



Energy Resources Quarterly Board Update
2nd Quarter 2019 • August 19, 2019

ENERGY PLANNING & TRADING

2019 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 2019 Net Wholesale Revenue and other energy-related revenues forecast for 2019 is \$124.5 million, which is \$11.5 million above budget.

Forecasted specified source energy sales contribute \$5.4 million to the Net Wholesale Revenue forecast, which is \$1.2 million lower than budget. This reduction is due to lower than normal supply because of low water year.

New Microsoft contract to serve Redmond/Bellevue campus was successfully implemented on April 1, 2019.

Energy efficiency programs performance is strong, well on the way to surpassing targets.

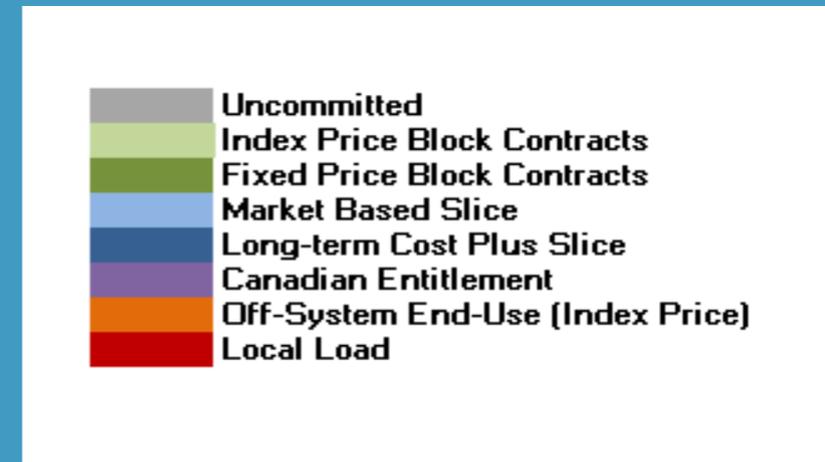
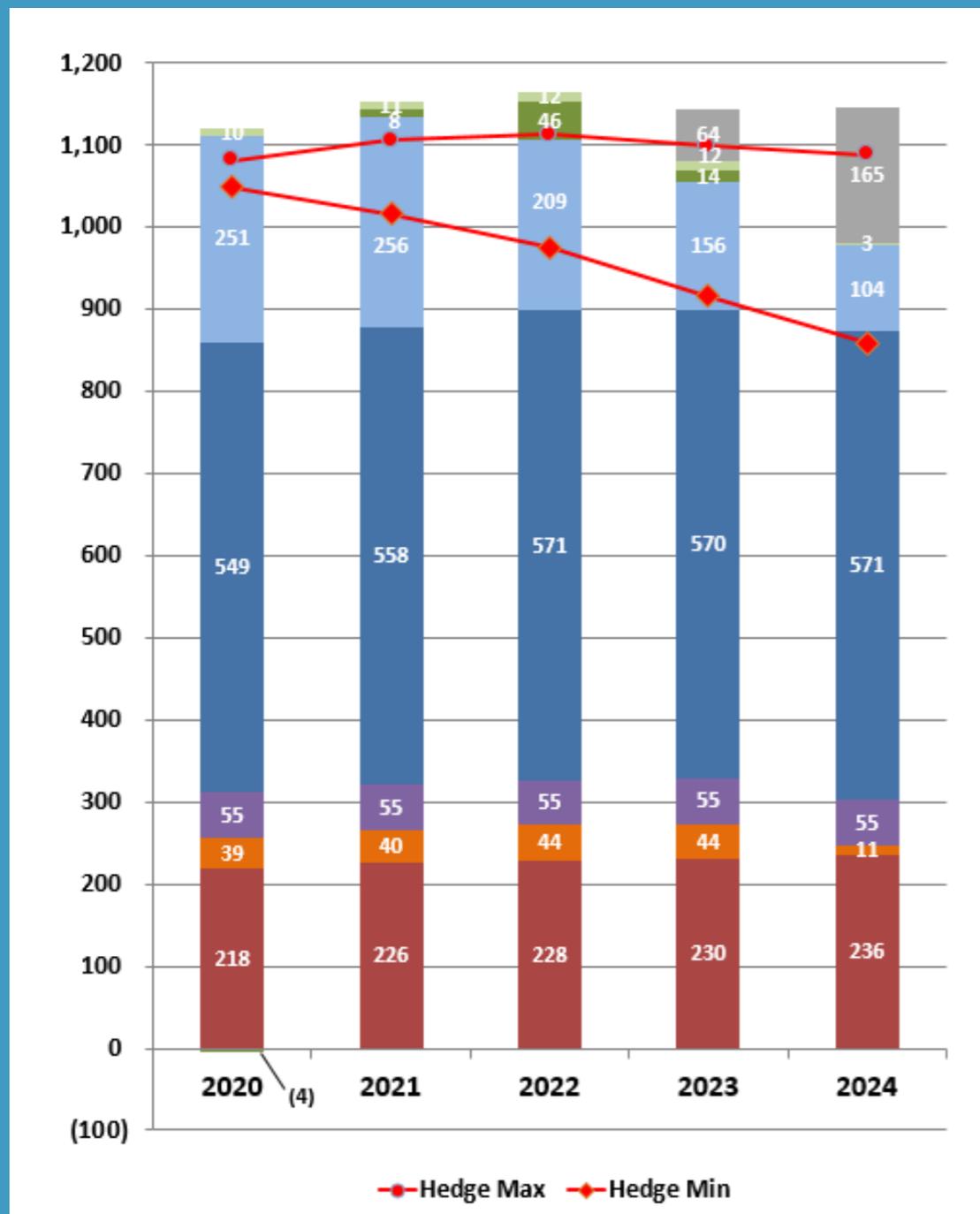
Energy Resource Team is monitoring major changes in the western power market

- **Resource Adequacy**
 - Several efforts underway to assess the future resource adequacy of the northwest (NWPP, NWPPCC, PNUCC)
 - Staff engaging in NWPP RA program development effort
- **Short term markets (within hour → real-time → day ahead)**
 - Many utilities have joined CAISO Energy Imbalance Market (EIM) for within hour products (about 4% of trades)
 - Staff engaging in CAISO stakeholder process on EIM and day ahead market – advocating for rules that equitably compensate hydro for the services it provides
- **State carbon policies**
 - Rulemaking beginning on WA Clean Energy Transformation Act (CETA)
- **Value of products and services changing**

MAJOR TRANSACTIONS

No new major transactions

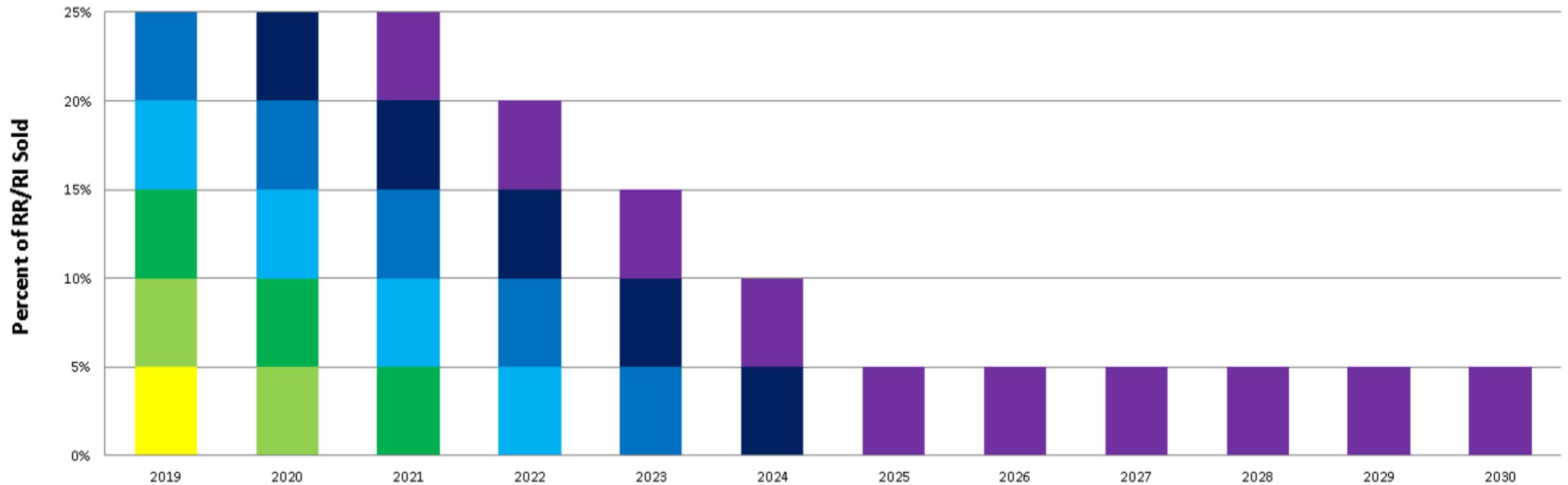
District's Energy Commitments (average MW)



Note: The Power Risk Management Committee (PRMC) approved an exception to policy for commitments in years 2020 through 2022 because index priced sales do not introduce price risk.

Market Based Slice Contracts

Current Market Position - Market Based Slice Products



	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 34 - Powerex		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%								
Slice Product 26 - Morgan	5.0%	5.0%	5.0%									
Slice Product 22 - Avista	5.0%	5.0%										
Slice Product 18 - Exelon	5.0%											

Columbia River Flow Update for 2019

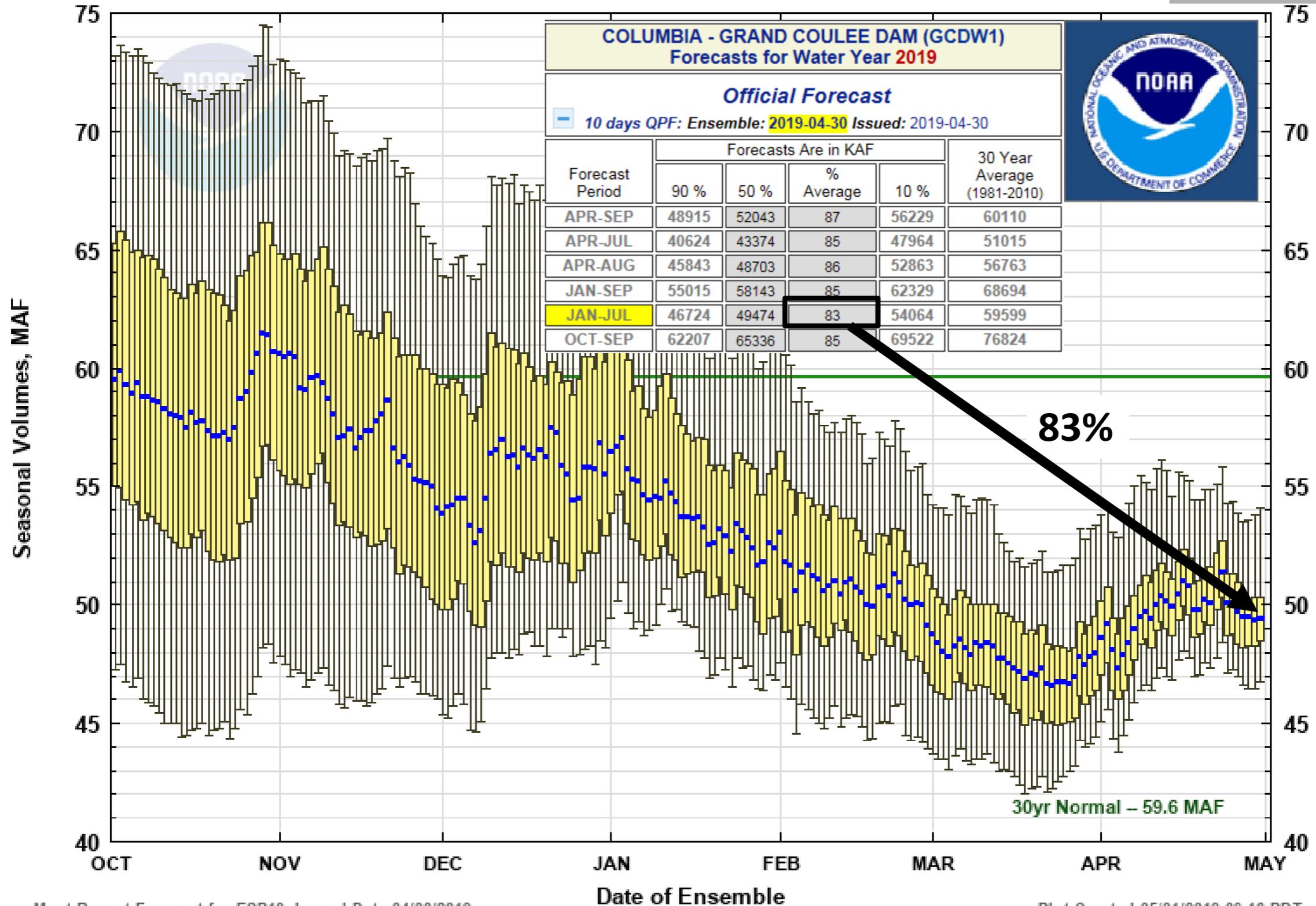
2019	Rocky Reach Flow (kcfs)	Budget Rocky Reach Flow (kcfs)	Difference from budget (kcfs)
Jan	92	139	-46
Feb	88	108	-20
Mar	72	89	-17
Apr	76	113	-37
May	133	140	-7
Jun	110	178	-68
Jul	93	144	-51
Aug		114	
Sep		59	
Oct		73	
Nov		96	
Dec		107	
YTD Average	95	130	-35

* Budgeted Rocky Reach flow is 1929-2016 average

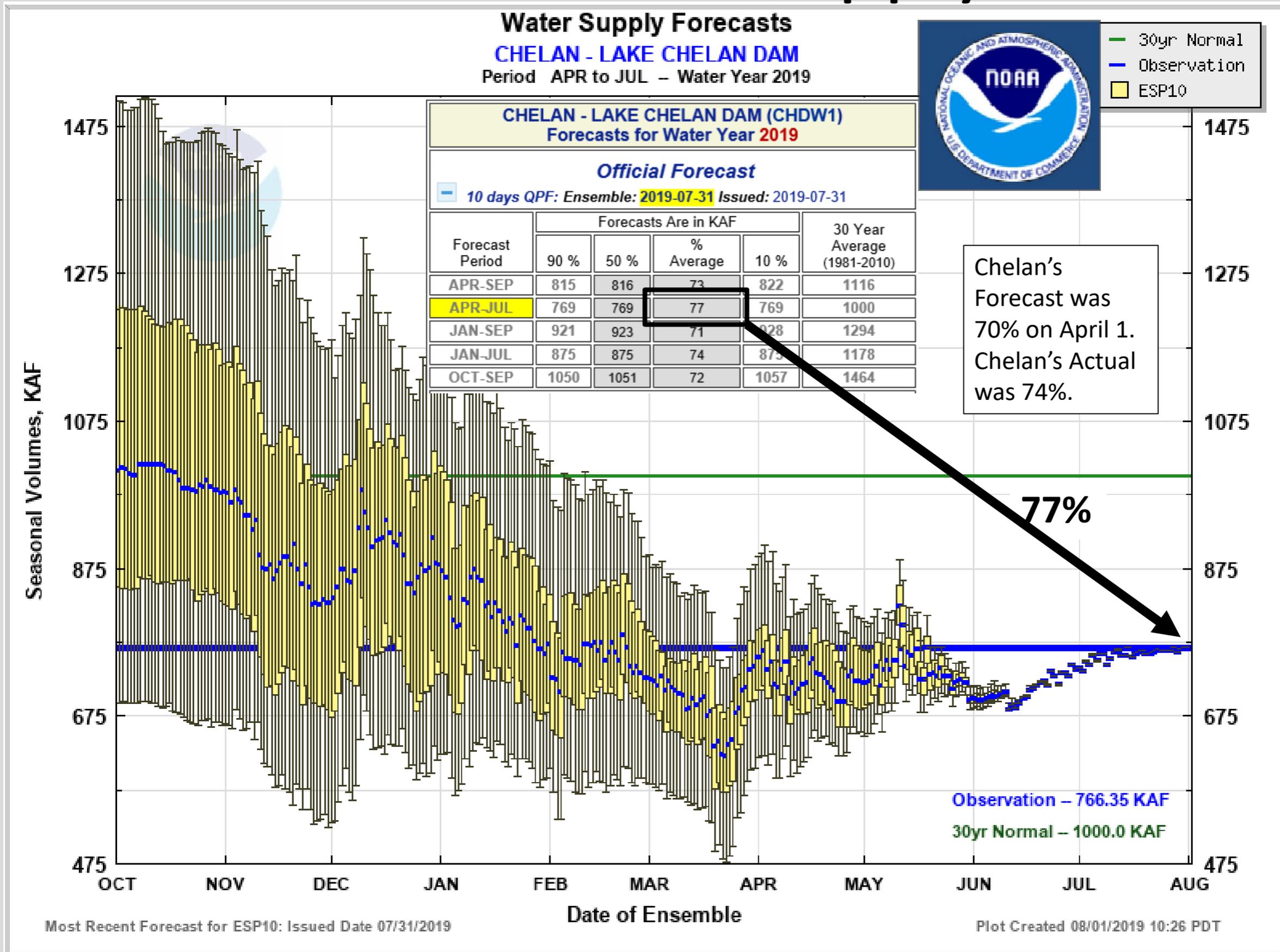
WY 2019 Water Supply Forecast

Water Supply Forecasts COLUMBIA - GRAND COULEE DAM Period JAN to JUL - Water Year 2019

— 30yr Normal
■ ESP10



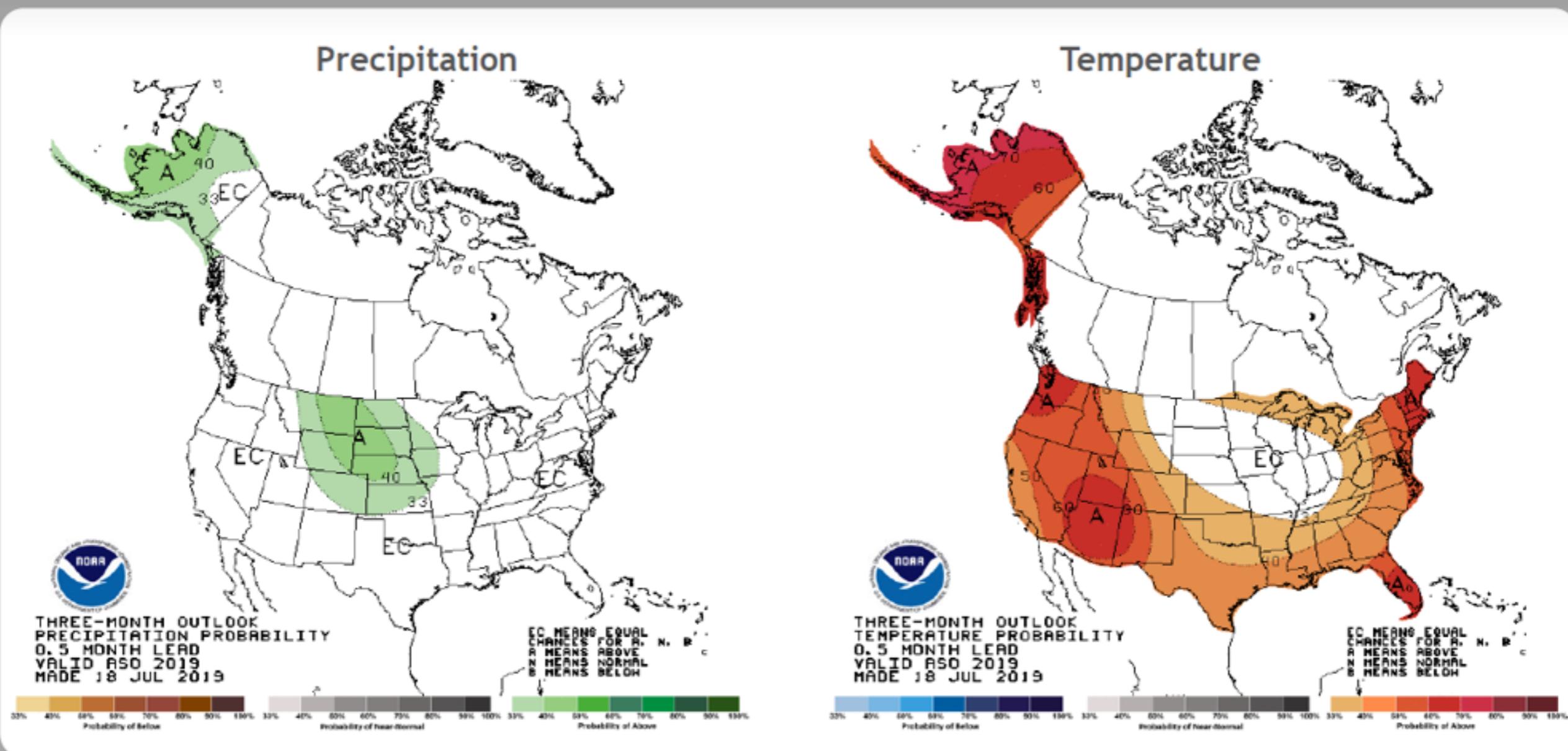
WY 2019 Water Supply Forecast



U. S. Seasonal Outlooks

August-October 2019

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

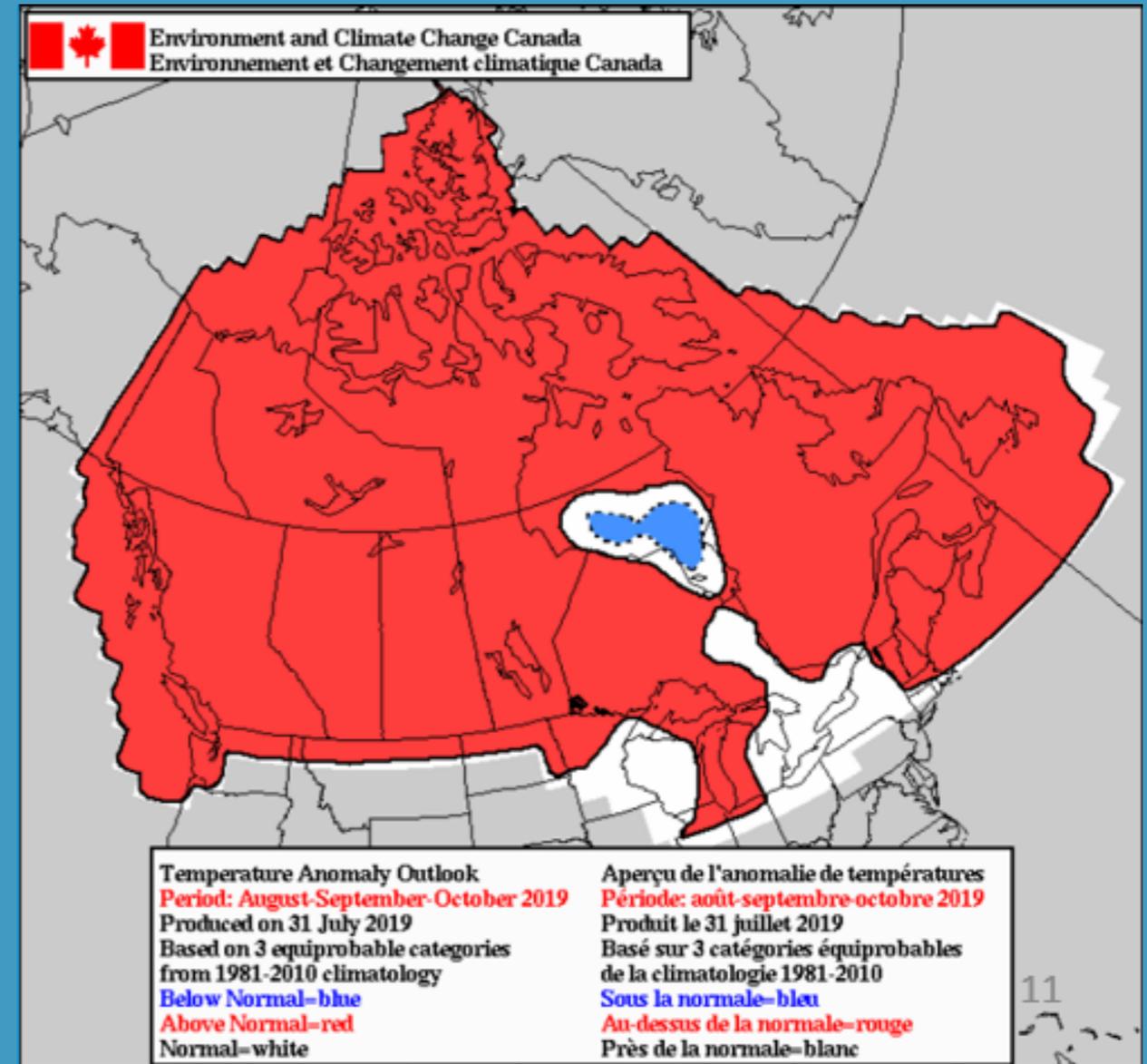
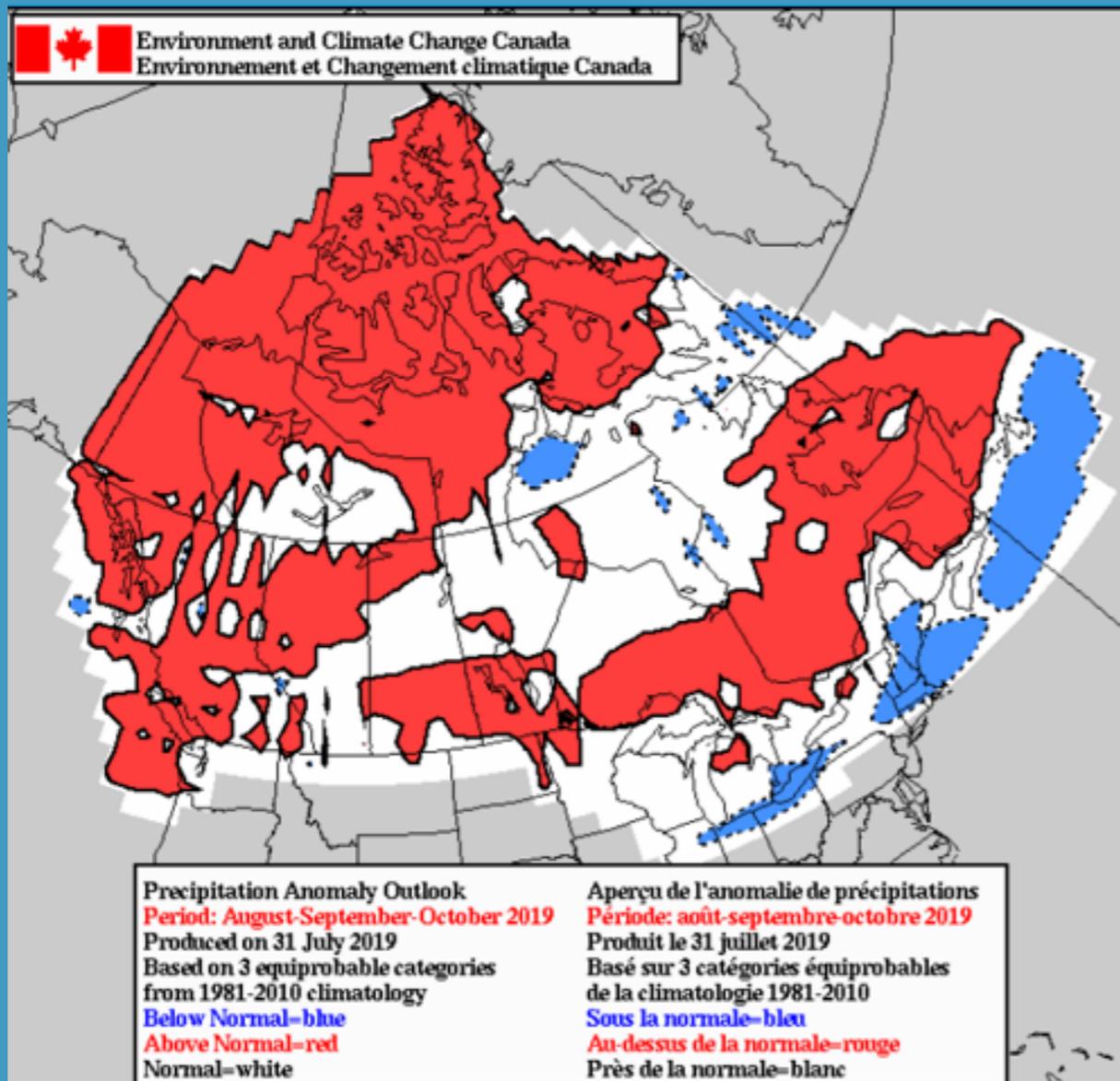
Red = Above (wetter)

Blue = Below (drier)

Temperature

Red = Above (warmer)

Blue = Below (colder)

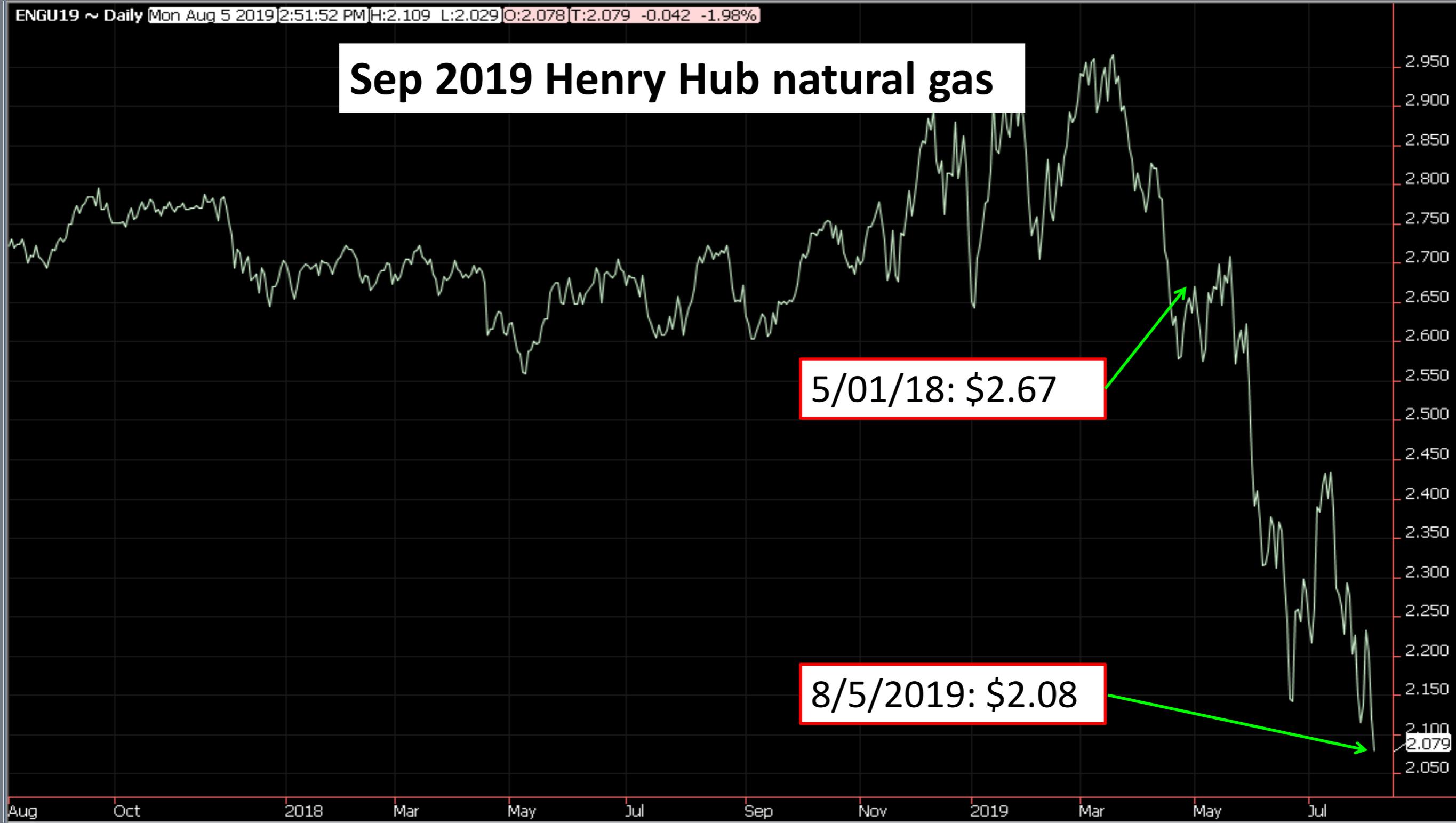


ENGU19 ~ Daily Mon Aug 5 2019 2:51:52 PM H:2.109 L:2.029 O:2.078 T:2.079 -0.042 -1.98%

Sep 2019 Henry Hub natural gas

5/01/18: \$2.67

8/5/2019: \$2.08

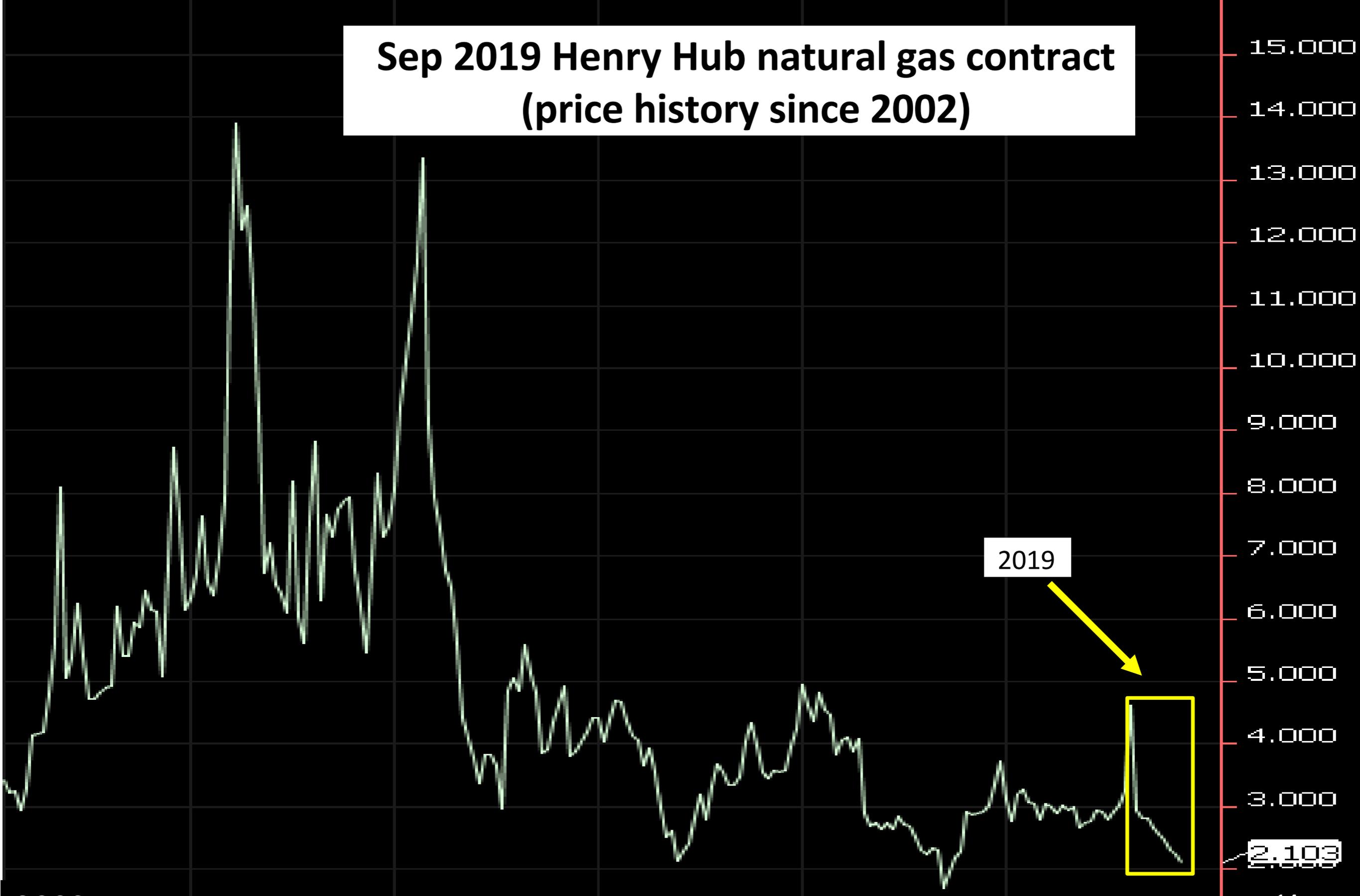


Aug 2018



Aug 2019

Sep 2019 Henry Hub natural gas contract (price history since 2002)

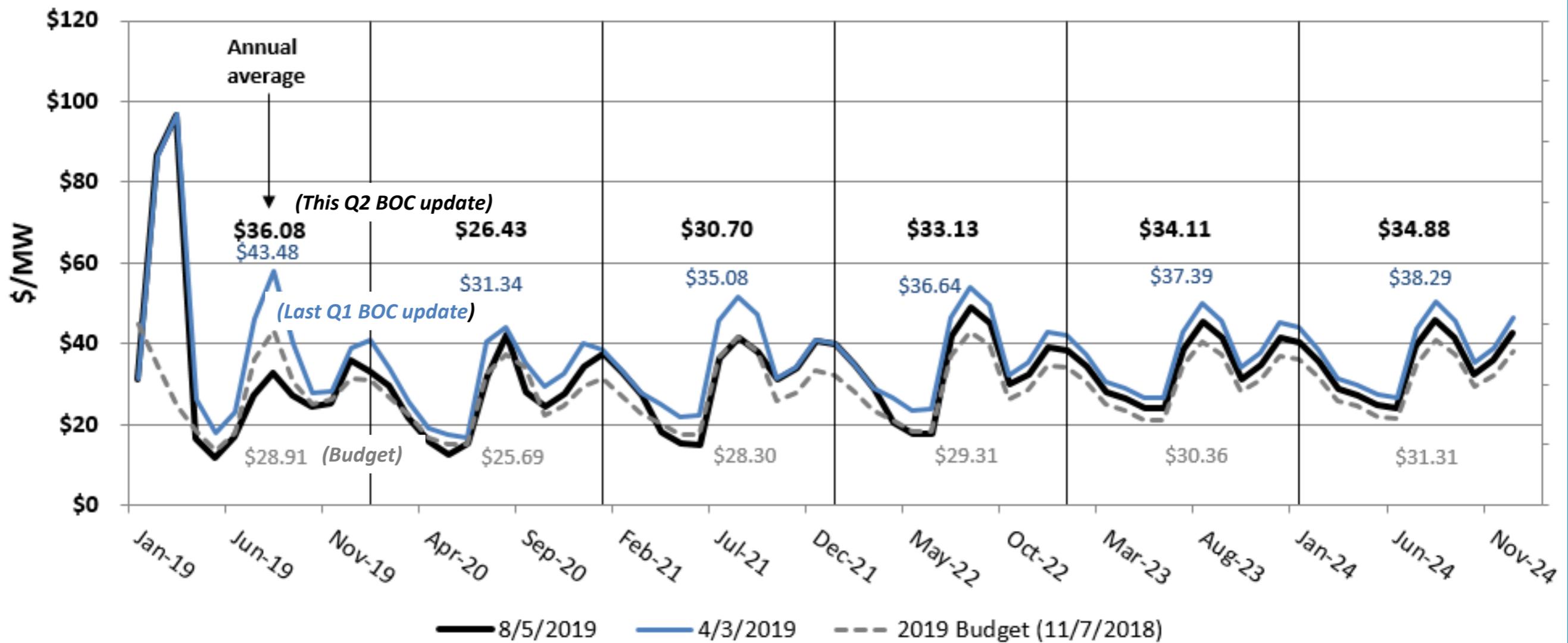


2019

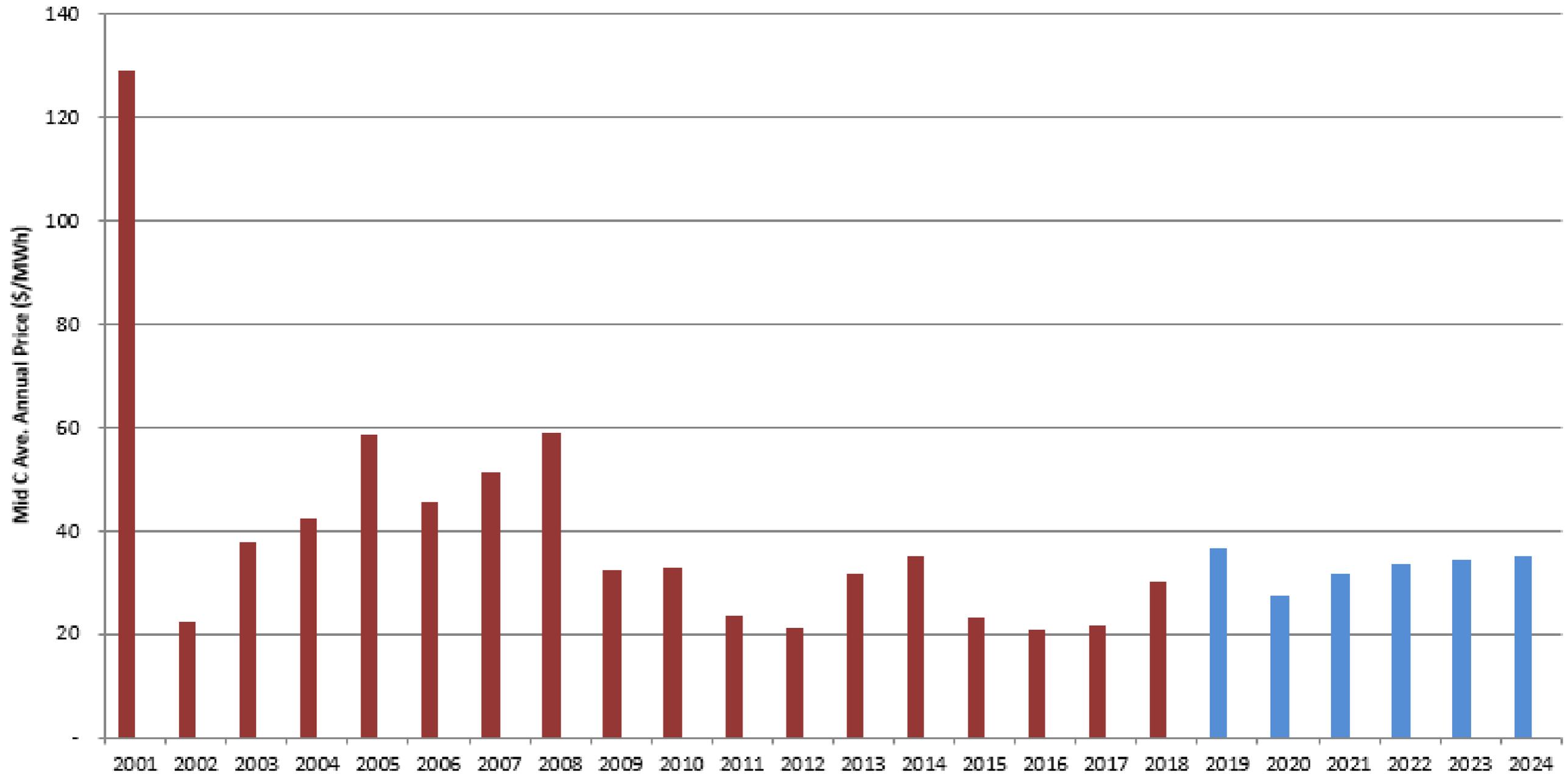
2.103

MIDC forward price curve

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



MIDC flat annual Wholesale Electricity Prices



Red = Historical prices
Blue = Forward price curve

2019 NWR and Other Energy-Related Revenue

(amounts in millions)

	Budget		Forecast [1]		Variance
Net Wholesale Revenue (NWR)					
Energy Sales	\$ 94.9		\$ 75.1		\$ (19.8)
Specified Source Premium	\$ 6.7		\$ 5.4		\$ (1.2)
Renewables- Bundled	\$ 0.8		\$ 0.7		\$ (0.1)
NWR Sub-total [2]	\$ 102.4		\$ 81.2		\$ (21.2)
Off-System End-Use Revenue					
Off-System End-Use Sales [3]	\$ -		\$ 11.4		\$ 11.4
Off-System End-Use Sub-total	\$ -		\$ 11.4		\$ 11.4
Other Energy-Related Revenue					
LT Power Contract- Retained Surplus	\$ -		\$ 20.0		\$ 20.0
LT Power Contract- Admin Fees	\$ 2.0		\$ 2.0		\$ -
Frequency Response & Load Shedding	\$ 1.1		\$ 1.1		\$ -
Other [4]	\$ 0.4		\$ 0.4		\$ 0.0
Renewables- Unbundled	\$ 0.1		\$ 0.1		\$ (0.0)
Real-Time Revenue	\$ 7.0		\$ 8.3		\$ 1.3
Other Energy-Related Sub-total	\$ 10.6		\$ 31.9		\$ 21.3
NWR and Other Energy-Related Revenue	\$ 112.9		\$ 124.5		\$ 11.5

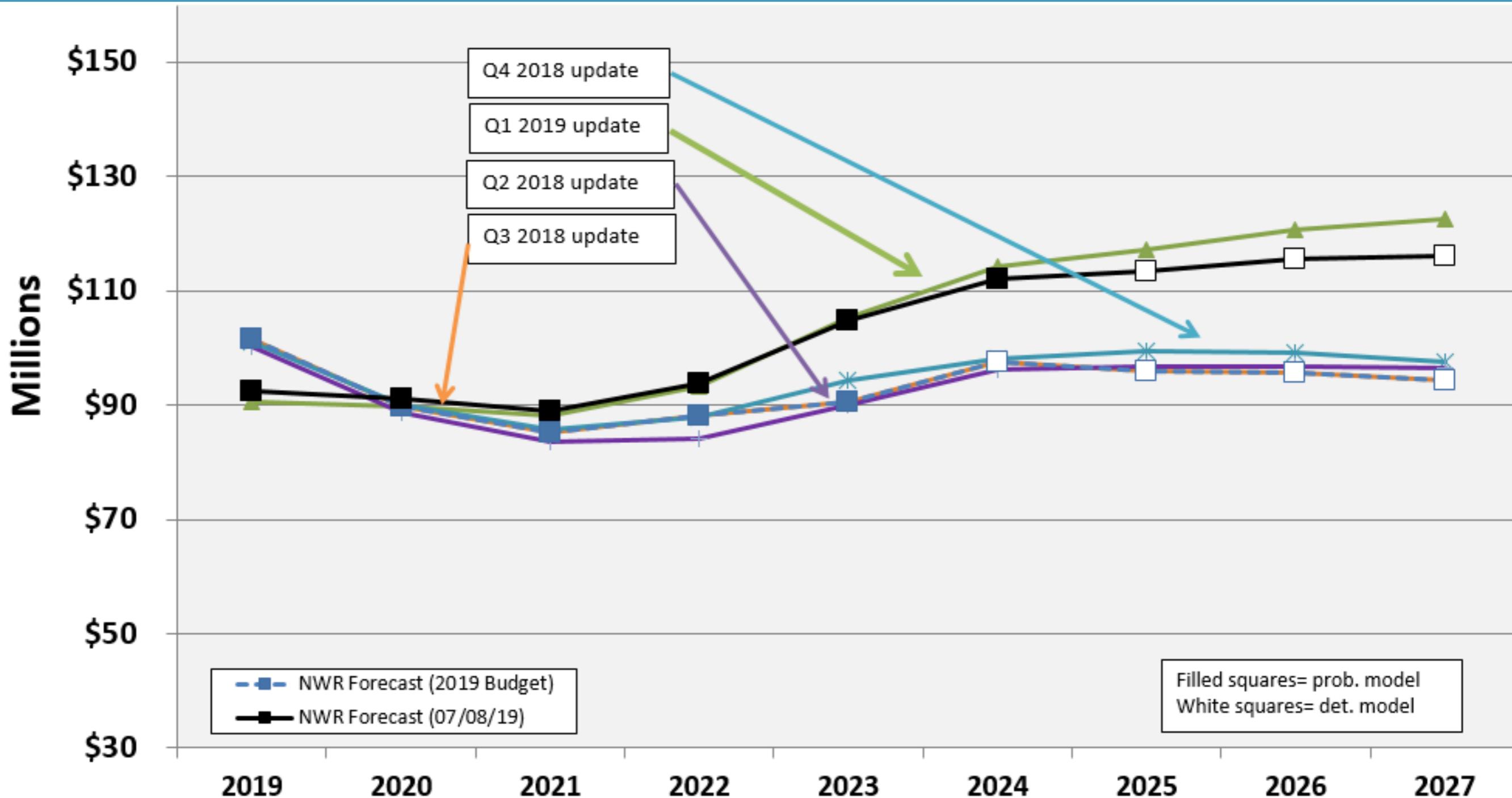
[1] 2019 forecast based on preliminary Jan-Jun actuals and Jul-Dec estimates (7/8/19 NWR forecast).

[2] NWR includes PWX specified source sale/full requirements purchase, but not transmission pass through costs.

[3] Off-system end-use sale does not include transmission pass through or transaction specific costs.

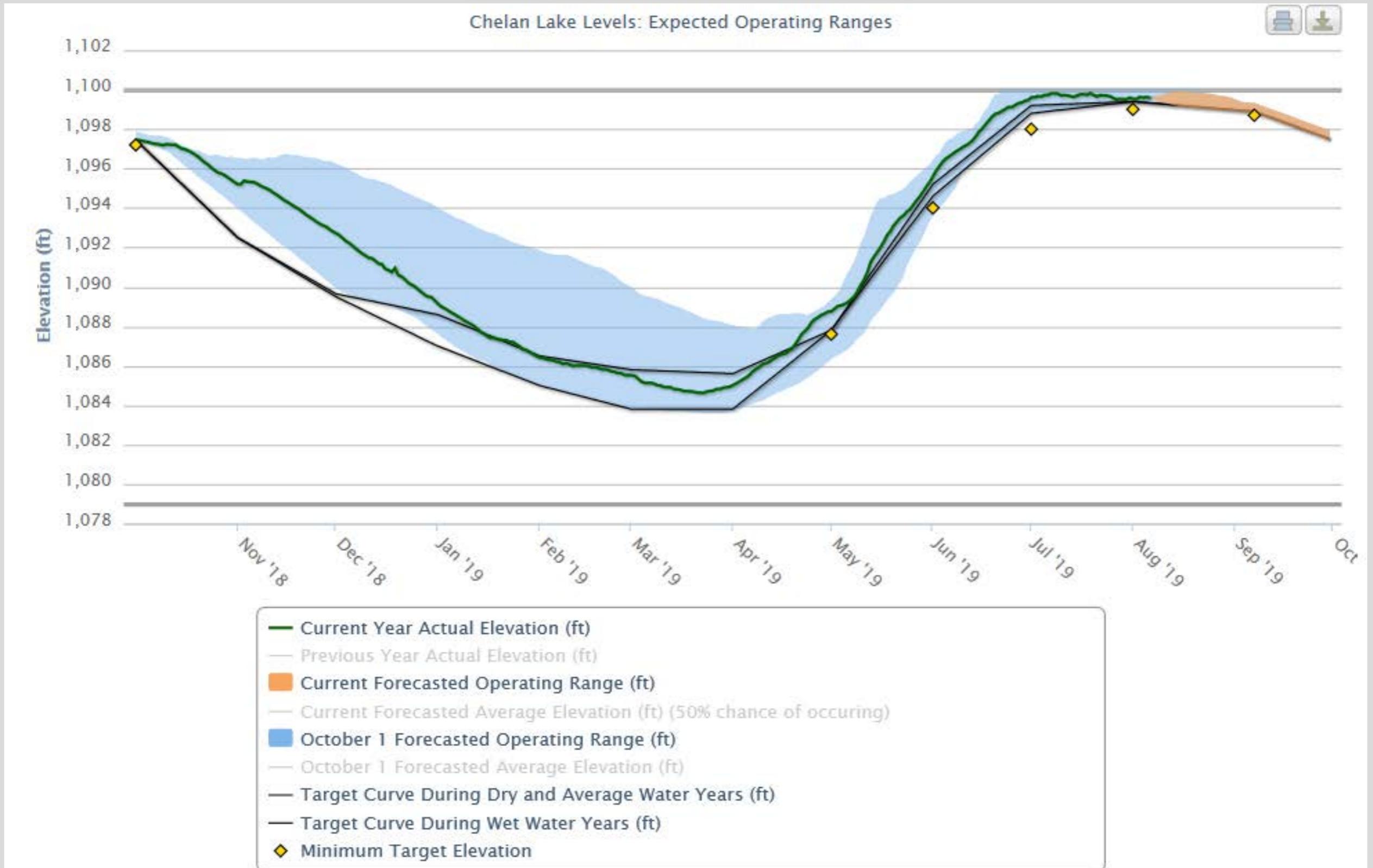
[4] Other includes scheduling & admin fees and the sale of reserves.

Net Wholesale Revenue + Off System End-Use sales forecast



Lake Chelan lake level webpage

(08/06/19)



Market Info

June heat wave revealed key capacity concerns: Cal-ISO CEO

- ...showed that the California Independent System Operator is struggling to meet load levels that it has easily met in the past
- CAISO is working with the CPUC to make sure they are aware of the capacity tightening and take action in both the resource adequacy program and the long term procurement program to ensure the ISO has the necessary capacity on the system
- Cal-ISO filed comments with the CPUC warning that there could be a 2,000 MW system capacity shortfall beginning in the summer of 2021, which could grow to 2,500 MW in 2022

BPA makes case for Western EIM, proposes signing CAISO agreement (issued letter on 6/20/19)

- “The new tools and capabilities that come with participation in an energy imbalance market will help BPA and the region to more fully realize the value of the flexible, carbon-free power of the Federal Columbia River Power System across an expanding footprint,” said Steve Kerns (BPA)
- Estimated \$29-\$34 million annual net dispatch benefit for FCRPS participating resources
- Possible go-live date of March 2022

Q2 ENERGY EFFICIENCY RESULTS

Two-Year (2018/2019) Compliance Target is 2.42 aMW

Annual 2019 Stretch Target is 1.7 aMW

2019 Energy Savings (aMW) ¹	Incentive and Labor Cost	Levelized Cost ² (\$/MWh)	Estimated Value over Life ²
0.95	\$ 1,520,000	\$ 19.33	\$ 3,040,000

1 Pending metering and verification and based on expected NEEA savings

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

Near-term Board Actions (Next Two Months)

- Consider renewing five-year funding agreement with Northwest Energy Efficiency Alliance-early September
- Approve 2020-2021 I-937 Conservation Compliance Target-by the end of September

SUMMARY

The District's 2019 Net Wholesale Revenue and other energy-related revenues forecast for 2019 is \$124.9 million, which is \$11.5 million above budget.

Forecasted specified source energy sales contribute \$5.4 million to the Net Wholesale Revenue forecast, which is \$1.2 million lower than budget. This reduction is due to lower than normal supply because of low water year.

New Microsoft contract to serve Redmond/Bellevue campus was successfully implemented on April 1, 2019.

Energy efficiency programs performance is strong, well on the way to surpassing targets.

QUESTIONS?



CHELAN COUNTY