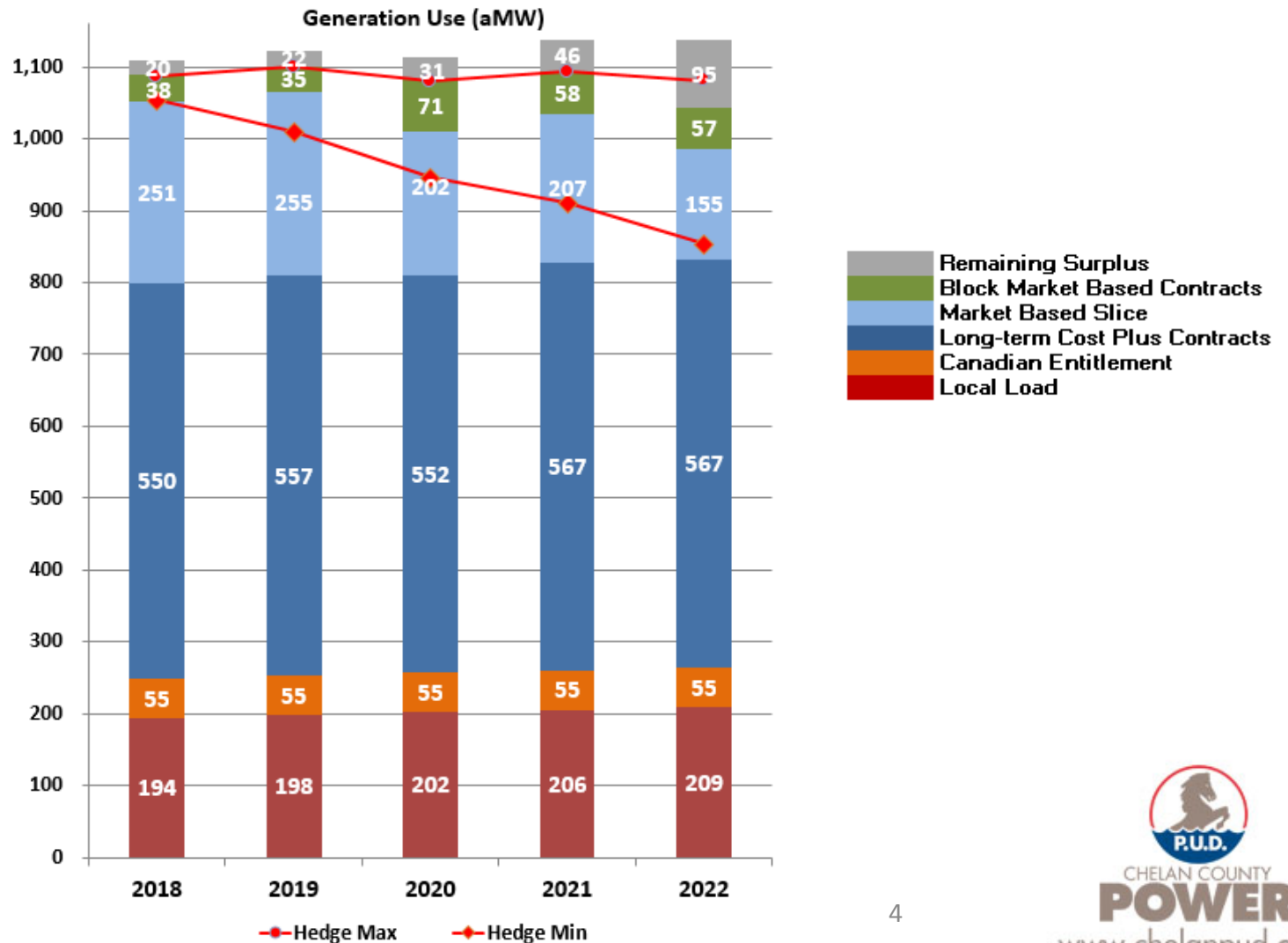
- **Portfolio Overview** (Gregg Carrington)
- **Operations and Planning** (Janet Jaspers)
  - Snowpack, Streamflow and Pricing update
  - Net Wholesale Revenue Forecast update
- **Market Update** (Janet Jaspers)
- **Energy Efficiency Update** (Andrew Grassell)

# Key Message Points

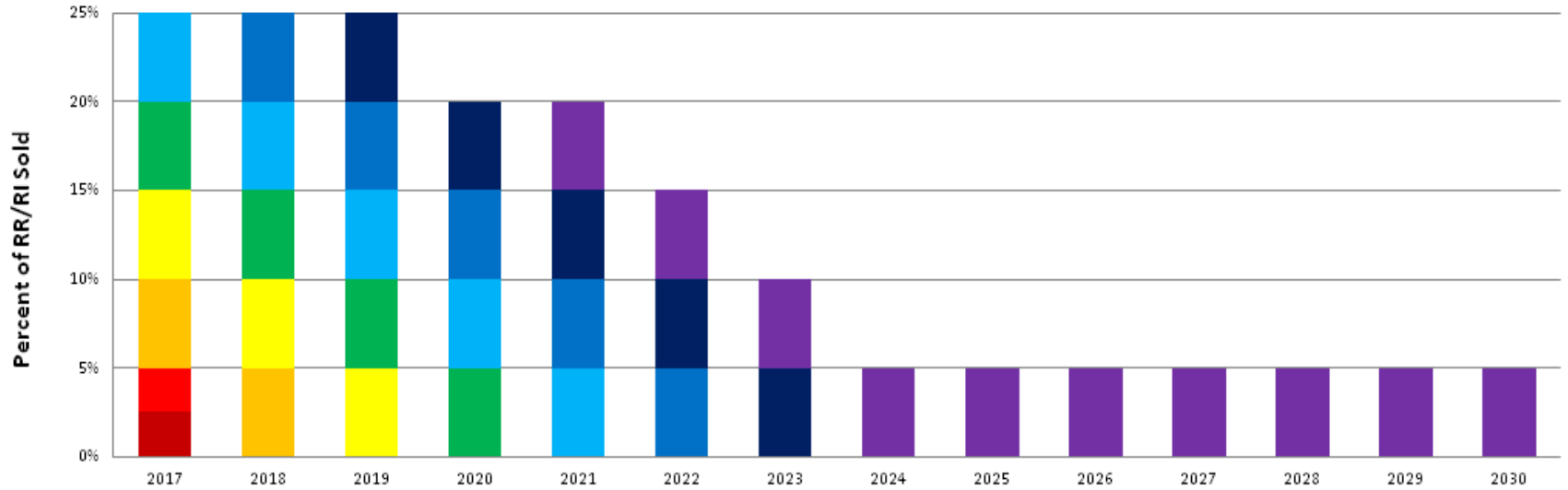
- The District's 2017 Net Wholesale Revenue and other energy related revenue forecast (\$124.2 Million) is slightly higher than the budget amount for 2017 (\$121.9 Million).
- Specified Source energy sales contributed \$3.8 Million to the Net Wholesale Revenue which is \$700,000 higher than budget.
- Energy Efficiency programs have met the compliance target, stretch goals are still behind but actions have been taken.



# District's Load/Resource Balance (average MW)

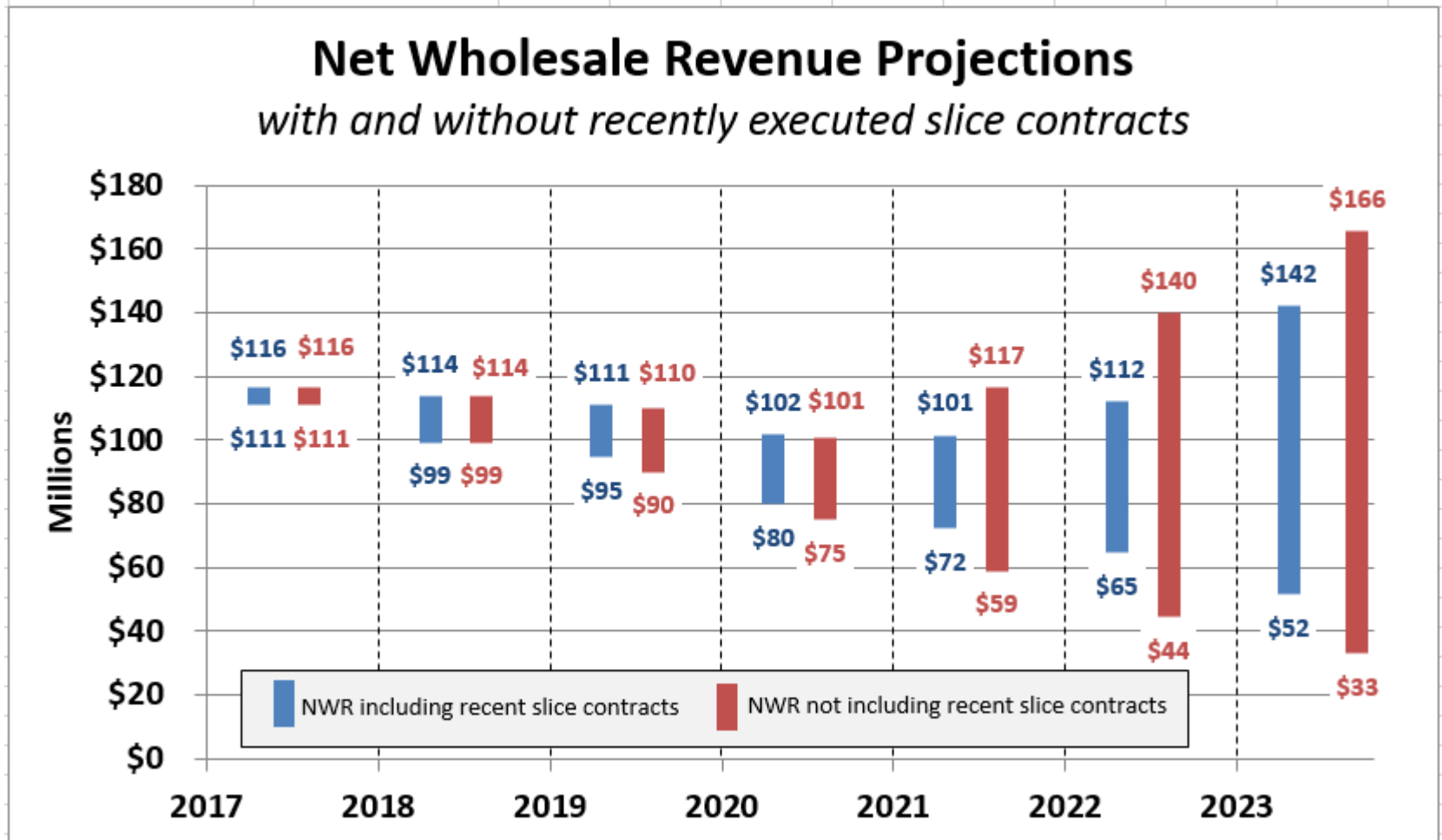


### Current Market Position - Market Based Slice Products



|                             | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Long Term Slice - Avista    |      |      |      |      | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |
| Slice Product 30 - Avangrid |      |      | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |      |      |      |      |      |      |      |
| Slice Product 29 - Morgan   |      | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |      |      |      |      |      |      |      |      |
| Slice Product 26 - Morgan   | 5.0% | 5.0% | 5.0% | 5.0% | 5.0% |      |      |      |      |      |      |      |      |      |
| Slice Product 22 - Avista   | 5.0% | 5.0% | 5.0% | 5.0% |      |      |      |      |      |      |      |      |      |      |
| Slice Product 18 - Exelon   | 5.0% | 5.0% | 5.0% |      |      |      |      |      |      |      |      |      |      |      |
| Slice Product 15 - Morgan   | 5.0% | 5.0% |      |      |      |      |      |      |      |      |      |      |      |      |
| Slice Product 11 - Morgan   | 2.5% |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Slice Product 10 - Exelon   | 2.5% |      |      |      |      |      |      |      |      |      |      |      |      |      |

# Recent slice transactions have reduced wholesale revenue uncertainty



# Recent slice transaction terms and results

## **Avista Corporation Contract Terms:**

Contract Term: 1/1/2021 to 12/31/2030, 10 years

Product: 5% Rocky Reach/5% Rock Island Slice

## **Avangrid Renewables LLC Contract Terms:**

Contract Term: 1/1/2019 to 12/31/2023, 5 years

Product: 5% Rocky Reach/5% Rock Island Output

## **Overall Expected Net Wholesale Revenue Projection increase associated with these two slices:**

+\$40.7 Million for the period 2019-2030

# Columbia River Flow Update for 2017

| 2016        | Rocky Reach Flow (kcfs) | Budget Rocky Reach Flow (kcfs) | % of Budget |
|-------------|-------------------------|--------------------------------|-------------|
| Jan         | 128                     | 115                            | 111%        |
| Feb         | 119                     | 110                            | 108%        |
| Mar         | 158                     | 102                            | 155%        |
| Apr         | 207                     | 114                            | 182%        |
| May         | 236                     | 147                            | 161%        |
| Jun         | 209                     | 167                            | 125%        |
| Jul         |                         | 131                            |             |
| Aug         |                         | 106                            |             |
| Sep         |                         | 76                             |             |
| Oct         |                         | 78                             |             |
| Nov         |                         | 92                             |             |
| Dec         |                         | 108                            |             |
| YTD Average | 176                     | 126                            | 140%        |

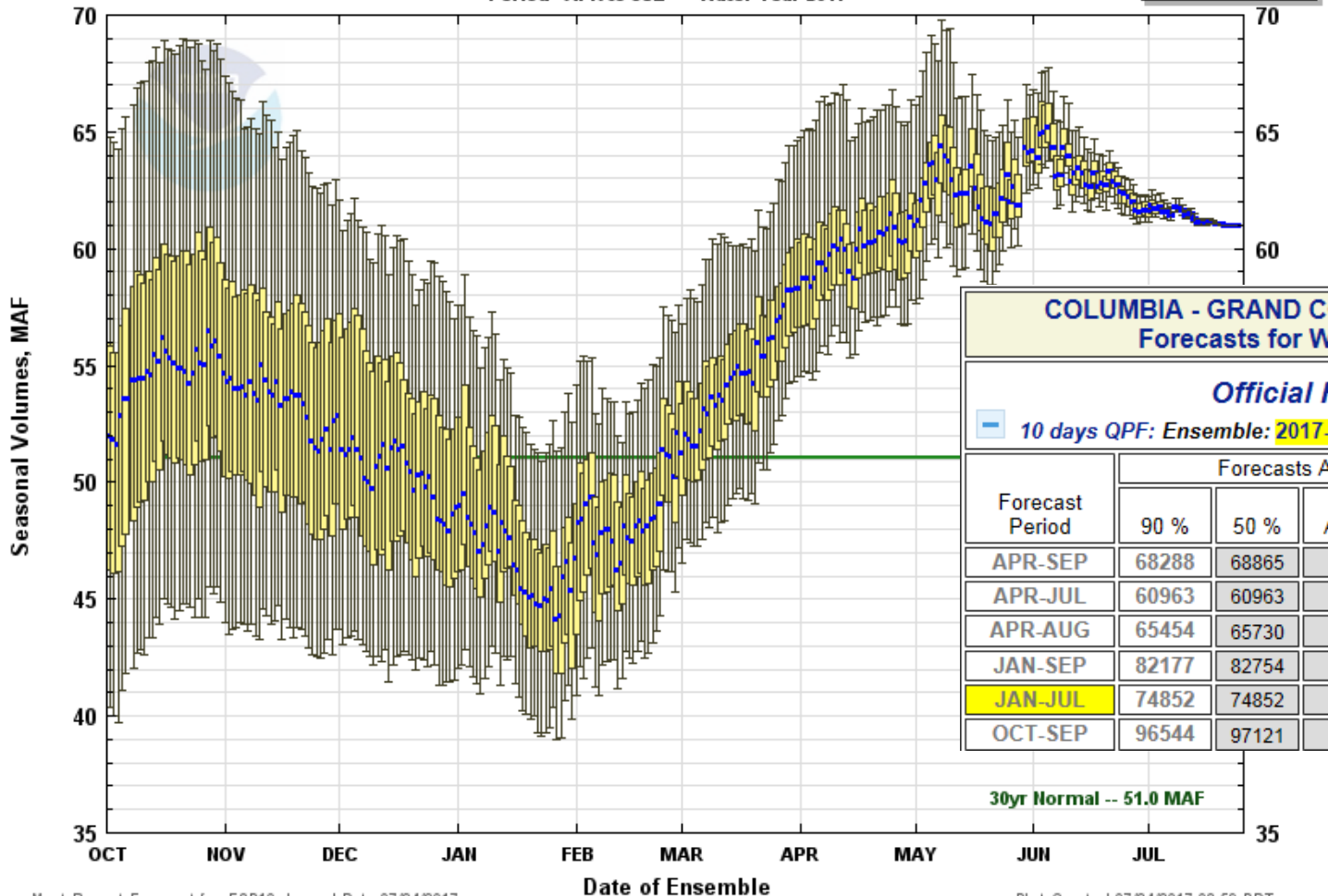
\* Budgeted Rocky Reach flow is the median year from the 1929-2011 data set



# Water Supply Forecast



**Water Supply Forecasts**  
**COLUMBIA - GRAND COULEE DAM**  
 Period APR to JUL -- Water Year 2017



**COLUMBIA - GRAND COULEE DAM (GCDW1)**  
 Forecasts for Water Year 2017

**Official Forecast**

10 days QPF: Ensemble: **2017-07-24** Issued: 2017-07-24

| Forecast Period | Forecasts Are in KAF |              |            |              | 30 Year Average (1981-2010) |
|-----------------|----------------------|--------------|------------|--------------|-----------------------------|
|                 | 90 %                 | 50 %         | % Average  | 10 %         |                             |
| APR-SEP         | 68288                | 68865        | 115        | 70330        | 60110                       |
| APR-JUL         | 60963                | 60963        | 120        | 60963        | 51015                       |
| APR-AUG         | 65454                | 65730        | 116        | 66397        | 56763                       |
| JAN-SEP         | 82177                | 82754        | 120        | 84219        | 68694                       |
| <b>JAN-JUL</b>  | <b>74852</b>         | <b>74852</b> | <b>126</b> | <b>74852</b> | <b>59599</b>                |
| OCT-SEP         | 96544                | 97121        | 126        | 98587        | 76824                       |

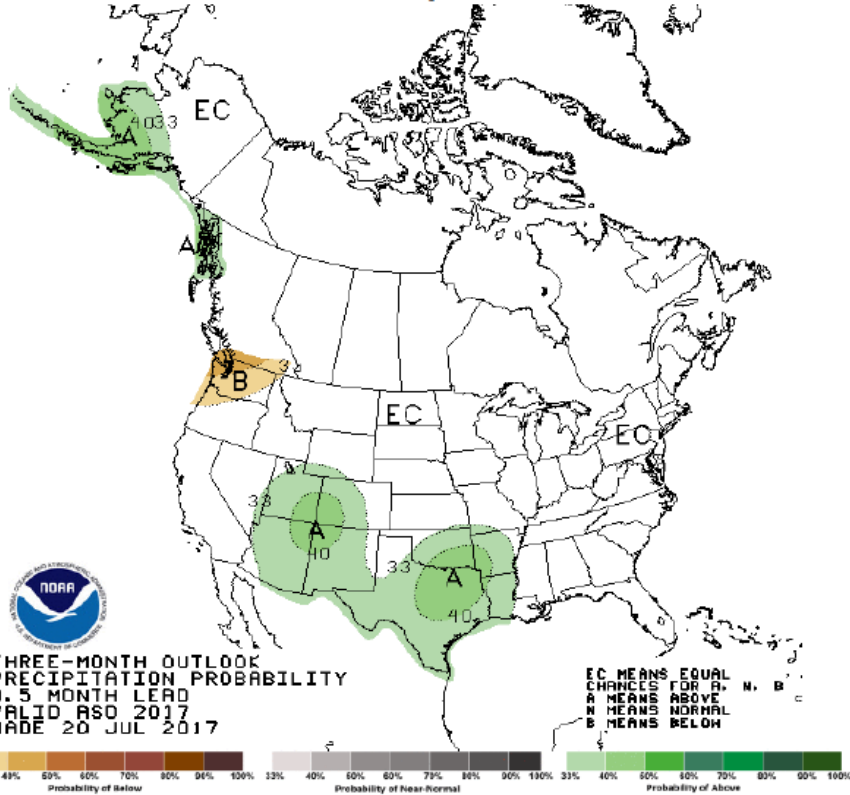
Most Recent Forecast for ESP10: Issued Date 07/24/2017

Plot Created 07/24/2017 03:59 PDT

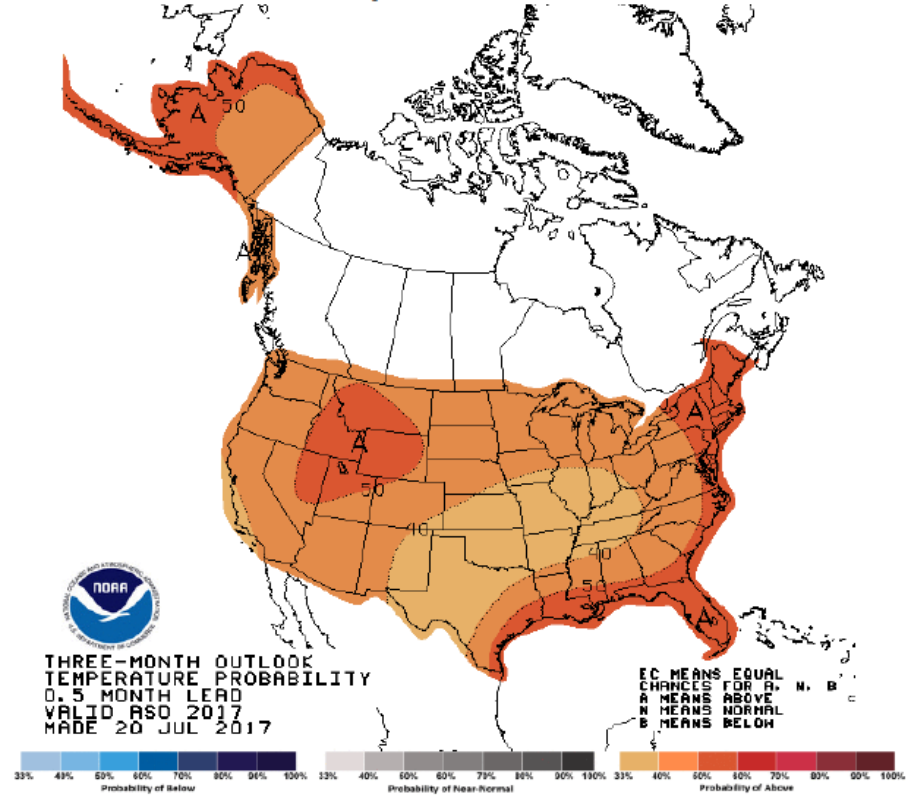


# NOAA Aug-Oct Climate Forecast

## Precipitation



## Temperature



THREE-MONTH OUTLOOK  
 PRECIPITATION PROBABILITY  
 0.5 MONTH LEAD  
 VALID ASD 2017  
 MADE 20 JUL 2017

THREE-MONTH OUTLOOK  
 TEMPERATURE PROBABILITY  
 0.5 MONTH LEAD  
 VALID ASD 2017  
 MADE 20 JUL 2017

# Canadian Jul-Sep Forecasts

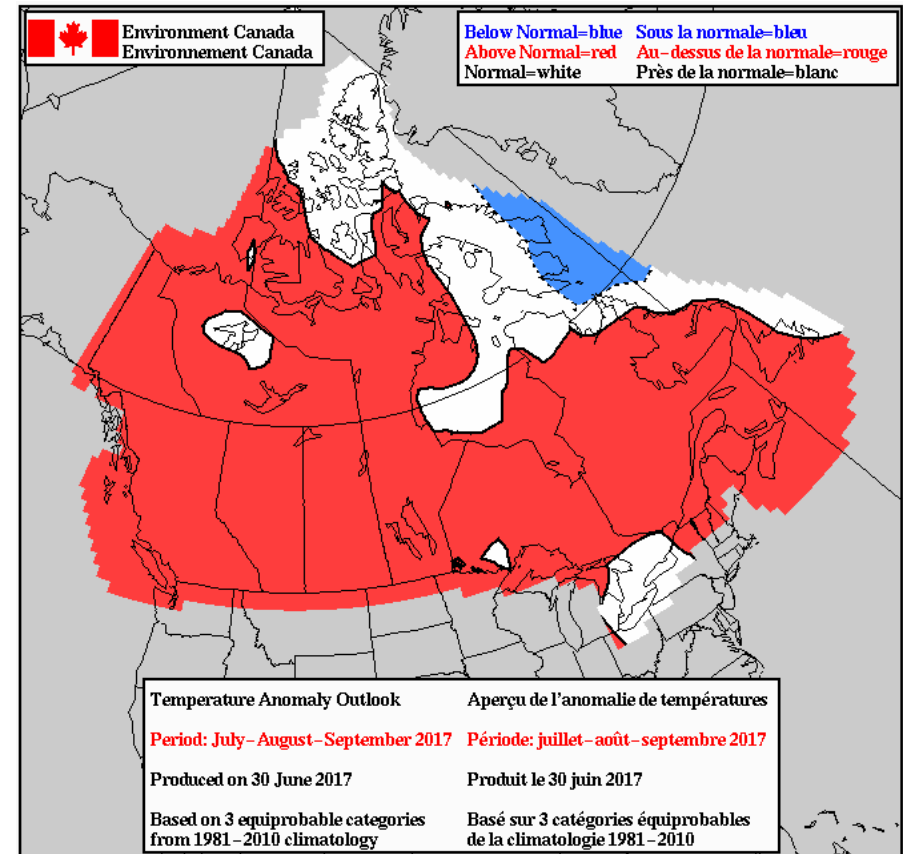
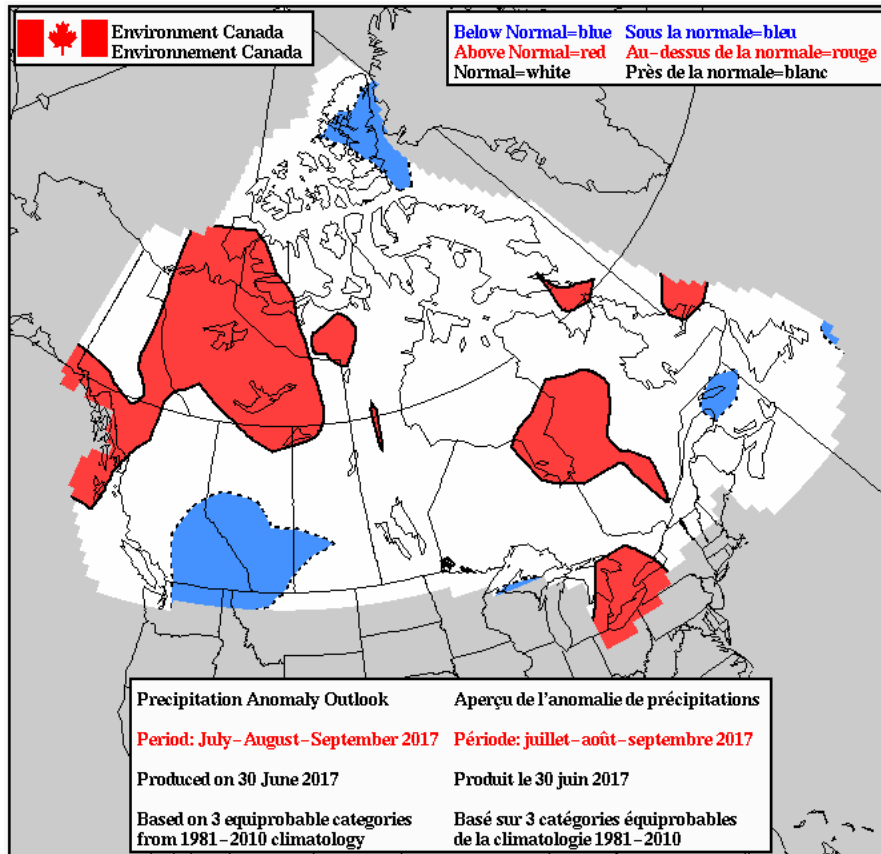
## Temperature and Precipitation Deterministic Forecasts

Red = Above (wetter)

Blue = Below (drier)

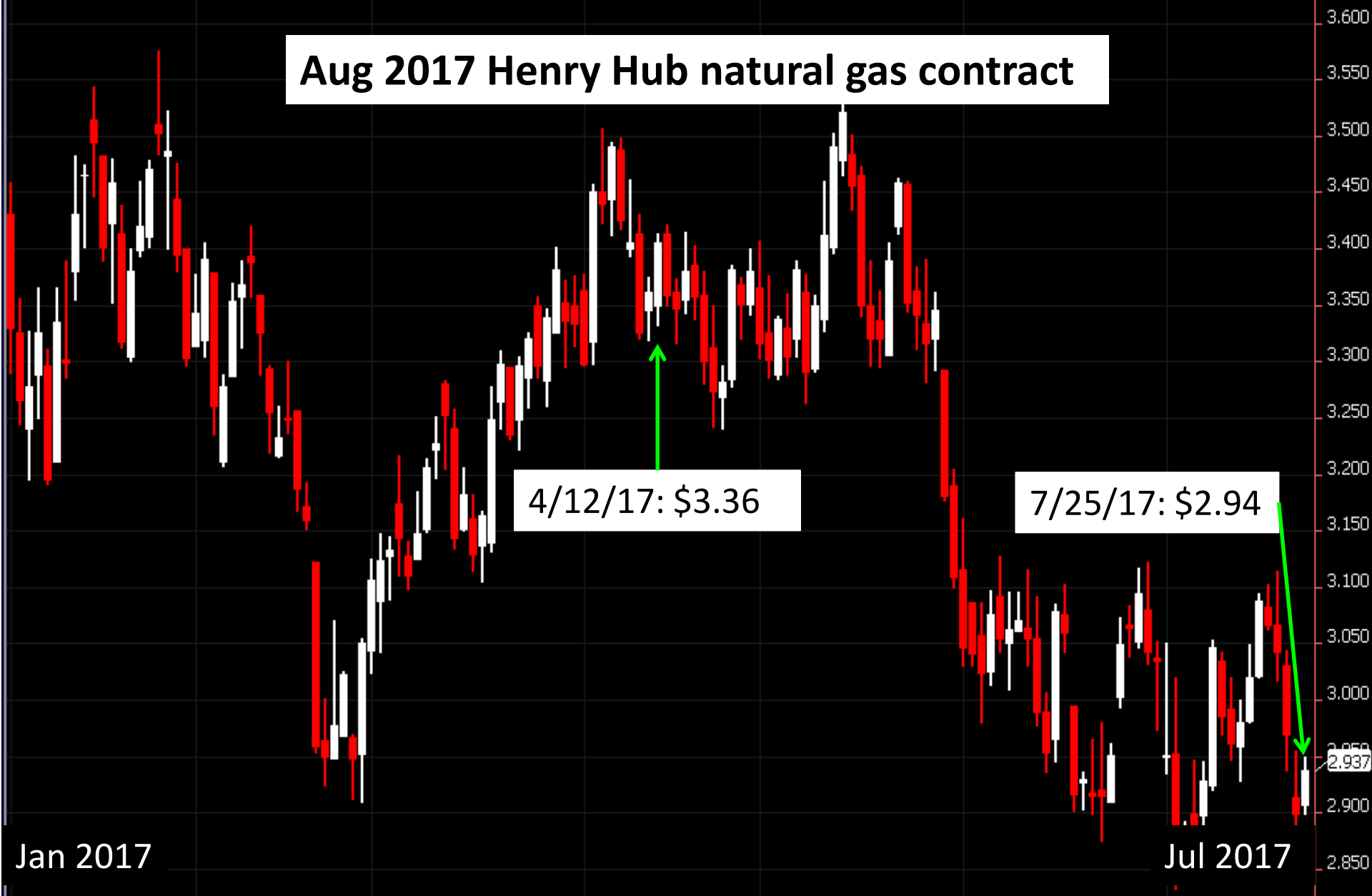
Red = Above (warmer)

Blue = Below (colder)



ENGQ17 ~ Daily Tue Jul 25 2017 1:20:56 PM H:2.950 L:2.899 O:2.907 T:2.937 +0.038 +1.31%

# Aug 2017 Henry Hub natural gas contract



4/12/17: \$3.36

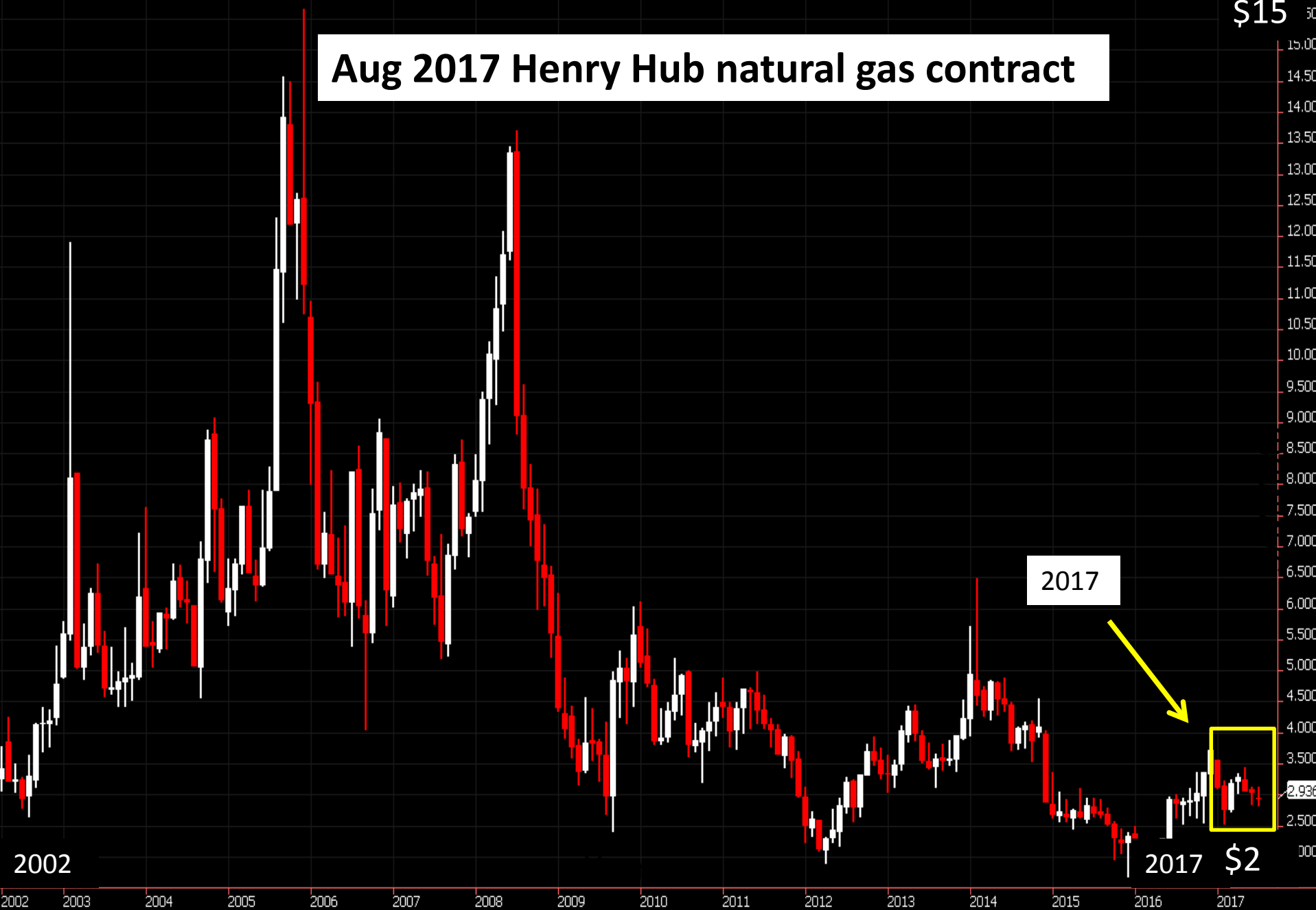
7/25/17: \$2.94

Jan 2017

Jul 2017

2017 Feb Mar Apr May Jun Jul

# Aug 2017 Henry Hub natural gas contract



2017

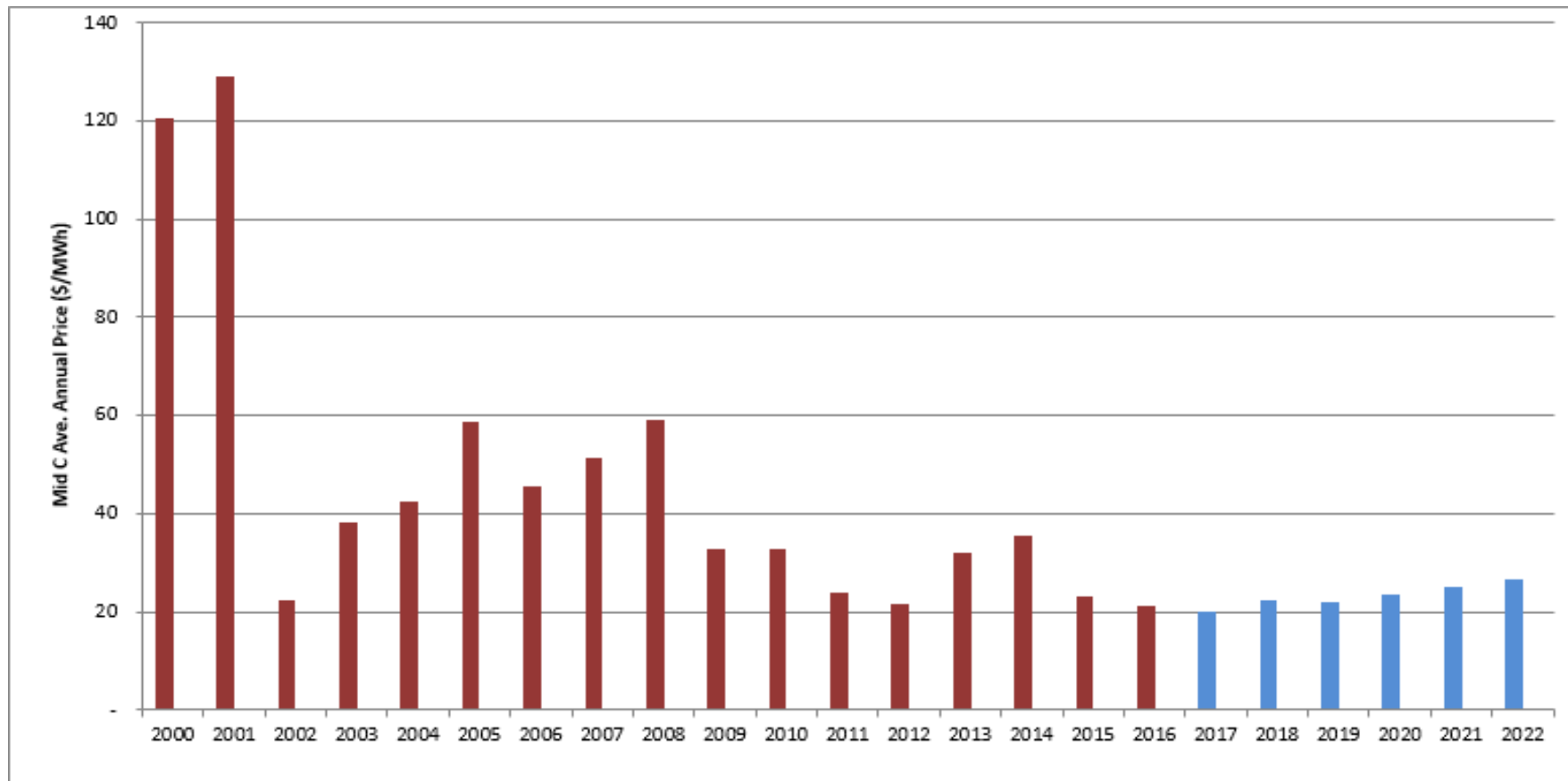


2.936

2017 \$2

2002

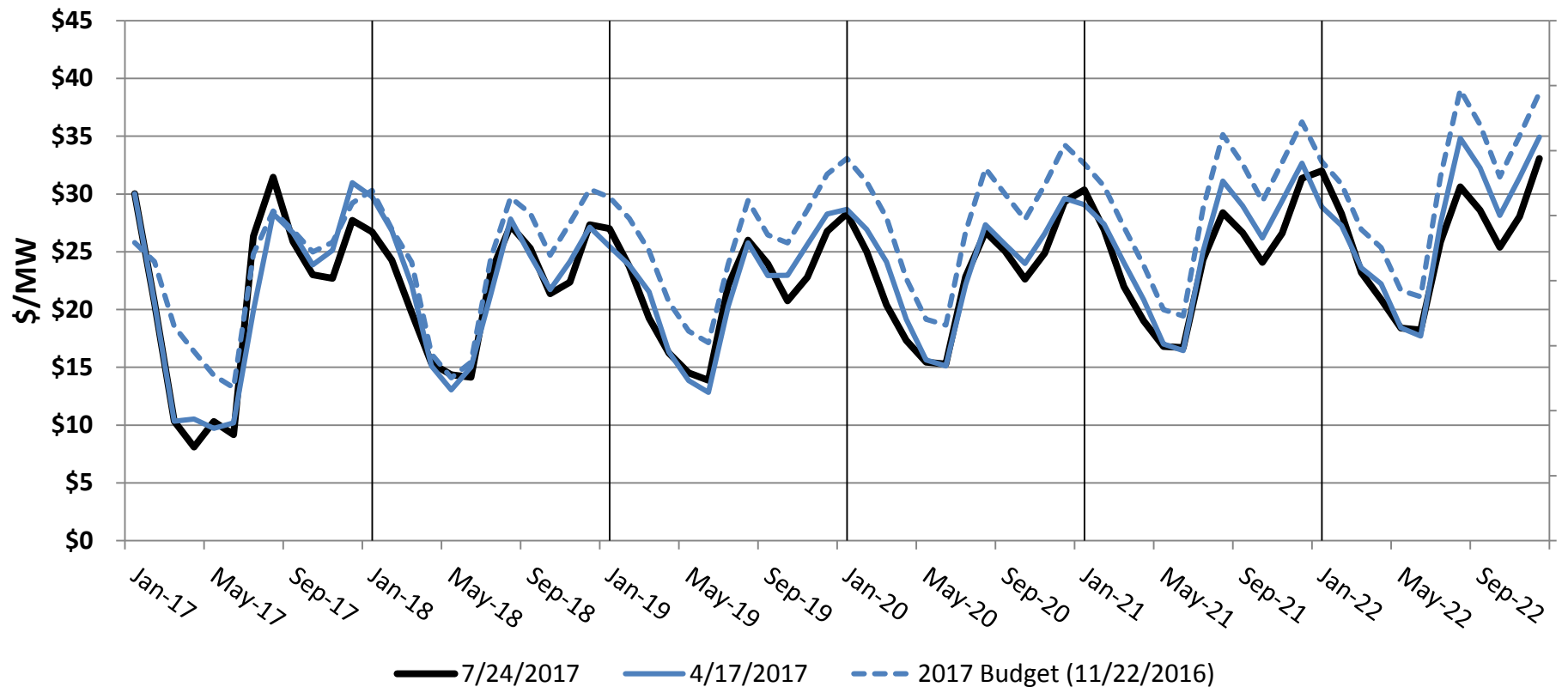
# Mid-C Flat Annual Wholesale Electricity Prices



Red = Historical prices

Blue = Forward price curve

## MIDC Flat Forward Price Curve (ICE DA index prices for previous months)



## 2017 NWR and Other Energy-Related Revenue

|   | Budget                | Forecast**            | Variance            |
|---|-----------------------|-----------------------|---------------------|
| Net Wholesale Revenue*                      | \$ 114,138,098        | \$ 115,530,474        | \$ 1,392,377        |
| <i>Specified Source</i>                     | \$ 3,091,960          | \$ 3,823,680          | \$ 731,720          |
| <i>Other</i>                                | \$ 615,896            | \$ 629,668            | \$ 13,772           |
| <i>Alcoa PSC Revenue</i>                    | \$ -                  | \$ 1,796,135          | \$ 1,796,135        |
| Frequency Response                          | \$ 282,750            | \$ 282,750            | \$ -                |
| Renewables                                  | \$ 458,090            | \$ 436,884            | \$ (21,206)         |
| Real-Time Revenue                           | \$ 7,000,000          | \$ 7,941,641          | \$ 941,641          |
| <b>NWR and Other Energy-Related Revenue</b> | <b>\$ 121,878,938</b> | <b>\$ 124,191,749</b> | <b>\$ 2,312,812</b> |

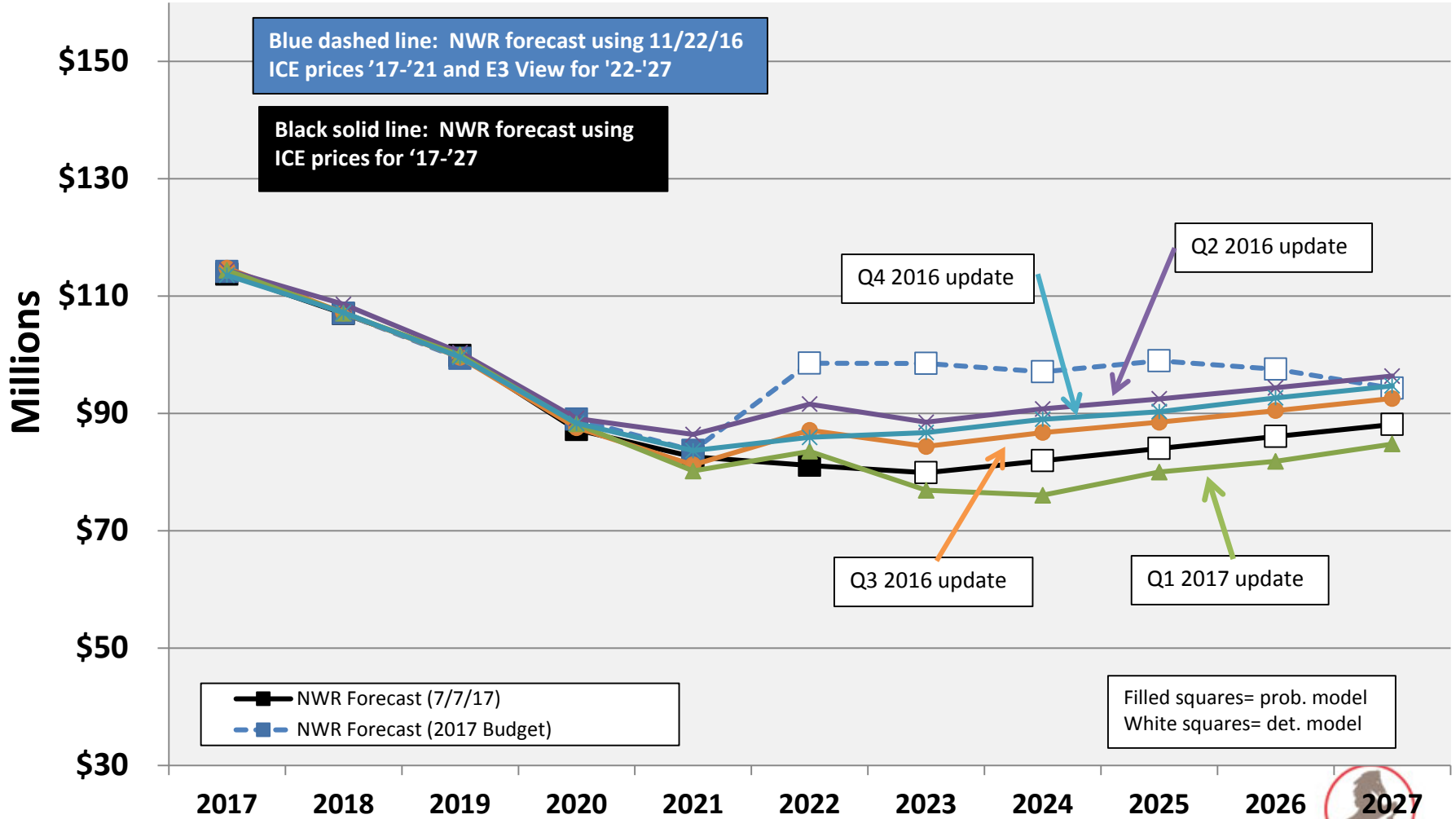
*\*Net Wholesale Revenue (NWR) includes all premiums from specified source and other premium products as well as slice sales and standard forward / pre-schedule energy trading activity. Alcoa PSC surplus proceeds are also included in the NWR forecast.*

*Other premium products include hubbing, system delivery, scheduling services, Lake Chelan reserves and super peak products*

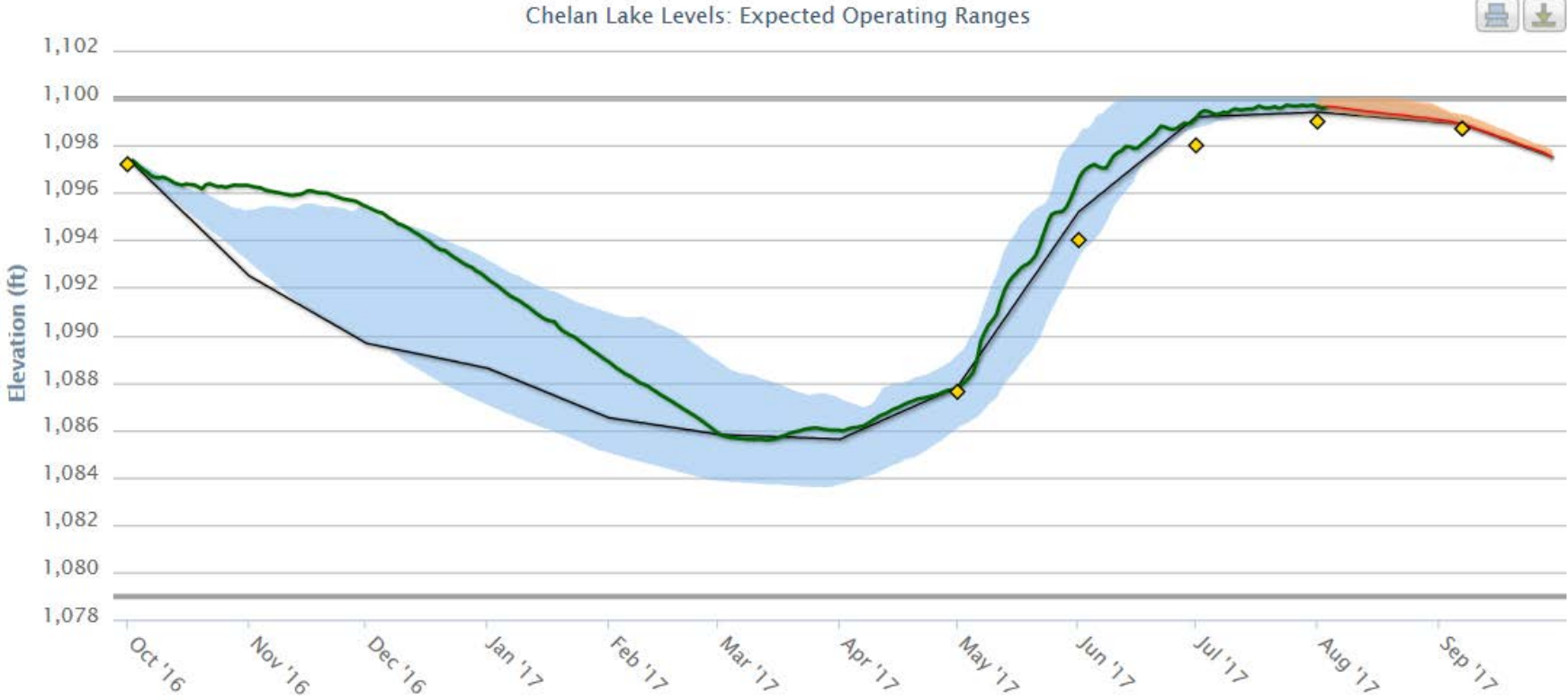
*\*\*2017 forecast based on Jan-Jun unaudited actuals and Jul-Dec estimates.*



# Net Wholesale Revenue Forecast



# Lake Chelan Lake Level Webpage (8/03/17)



- Current Year Actual Elevation (ft)
- Previous Year Actual Elevation (ft)
- Current Forecasted Operating Range (ft)
- Current Forecasted Average Elevation (ft) (50% chance of occurring)
- October 1 Forecasted Operating Range (ft)
- October 1 Forecasted Average Elevation (ft)
- Target Curve During Dry and Average Water Years (ft)
- Target Curve During Wet Water Years (ft)
- ◆ Minimum Target Elevation

# Market Info

## Hydro One to Acquire Avista for \$5.3 Billion

- The price represents \$53/share, a 24% premium over the July 18 closing price.
- Hydro One is the largest electricity transmission and distribution company in Ontario, Canada.
- Avista will retain its headquarters and management staff.
- Avista will operate with a 9 member board of directors made up of 5 designated by Hydro One and 4 by Avista.
- Deal Pending approval – expected in 2018.

## Buffet's BHE to buy EFH and Oncor for \$9B

- Berkshire Hathaway Energy said it has an agreement to buy Energy Future Holdings and its Texas transmission subsidiary, Oncor Electric Delivery, for an estimated \$9 billion
- BHE owns ten separately managed businesses, including the utilities PacifiCorp and NV Energy, the Canadian regulated electricity transmission company AltaLink

## BPA rate changes

- BPA is planning a 175% rate hike for hourly service on major transmission lines that export power to California
- Overall, BPA is planning to increase its wholesale power rates by 5.5%, up from an initial 3.5% proposed hike, according to the draft rate case decision released last week
- The pending jump in power rates for BPA's customers is driven by decreasing customer loads and lower market price forecasts for the sales of excess generation, the federal power marketer said

# Q2 Energy Efficiency Results

Two-Year Compliance Target 1.66 aMW-this was met in 2016  
Annual 2017 Stretch Target is 2.1 aMW

| Year-to-Date<br>Energy Savings<br>(aMW) <sup>1</sup> | Incentive and<br>Labor Cost | \$/MWh over<br>Life | Estimated<br>Value over Life <sup>2</sup> |
|--|-----------------------------|---------------------|---|
| 0.52   | \$ 1,200,000                | \$ 17.56            | \$ 1,555,662                              |

1. Pending metering and verification and based on expected NEEA savings
2. Based on weighted average life and 7% discount

# Other items of interest

- LED Streetlight
  - Received additional State Commerce grant
  - Almost ready for Transportation Improvement Board request
- Enhancing customer experience
  - Mobile rebate application capabilities
  - Upload receipts, information, ect.

# Summary

- The District's 2017 Net Wholesale Revenue and other energy related revenue forecast is higher than the budget amount for 2017 by \$2.3 Million.
- Specified Source energy sales contributed \$3.8 Million to the Net Wholesale Revenue which is \$700,000 higher than budget.
- Energy Efficiency programs have met the ~1.7 aMW 2016/2017 compliance goal. Year-to-date savings are behind pace to meet 2017 stretch goal. Actions are being implemented to change this.

# Questions?