



**Quarterly Board Update**  
4th Quarter 2017 • February 5, 2018

# ENERGY PLANNING & TRADING

2017 Q4

## Portfolio Overview

## Operations and Planning

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

## Market Update

## Energy Efficiency Update

# KEY MESSAGE POINTS

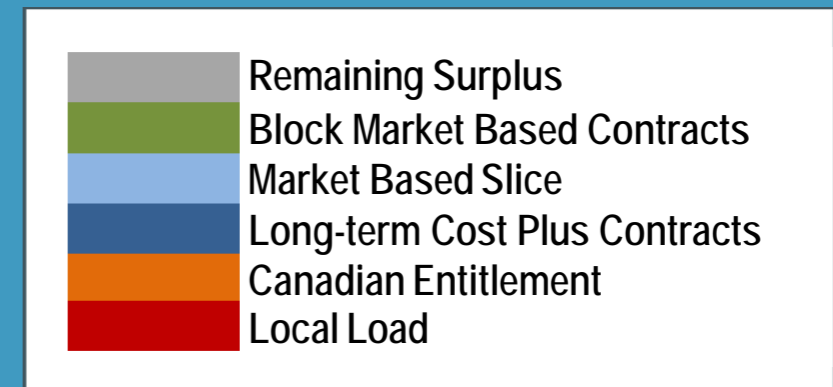
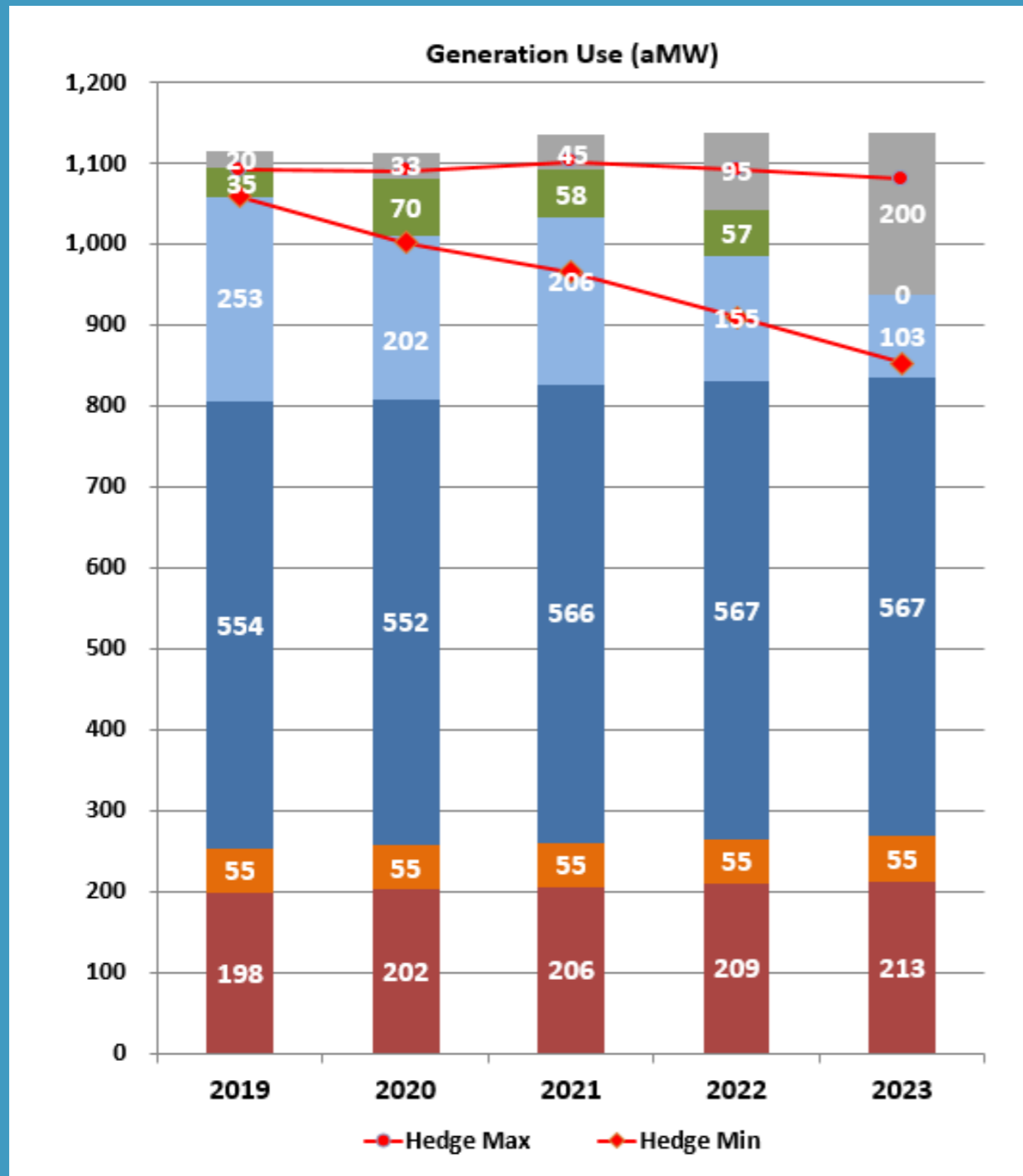
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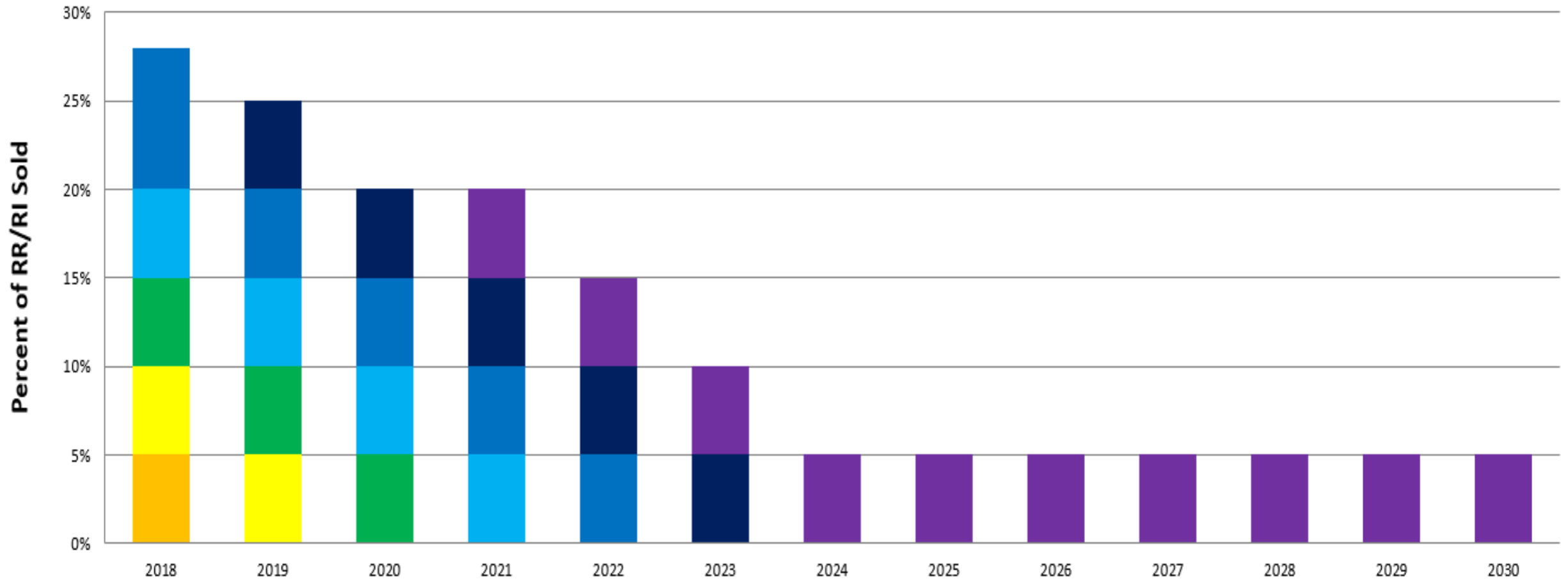
Energy Efficiency programs have met the ~1.7 aMW 2016/2017 compliance goal. The team also met the 2.1 aMW stretch goal for 2017 under budget.

# 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 2017

2017	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	122	131	93%
Aug	91	106	86%
Sep	72	76	94%
Oct	57	78	73%
Nov	74	92	80%
Dec	93	108	86%
YTD Average	130	112	116%

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

# WATER SUPPLY FORECAST

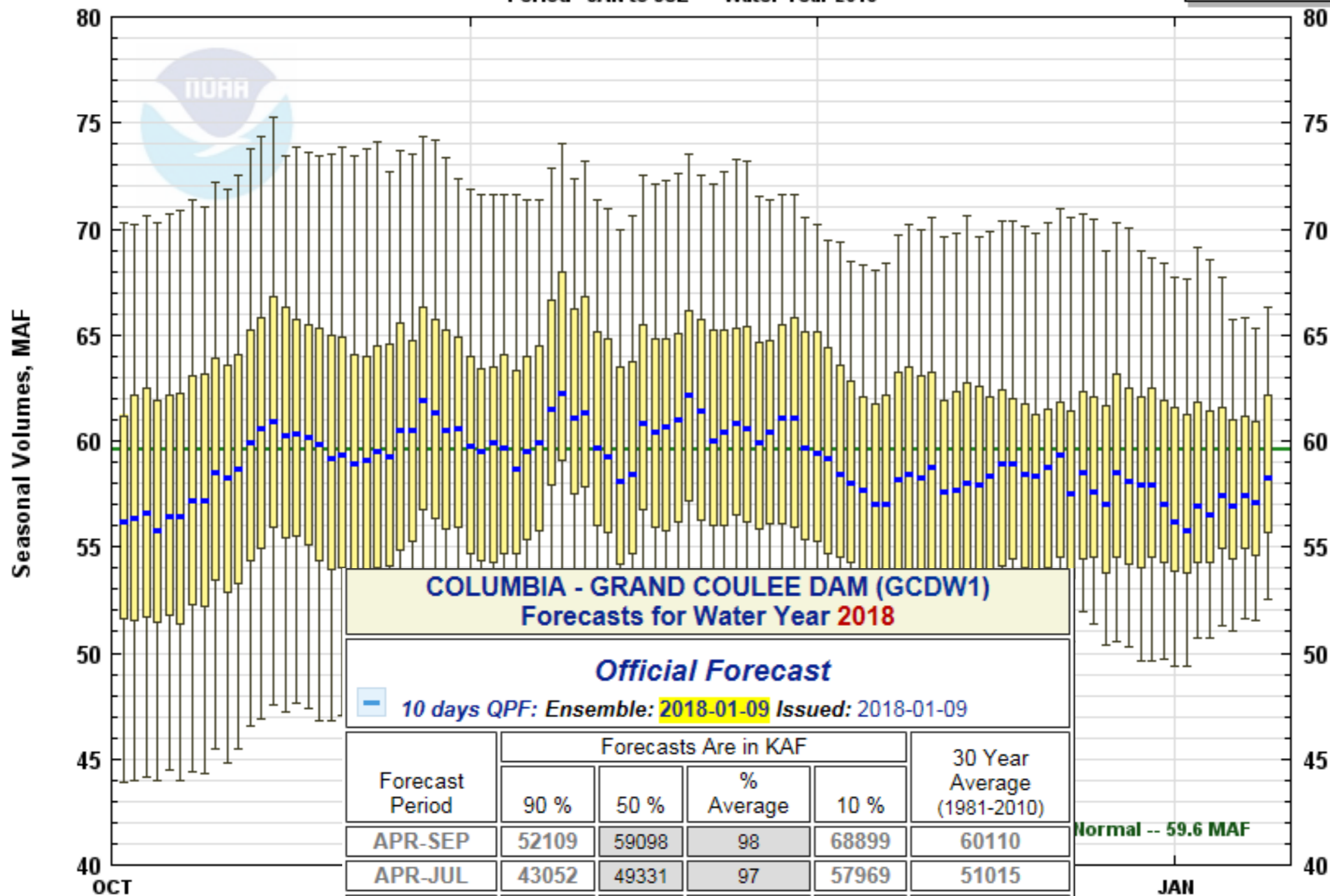


## Water Supply Forecasts

**COLUMBIA - GRAND COULEE DAM**

Period JAN to JUL -- Water Year 2018

30yr Normal  
ESP10



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

### Official Forecast

10 days QPF: Ensemble: 2018-01-09 Issued: 2018-01-09

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	52109	59098	98	68899	60110
APR-JUL	43052	49331	97	57969	51015
APR-AUG	49174	55314	97	64904	56763
JAN-SEP	61059	67229	98	78245	68694
<b>JAN-JUL</b>	<b>52561</b>	<b>58256</b>	<b>98</b>	<b>66285</b>	<b>59599</b>
OCT-SEP	68476	74646	97	85662	76824

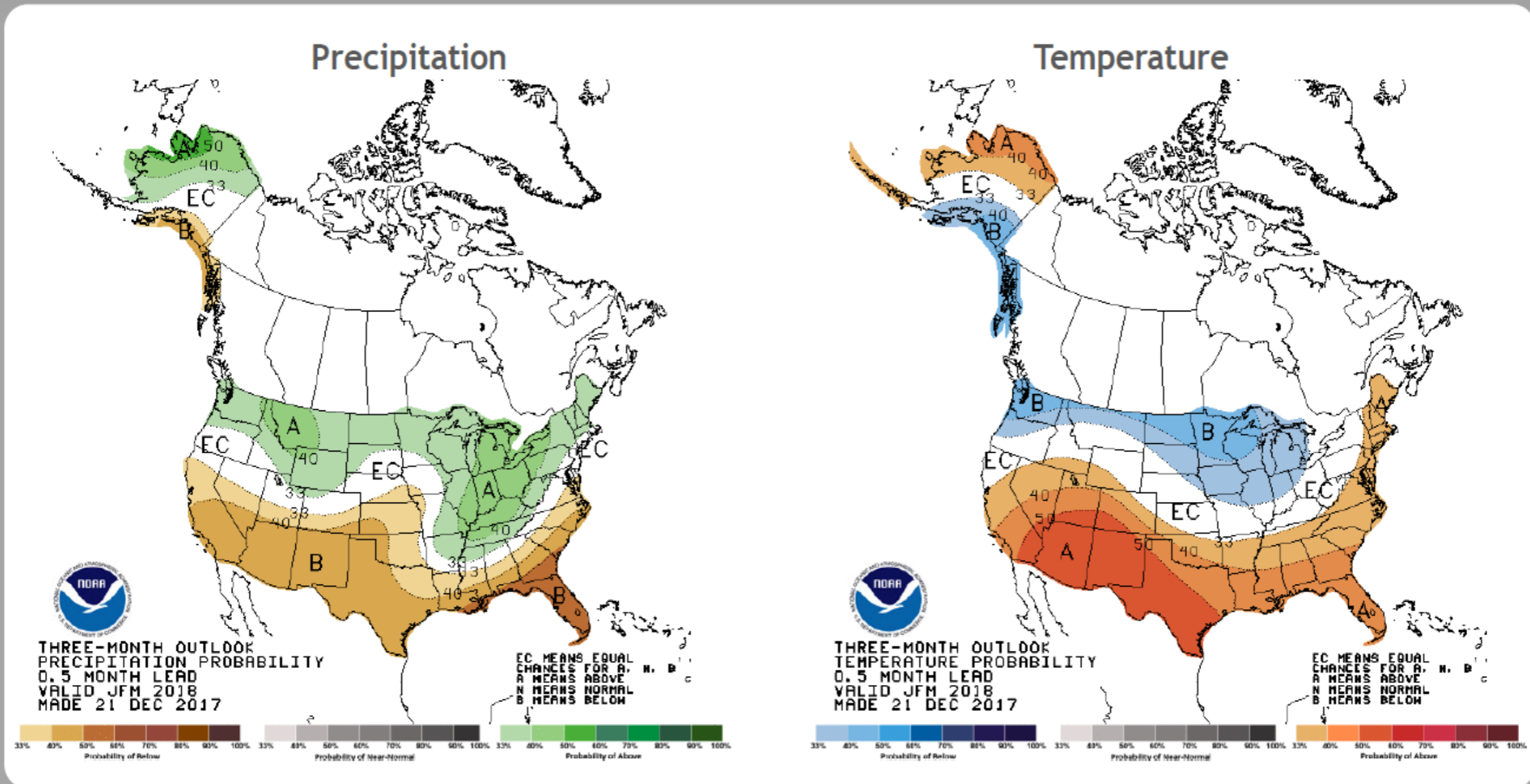
Most Recent Forecast for ESP10: Issued

Created 01/10/2018 08:36 PST

# U. S. Seasonal Outlooks

## January - March 2018

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



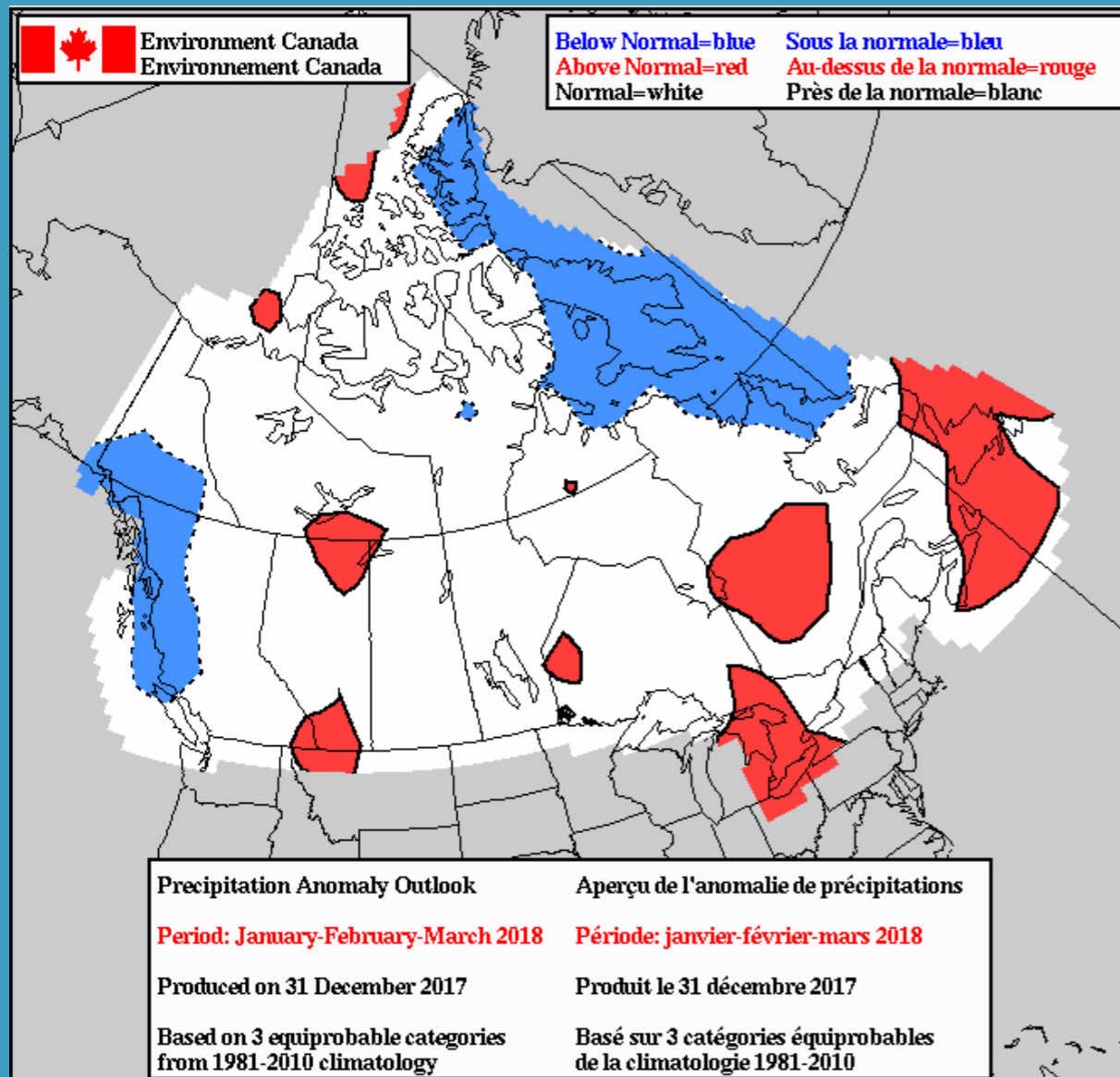


# CANADIAN JAN – MAR FORECASTS

## Temperature and Precipitation Deterministic Forecasts

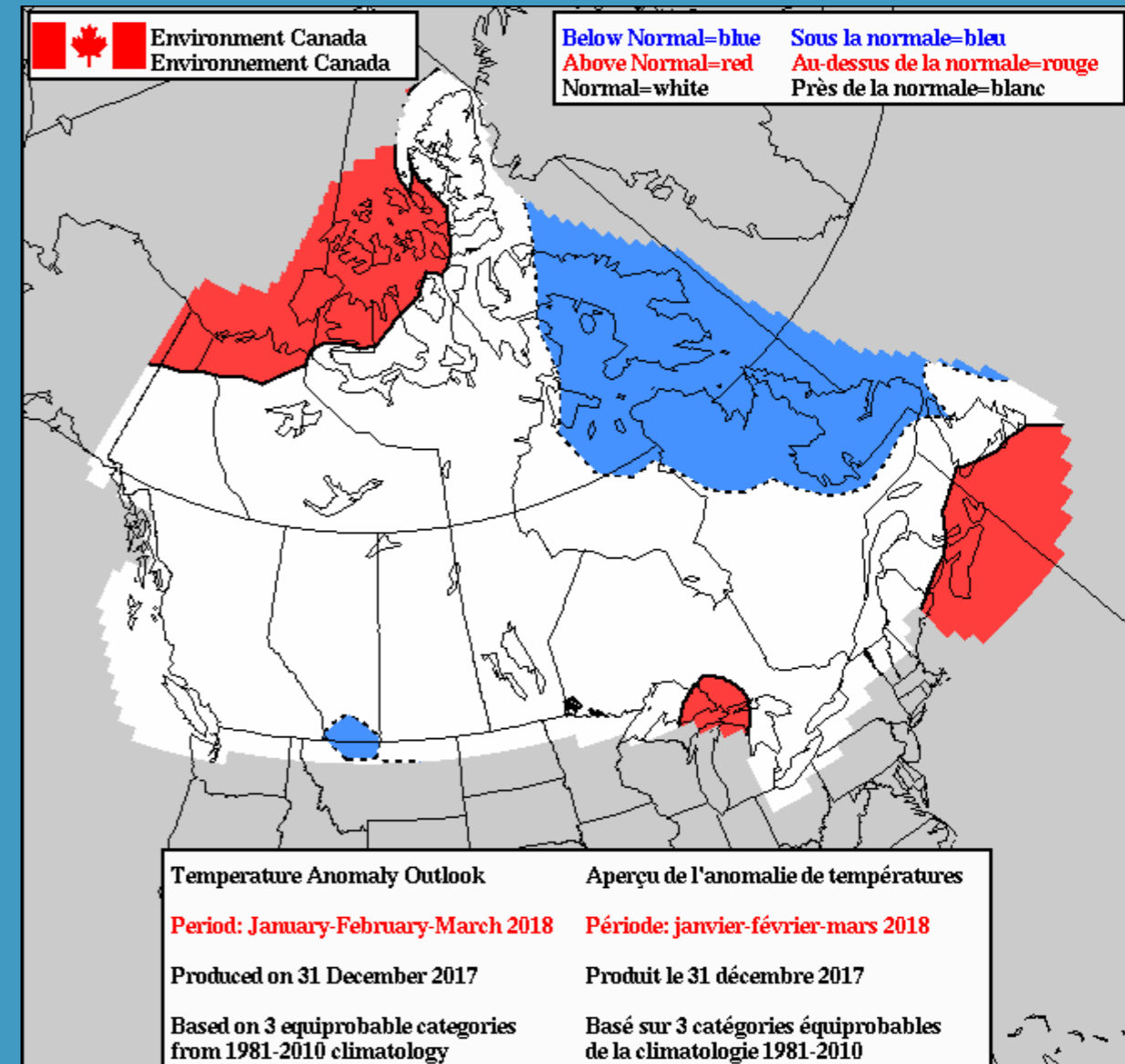
### Precipitation

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



### Temperature

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



\$3.75

# Feb 2018 Henry Hub natural gas contract

10/25/17: \$3.21

1/10/18: \$2.89

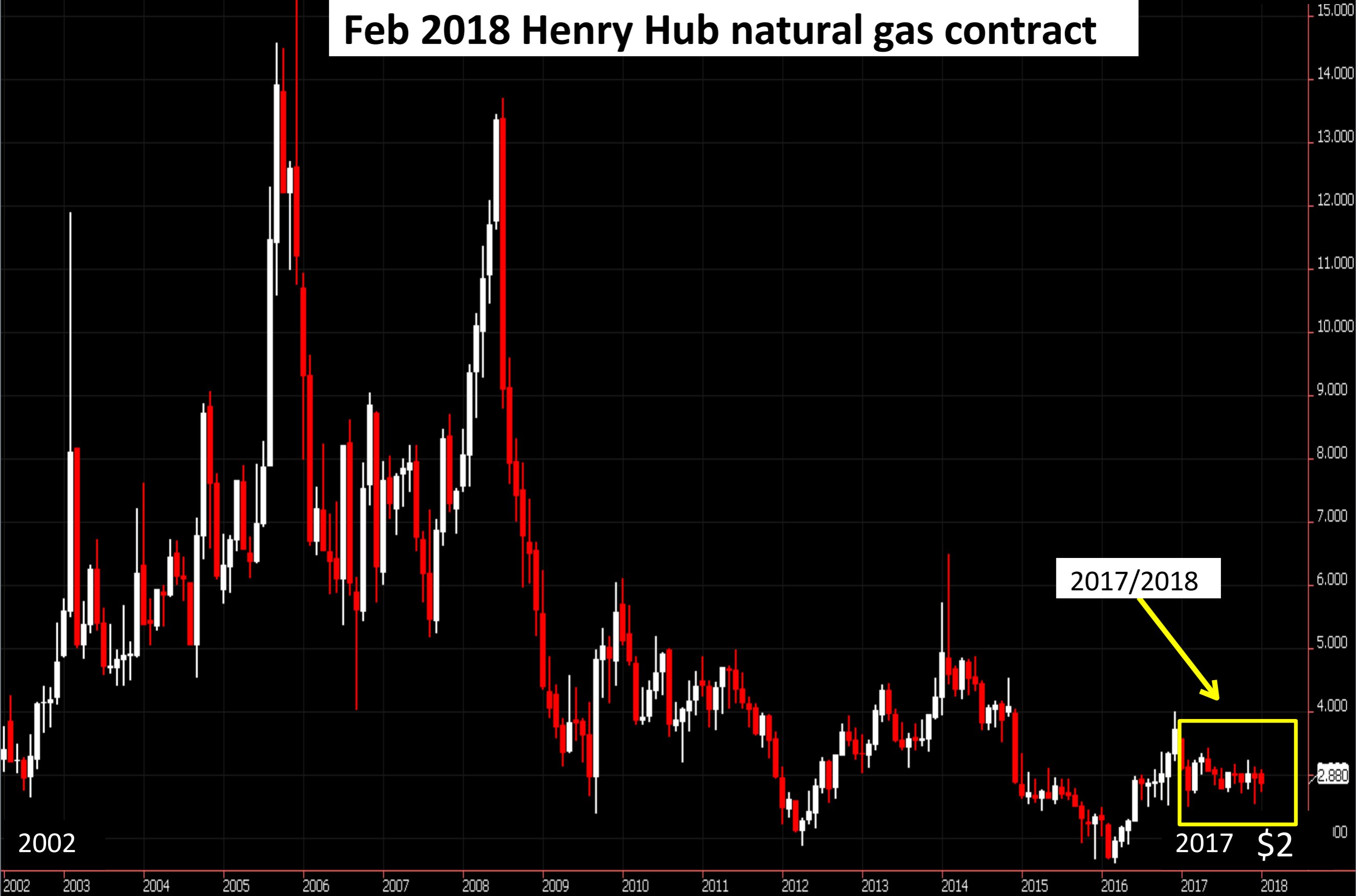
Jan 2017

Jan 2018



\$15

# Feb 2018 Henry Hub natural gas contract



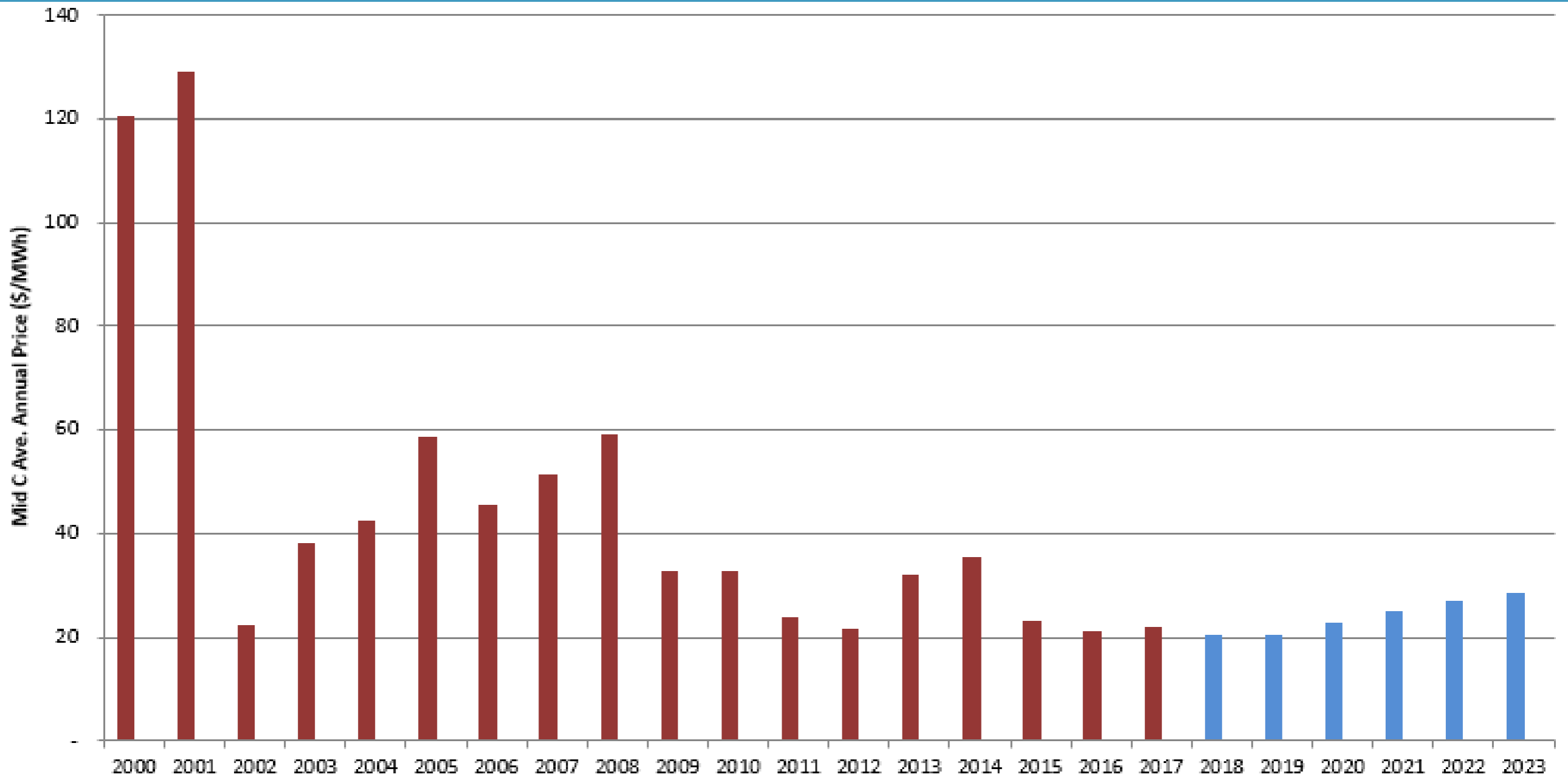
2002

2017/2018

2017

\$2

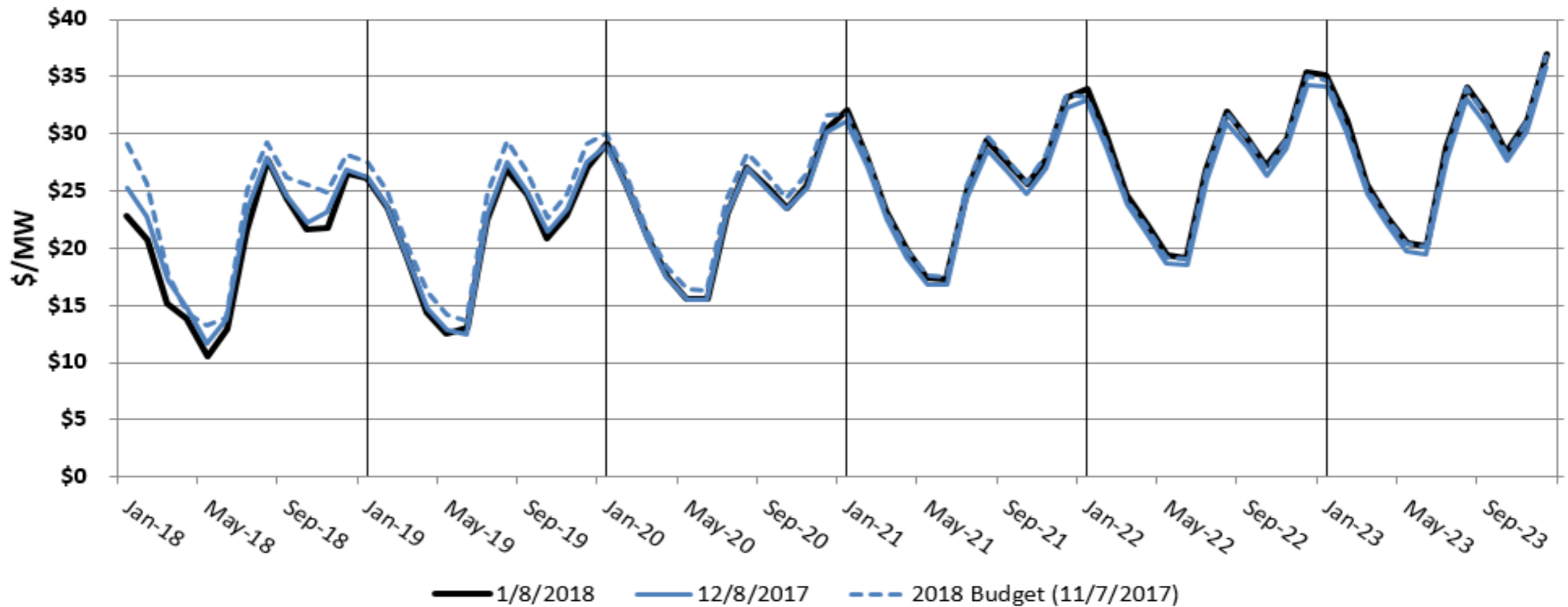
# MID-C FLAT ANNUAL WHOLESALE ELECTRICITY PRICES



**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)



## 2017 NWR and Other Energy-Related Revenue

	Budget	Actual**	Variance
Net Wholesale Revenue*	\$ 114,138,098	\$ 112,073,107	\$ (2,064,991)
<i>Specified Source</i>	\$ 3,091,960	\$ 4,562,645	\$ 1,470,685
<i>Other</i>	\$ 615,896	\$ 613,944	\$ (1,952)
Alcoa PSC Revenue	\$ -	\$ 2,663,418	\$ 2,663,418
Frequency Response	\$ 282,750	\$ 282,750	\$ -
Renewables	\$ 458,090	\$ 438,221	\$ (19,869)
Real-Time Revenue	\$ 7,000,000	\$ 8,472,979	\$ 1,472,979
<b>NWR and Other Energy-Related Revenue</b>	<b>\$ 121,878,938</b>	<b>\$ 123,930,475</b>	<b>\$ 2,051,537</b>

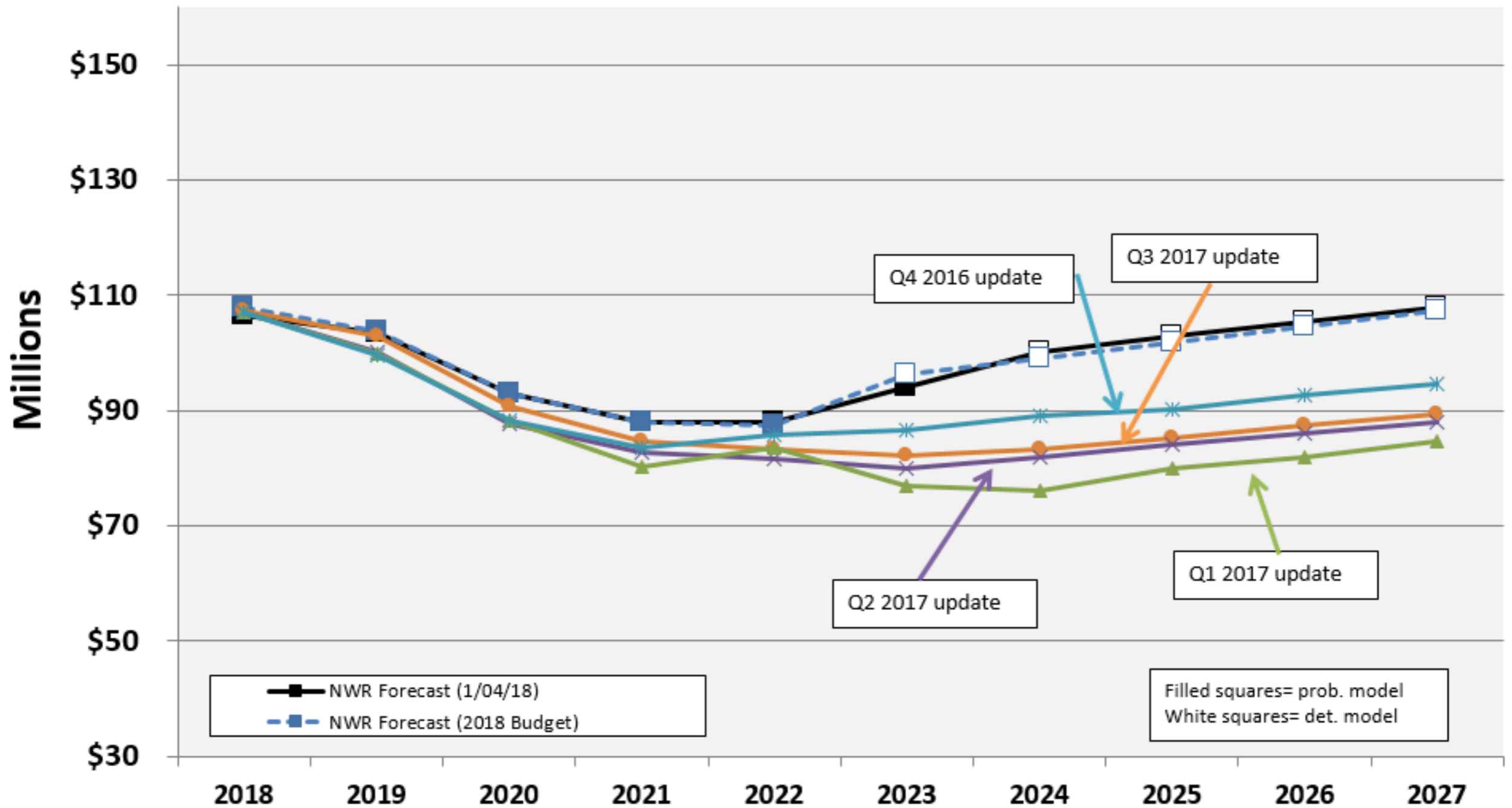
*\*Net Wholesale Revenue (NWR) includes all premiums from specified source and other premium products as well as slice sales and standard forward / pre-schedule energy trading activity.*

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

*\*\*Unaudited*

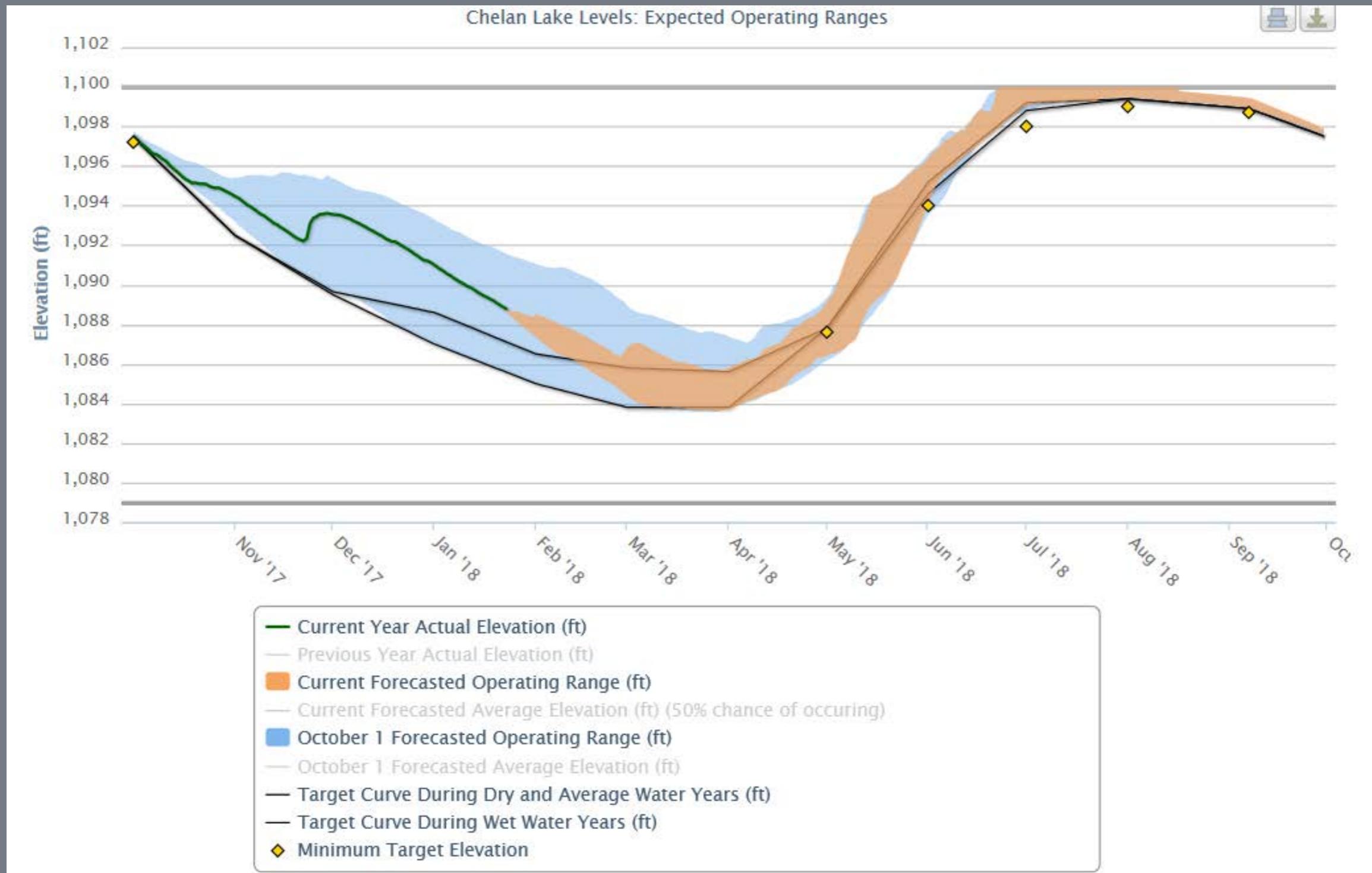
# NET WHOLESALE REVENUE FORECAST

## Net Wholesale Revenue Forecast



# LAKE CHELAN LAKE LEVEL WEBPAGE

(01/23/18)





# MARKET INFO

## Cal-ISO RC Decision seen reshaping markets

- Cal-ISO plans to withdraw from its current RC, Peak Reliability, in September 2019, and become its own RC by spring 2020
- Cal-ISO will also offer its RC services to other parties in the West, “at significantly reduced costs,”
- Its decision was motivated in part by MWTG’s plan to leave Peak, and in part by Peak’s new partnership with PJM subsidiary PJM Connex

## FERC rejects DOE NOPR, kicking resilience issue to grid operators

- FERC rejected a proposal from the DOE to subsidize coal and nuclear plants, instead turning to regional grid operators to assess how best to enhance the resilience of the power system.
- The five-member FERC voted unanimously to reject the proposed rule from Secretary of Energy Rick Perry .

## ‘Incredible’ low prices for renewables-plus-storage in Xcel’s solicitation

- The median price bid for wind-plus-storage projects in Xcel's all-source solicitation was \$21/MWh
- the median bid for solar-plus storage was \$36/MWh
- Previously, the lowest known bid for similar solar resources was \$45/MWh in Arizona.

# Q3 ENERGY EFFICIENCY RESULTS

Two-Year Compliance Target 1.66 aMW-this was met in 2016

Annual 2017 Stretch Target is 2.1 aMW

2017 Energy Savings (aMW) <sup>1</sup>	Incentive and Labor Cost	Levelized Cost <sup>2</sup> (\$/MWh)	Estimated Value over Life <sup>2</sup>
2.1	\$ 3,500,000	\$ 19.95	\$ 5,800,000

1 Pending metering and verification and based on expected NEEA savings

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

# SUMMARY

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# QUESTIONS?



CHELAN COUNTY