



**Quarterly Board Update**  
2nd Quarter 2018 • August 20, 2018



# **ENERGY PLANNING & TRADING**

2018 Q2

## **Portfolio Overview**

## **Operations and Planning**

- » Snowpack, Streamflow and Pricing update
- » Net Wholesale Revenue Forecast update

## **Market Update**

## **Energy Efficiency Update**

# KEY MESSAGE POINTS

The District's 2018 Net Wholesale Revenue and other energy-related revenues are forecasted to be \$116.0 million which is \$0.3 million lower than budget.

Specified Source energy sales are expected to contribute \$5.0 million to the Net Wholesale Revenue which is \$1.2 million higher than budget.

Energy Efficiency programs are working towards meeting both the compliance and stretch goals.

The Energy Efficiency team will be providing additional services for our customers (e.g. electric vehicle support, etc).

# **Energy Resource Team is monitoring major changes in the western power market**

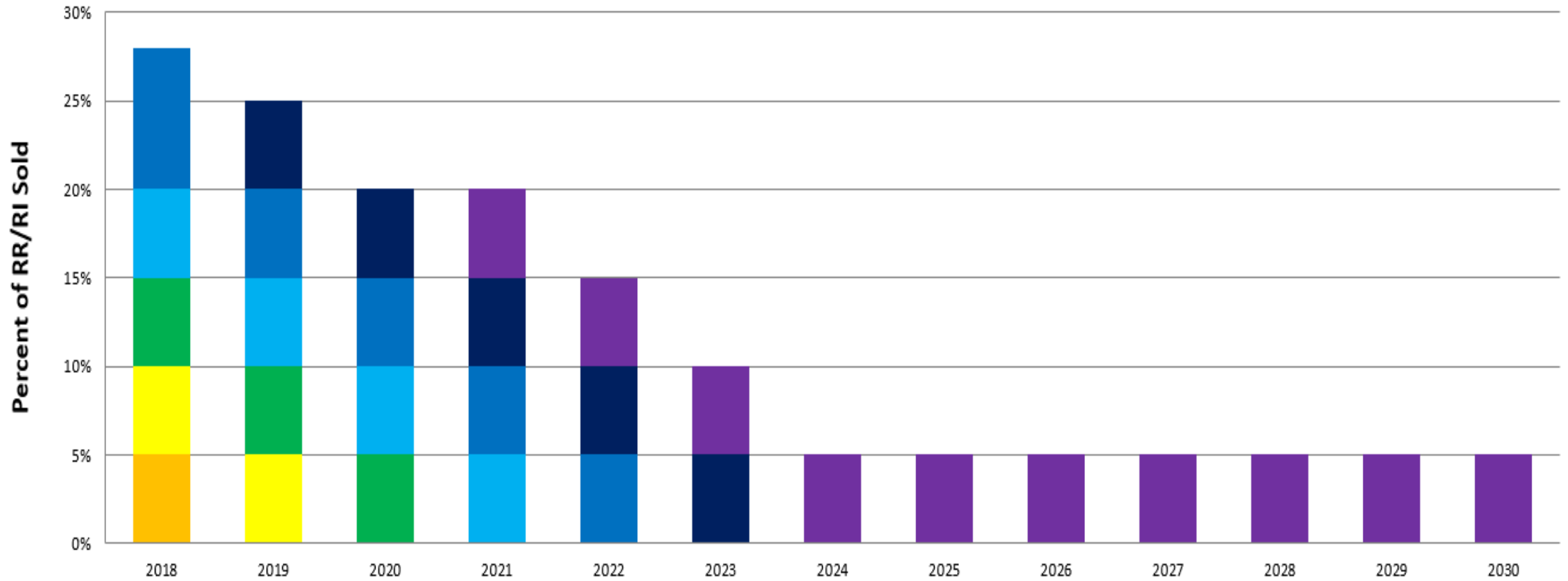
- **Reliability Coordination (RC) services**
  - Peak RC will stop providing services in 2019
  - California ISO (CAISO) will provide RC services for most
- **Short term markets (within hour → real-time → day ahead)**
  - Many utilities have joined CAISO Energy Imbalance Market (EIM) for within hour products
  - Discussions about expanding the EIM to the day ahead market
- **State carbon policies**
  - Affecting resource mix and pricing
- **Value of products and services changing**

# DISTRICT'S LOAD/RESOURCE BALANCE

(average MW)



### Current Market Position - Market Based Slice Products



	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	8.0%	5.0%	5.0%	5.0%	5.0%								
Slice Product 26 - Morgan	5.0%	5.0%	5.0%	5.0%									
Slice Product 22 - Avista	5.0%	5.0%	5.0%										
Slice Product 18 - Exelon	5.0%	5.0%											
Slice Product 15 - Morgan	5.0%												

# COLUMBIA RIVER FLOW

## UPDATE FOR 2018

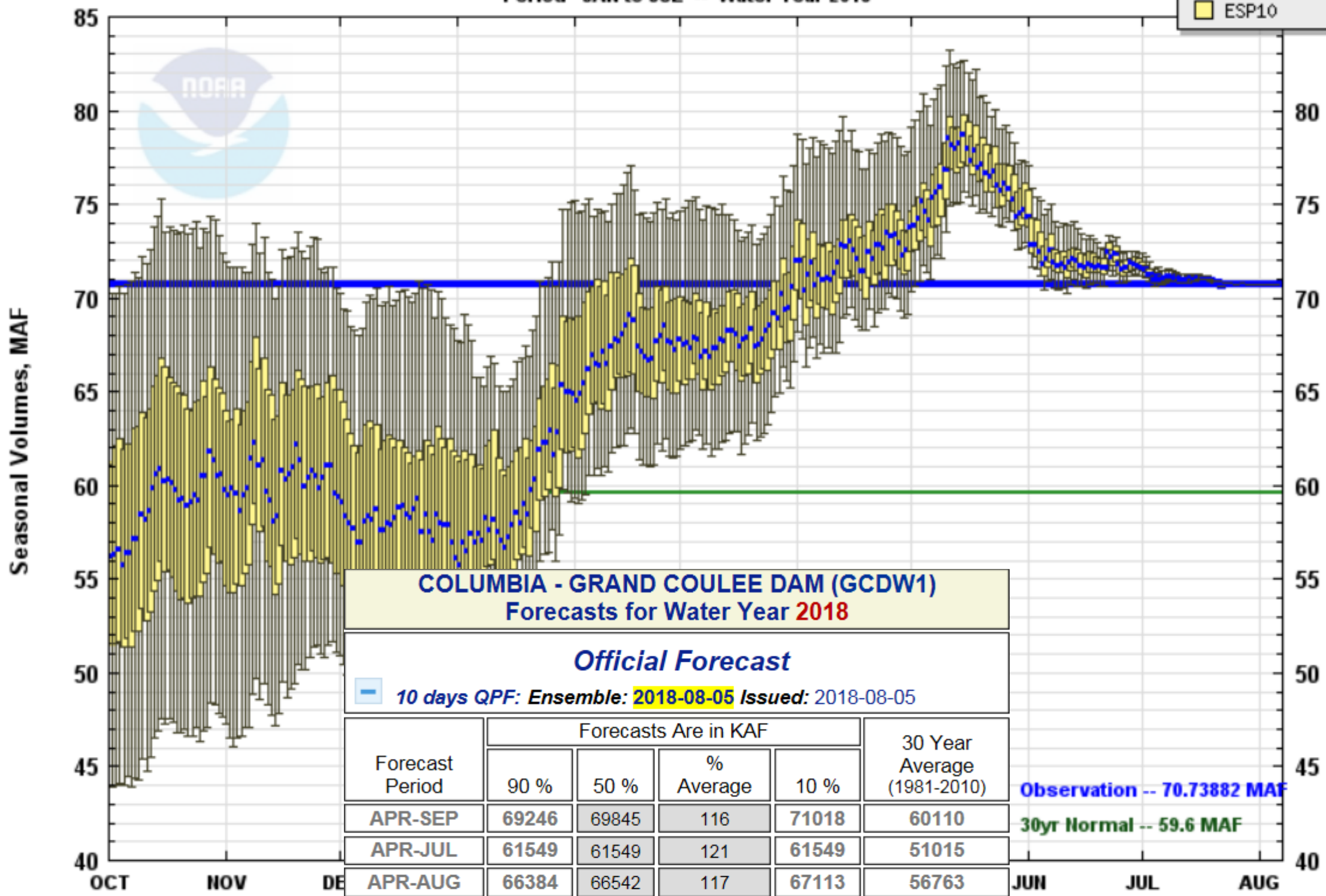
2018	Rocky Reach Flow (kcf)	Budget Rocky Reach Flow (kcf)	% of Budget
Jan	122	115	106%
Feb	150	110	137%
Mar	112	102	110%
Apr	144	114	126%
May	275	147	187%
Jun	177	167	106%
Jul	121	131	93%
Aug			
Sep			
Oct			
Nov			
Dec			
YTD Average	157	127	124%

\* 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 JAN to JUL -- Water Year 2018

— 30yr Normal  
 — Observation  
 ■ ESP10



**COLUMBIA - GRAND COULEE DAM (GCDW1)**  
 Forecasts for Water Year **2018**

**Official Forecast**  
 — 10 days QPF: Ensemble: **2018-08-05** Issued: 2018-08-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	69246	69845	116	71018	60110
APR-JUL	61549	61549	121	61549	51015
APR-AUG	66384	66542	117	67113	56763
JAN-SEP	78419	79018	115	80191	68694
<b>JAN-JUL</b>	<b>70722</b>	<b>70722</b>	<b>119</b>	<b>70722</b>	<b>59599</b>
OCT-SEP	85837	86436	113	87609	76824

Observation -- 70.73882 MAF  
 30yr Normal -- 59.6 MAF

Most Recent Forecast for ESP10: Issued

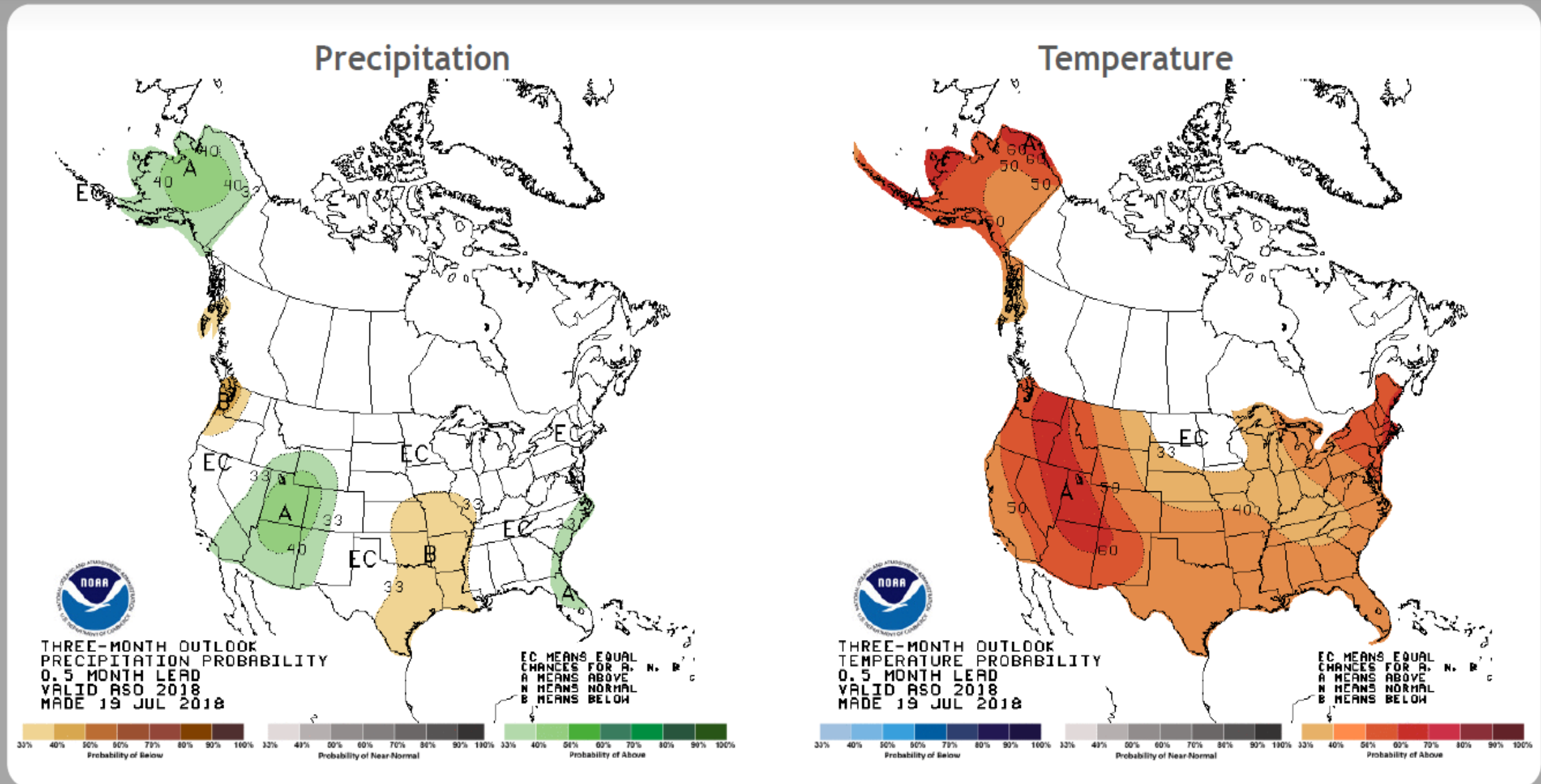
Plot Created 08/06/2018 01:22 PDT



# U. S. Seasonal Outlooks

August - October 2018

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.

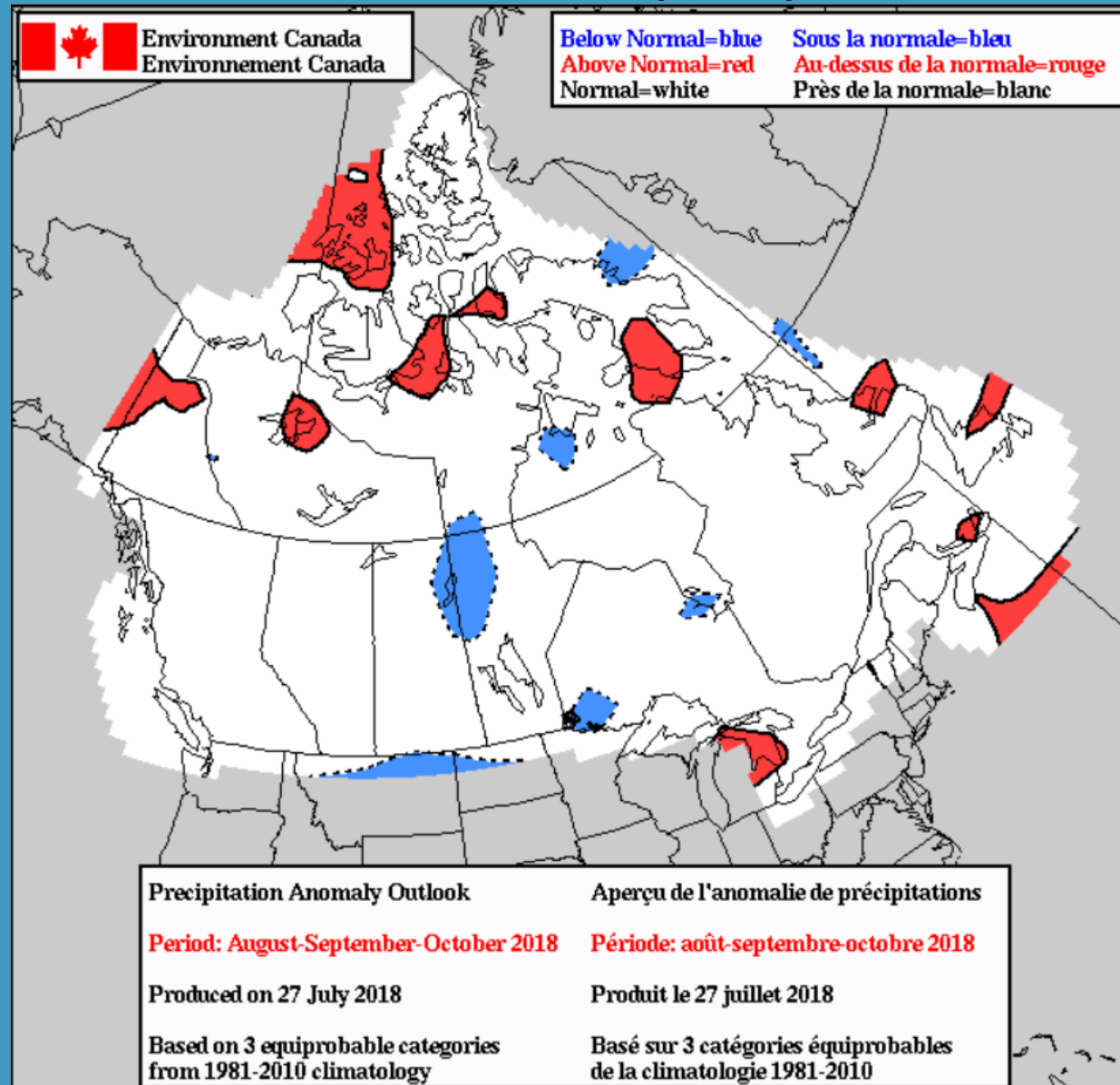


# CANADIAN AUG – OCT FORECASTS

## Temperature and Precipitation Deterministic Forecasts

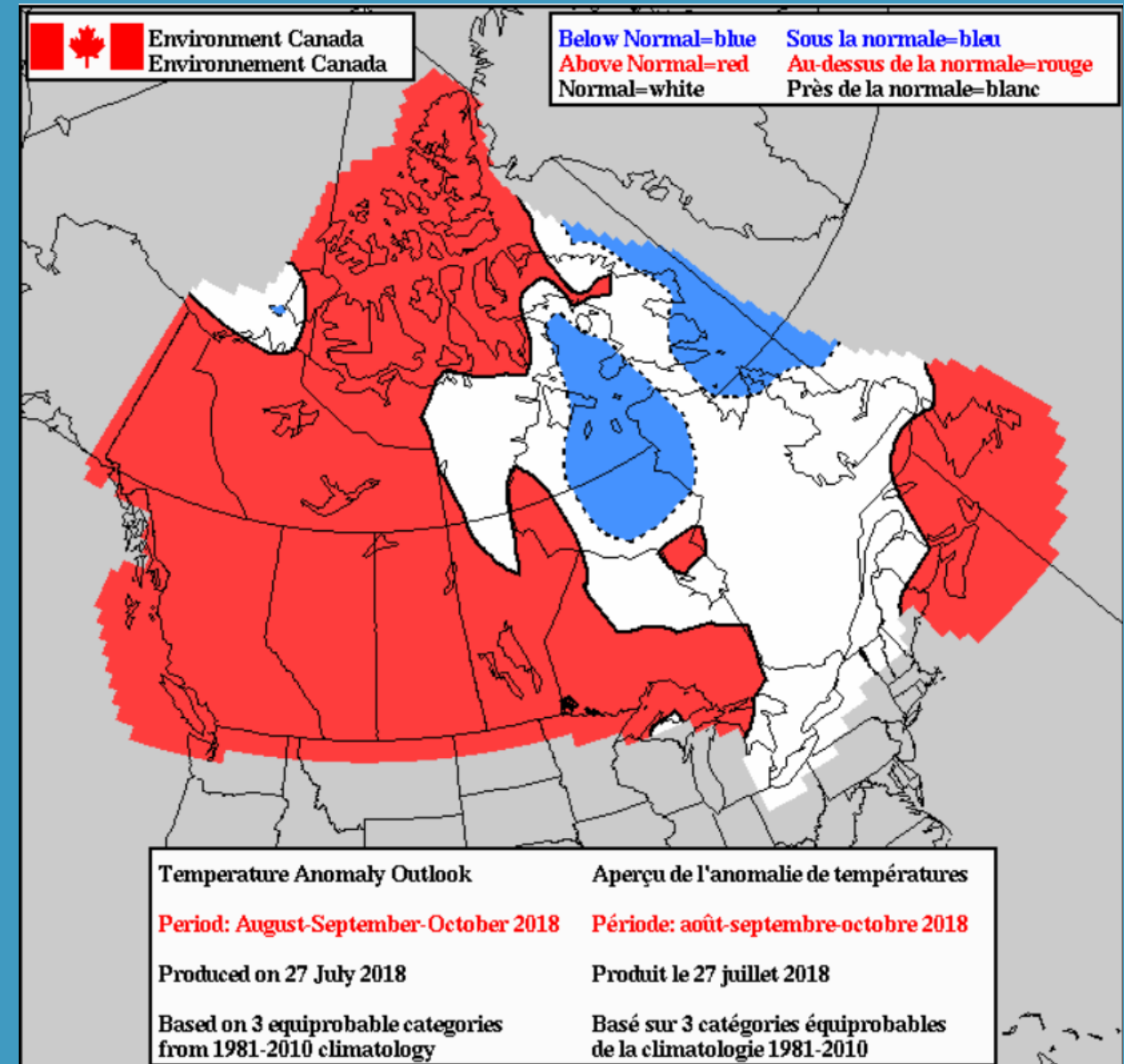
### Precipitation

Red = Above (wetter)  
Blue = Below (drier)



### Temperature

Red = Above (warmer)  
Blue = Below (colder)

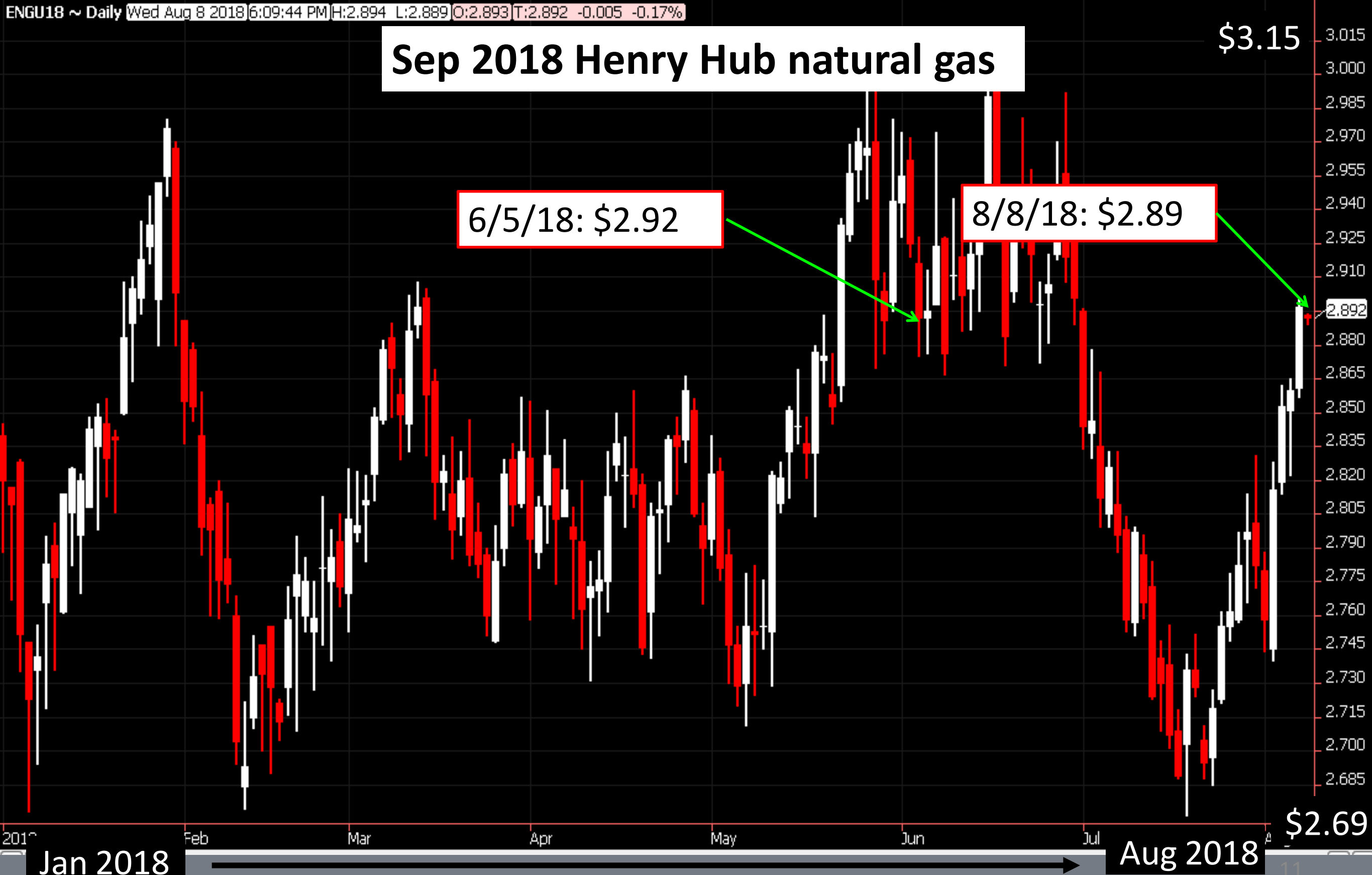


# Sep 2018 Henry Hub natural gas

\$3.15

6/5/18: \$2.92

8/8/18: \$2.89



Jan 2018

Aug 2018

\$2.69

# Sep 2018 Henry Hub natural gas contract



\$15

2018

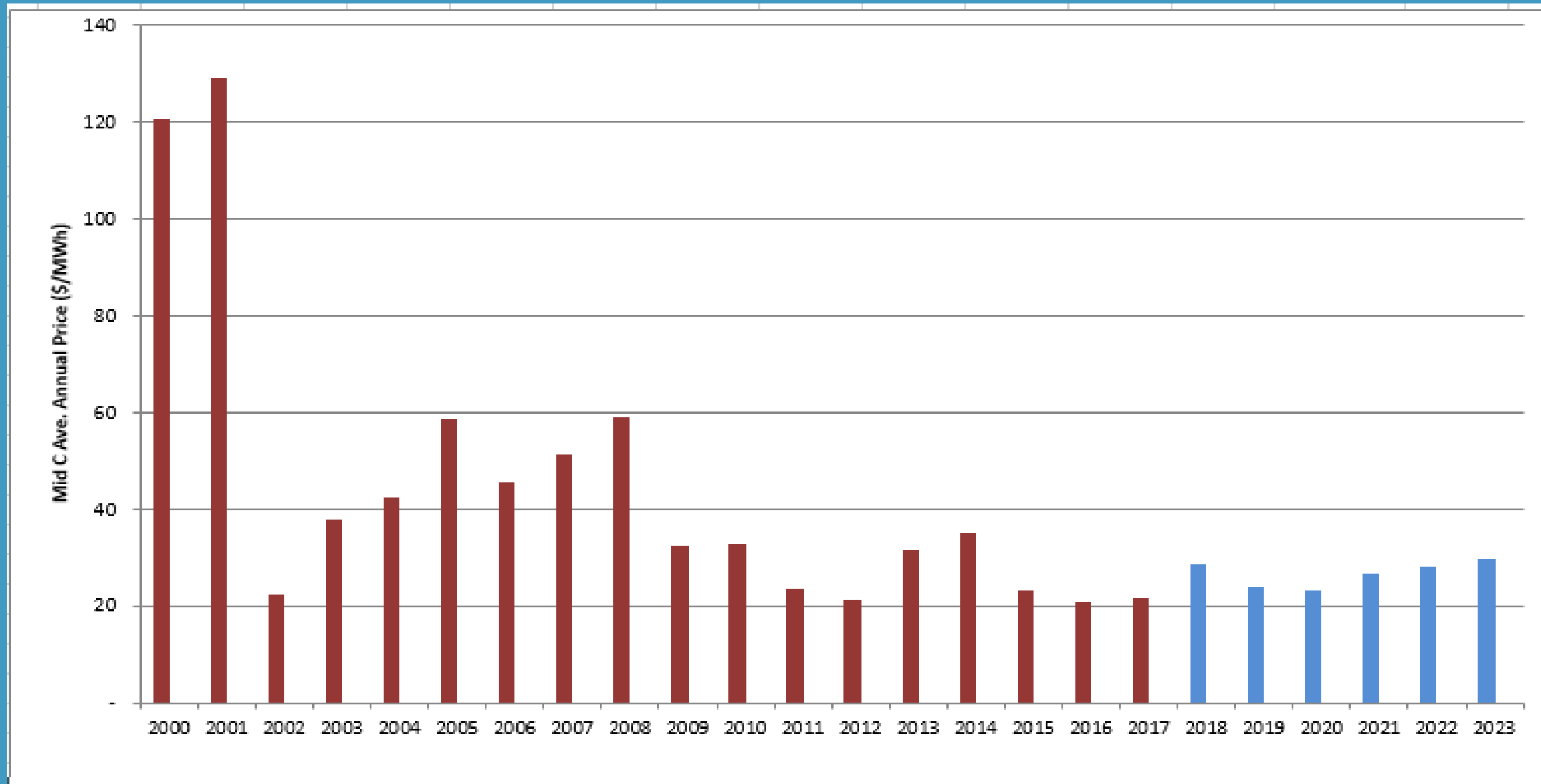
2002

2017

\$2



# MID-C FLAT ANNUAL WHOLESALE ELECTRICITY PRICES

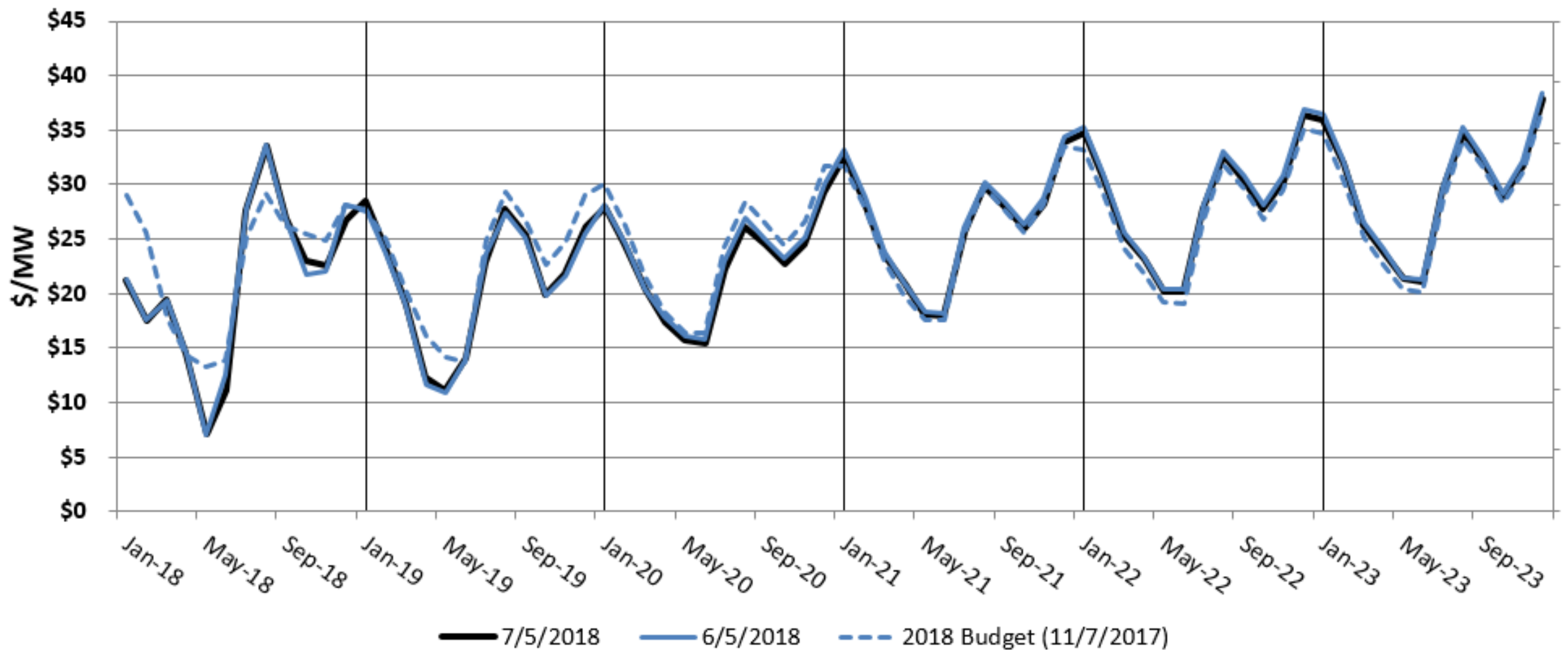


**Red** = Historical prices  
**Blue** = Forward price curve

# MIDC FLAT FORWARD PRICE CURVE

(ICE DA index prices for previous months)

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



## Q2 2018 NWR and Other Energy-Related Revenue

	Budget	Forecast**	Variance
Net Wholesale Revenue*	\$ 108,000,661	\$ 107,234,080	\$ (766,581)
<i>Specified Source</i>	\$ 3,736,377	\$ 4,971,438	\$ 1,235,061
<i>Other</i>	\$ 560,214	\$ 584,052	\$ 23,838
Alcoa PSC Revenue	\$ -	\$ 270,000	\$ 270,000
Frequency Response	\$ 638,314	\$ 638,314	\$ -
Renewables	\$ 675,764	\$ 651,624	\$ (24,140)
Real-Time Revenue	\$ 7,000,000	\$ 7,205,440	\$ 205,440
<b>NWR and Other Energy-Related Revenue</b>	<b>\$ 116,314,739</b>	<b>\$ 115,999,458</b>	<b>\$ (315,281)</b>

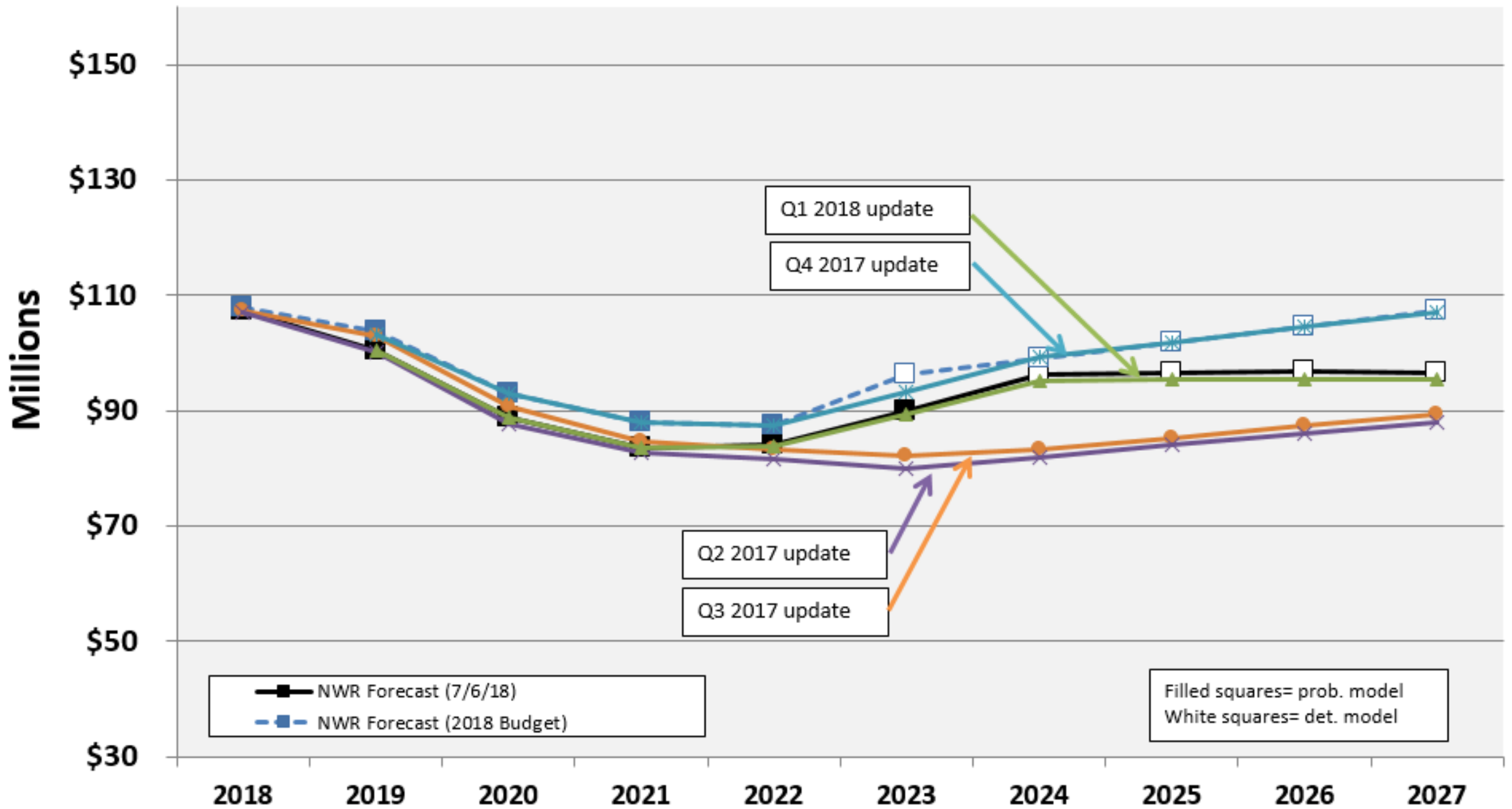
\*Net Wholesale Revenue (NWR) includes all premiums from specified source and other premium products as well as slice sales and standard forward / pre-schedule energy trading activity.

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

\*\*2018 forecast based on Jan-Jun unaudited actuals and Jul-Dec estimates. (7/6/18 forecast)

# NET WHOLESALE REVENUE FORECAST

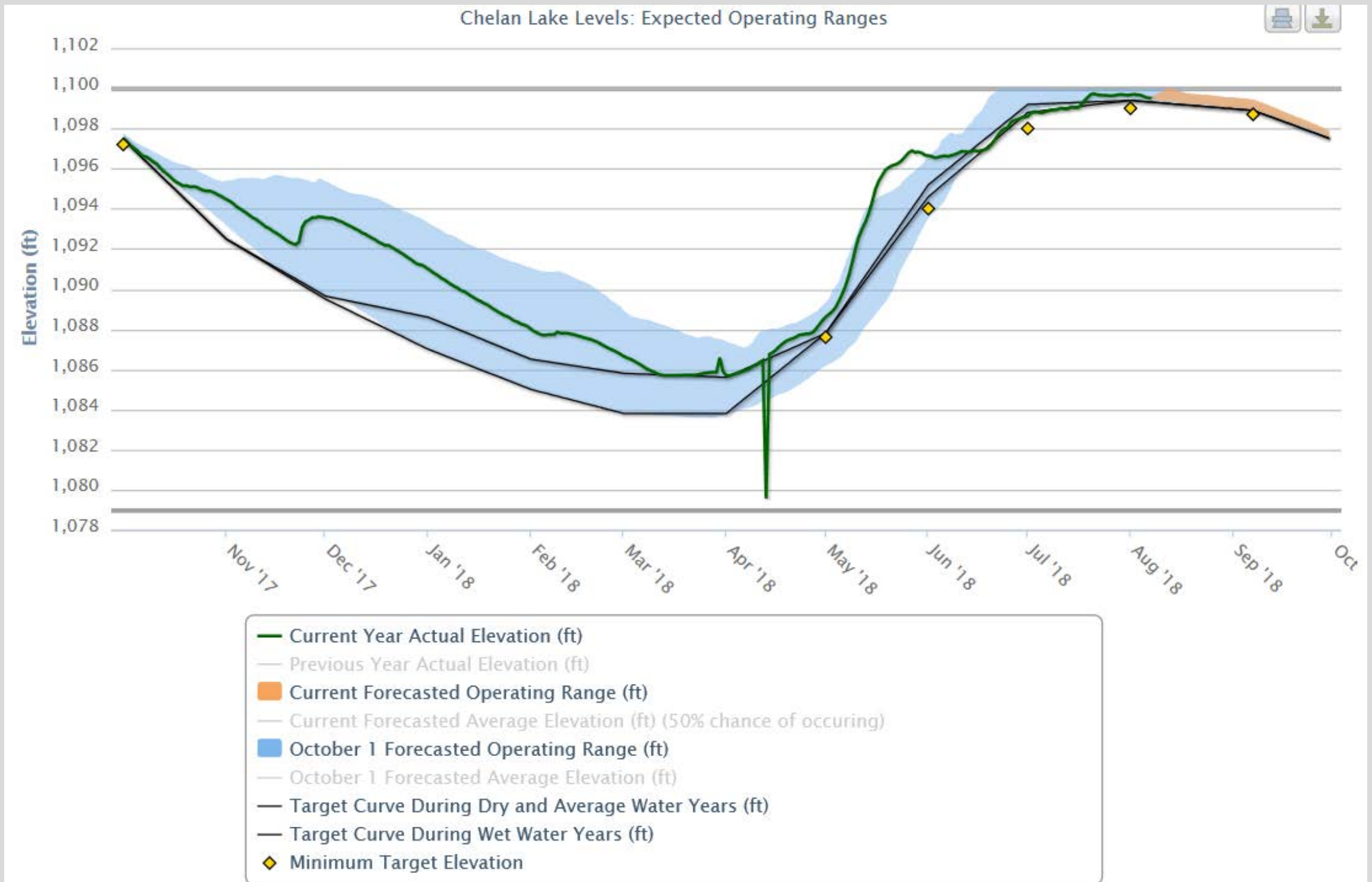
## Net Wholesale Revenue Forecast





# LAKE CHELAN LAKE LEVEL WEBPAGE

(08/07/18)



# MARKET INFO

## CCAs Expanding in California, Mainly in the South

- 4 new CCA's brings total to 13
- Another 6 are expected to begin in September
- PG&E sees company losing as much as 50% of customers by 2020
- CPUC warned that as much as 80% of IOU retail customers could shift to CCA's, direct access providers and rooftop solar between 2020 and 2024

## 'A decisive moment': Calif. utilities pitch decarbonization plans

- The new IRP process puts emissions reductions at the center of planning for power providers, while maintaining a focus on electric reliability.
- ...plans include for tens of thousands of megawatts of additional renewable energy and energy storage...
- SoCal Ed preferred proposal calls for around 4,200 MW of new renewables and about 1,600 MW of new energy storage, on top of already required amounts
- Pacific Gas and Electric, or PG&E, saw no need for new renewables through 2030. The utility expects 42% of its demand to migrate to CCAs by the end of 2019
- San Diego Gas & Electric identified a need for "only approximately 700 GWh of incremental renewable power in the outer years" of the planning period.

# Q2 ENERGY EFFICIENCY RESULTS

Two-Year Compliance Target is 2.42 aMW


















Annual 2018 Stretch Target is 1.7 aMW

Energy Efficiency Savings (aMW) <sup>1</sup>	Incentive and Labor Cost	Levelized Cost (\$/MWh) <sup>2</sup>	Estimated Value Over Life <sup>2</sup>
0.9	\$ 1,610,000	\$ 22.00	\$2,580,000

1. Pending verification

2. Based on weighted avg. life of measure and discounted at 7%

# How we Compare Against Others

2016-2017 Conservation Targets and Acquisitions				
Utility	2016-17 Conservation Target (MWh)	2016 Conservation Acquired (MWh)	2017 Conservation Acquired (MWh)	2016-17 Conservation as a Percent of 2016-17 Target
Avista	82,477	80,343	68,258	 180%
Benton PUD	17,257	11,734	9,344	 122%
<b>Chelan PUD</b>	<b>15,593</b>	<b>18,716</b>	<b>18,167</b>	 <b>237%</b>
Clallam PUD	7,008	5,199	5,827	 157%
Clark Public Utilities	67,802	48,792	114,998	 242%
Cowlitz PUD	41,260	121,668	27,249	 361%
Grant PUD	27,418	24,590	7,183	 116%
Grays Harbor PUD	6,482	8,979	5,525	 224%
Inland Power	6,658	7,307	6,088	 201%
Lewis PUD	5,519	5,350	7,671	 236%
Mason PUD #3	3,428	5,977	1,682	 223%
Pacific Power	93,059	54,960	44,148	 107%
Peninsula Light	4,767	4,462	3,551	 168%
Puget Sound Energy	605,194	314,525	318,629	 105%
Seattle City Light	224,431	125,725	145,336	 121%
Snohomish PUD	122,990	96,571	100,693	 160%
Tacoma Power	81,993	50,049	50,418	 123%
<b>Total</b>	<b>1,413,335</b>	<b>984,948</b>	<b>934,769</b>	<b>136%</b>



# Items of Interest

- Team is transitioning from Energy Efficiency only to Customer Energy Solutions
- The LED streetlight project:
  - bid awarded
  - contracts executed and work begins in September
- Cashmere School
- Strategic Energy Management
  - Town Toyota Center
  - Confluence Health
- Teamed with PNNL and LINK on R&D proposal

# SUMMARY

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# QUESTIONS?



CHELAN COUNTY