

Energy Resources Quarterly Board Update

1st Quarter 2019 • May 13, 2019

ENERGY PLANNING & TRADING

2019 Q1

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 revenues from the wholesale market portfolio is \$121.4M and \$8.5M above budget. Improved results are driven by:

- incremental revenue from power contract surplus proceeds and positive margin from off-system end-use sale, partially offset by;
- lower expectations for net wholesale revenue forecast due to low stream flow conditions, unit outages and higher weather driven retail load.

Net wholesale revenue forecast also lowered due to classification of the MWhs sold to Microsoft as a separate line item for off-system end-use sale.

Energy Efficiency programs have started off the year strong. 3

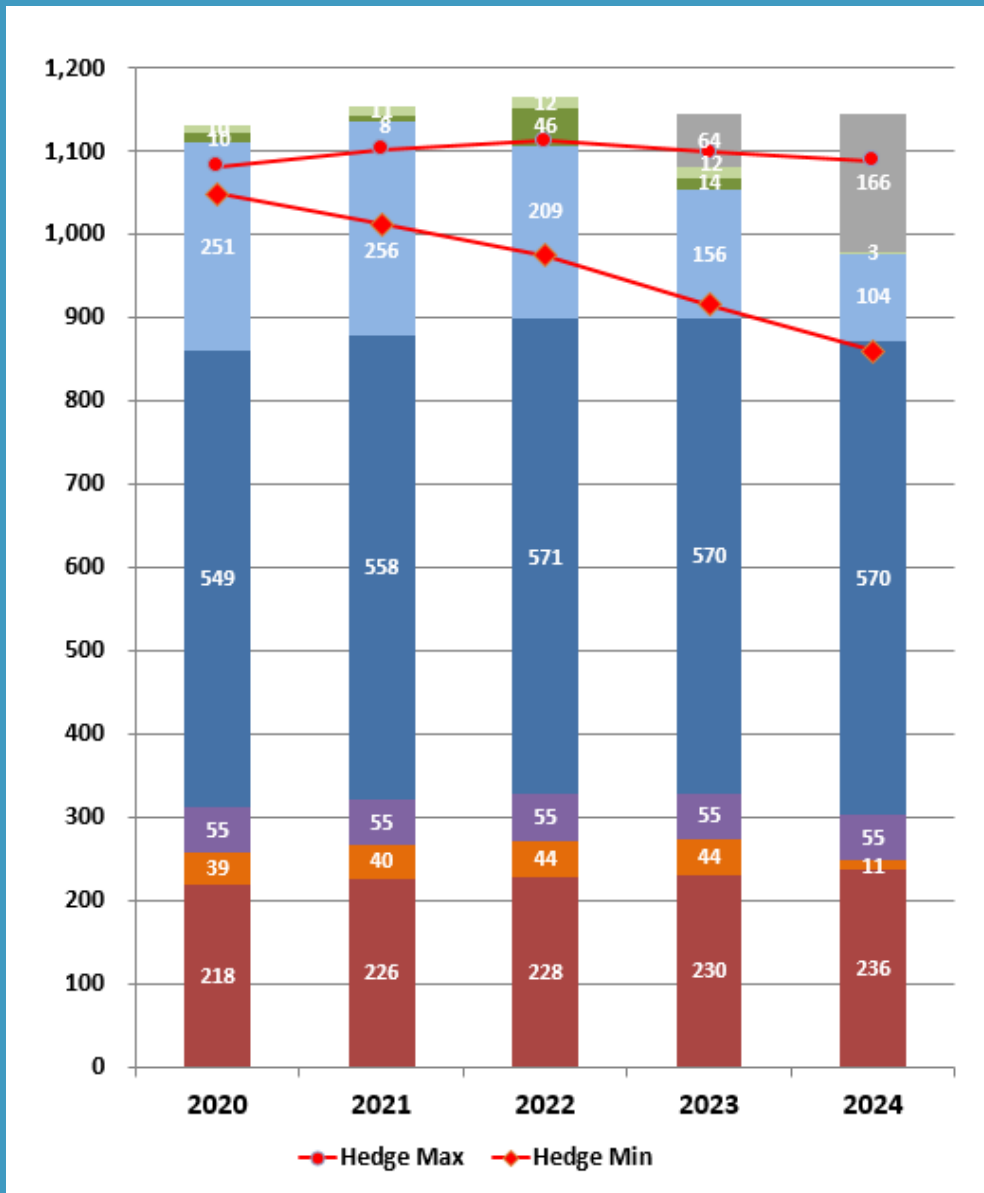
Energy Resource Team is monitoring major changes in the western power market

- **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)
 - Discussions about expanding the EIM to the day ahead market (about 40% of trades plus most term-trades less than 5 years = 80% of trades)
- **State carbon policies**
 - Governor's - Clean Energy Standard (signed by Governor May 7)
 - Carlyle's - Cap-and-trade (expect next year)
- **Value of products and services changing**
 - Energy, capacity and carbon

MAJOR TRANSACTIONS

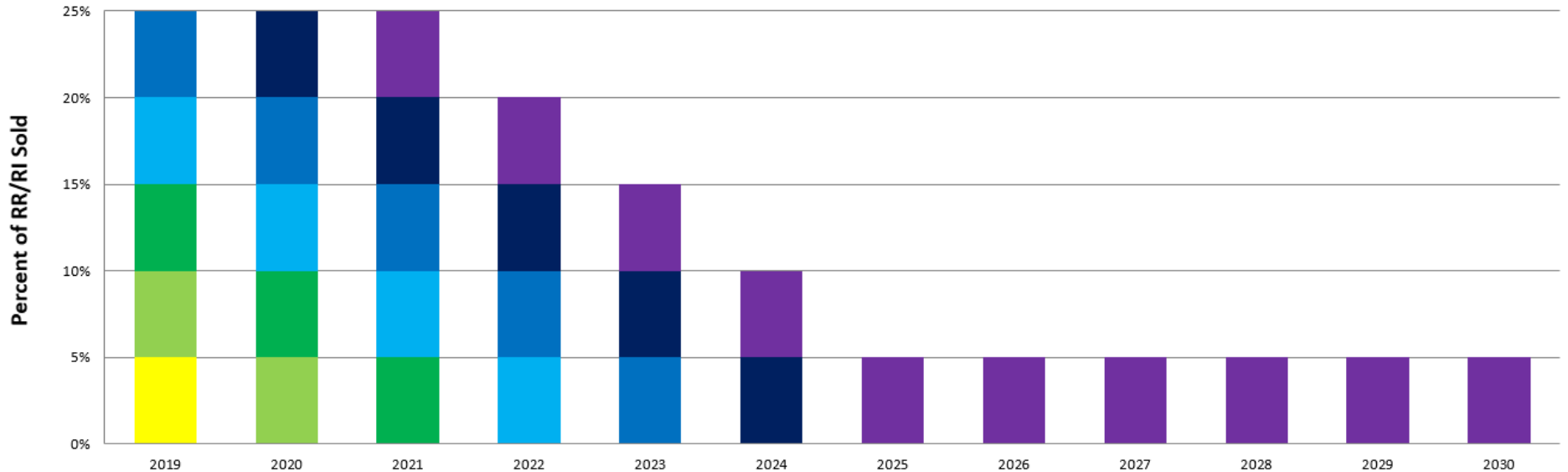
- The District executed a transaction to supply Microsoft's Redmond and Bellevue headquarters with District surplus renewable hydro power for five years.
 - Locked in revenue for surplus renewable and carbon free energy.
- The District also executed a sale of a 5 percent slice of Rocky Reach and Rock Island output for the calendar year 2020 through 2024 term.
 - Locked in revenues of approximately \$90 million.

District's Energy Commitments (average MW)



Market Based Slice Contracts

Current Market Position - Market Based Slice Products

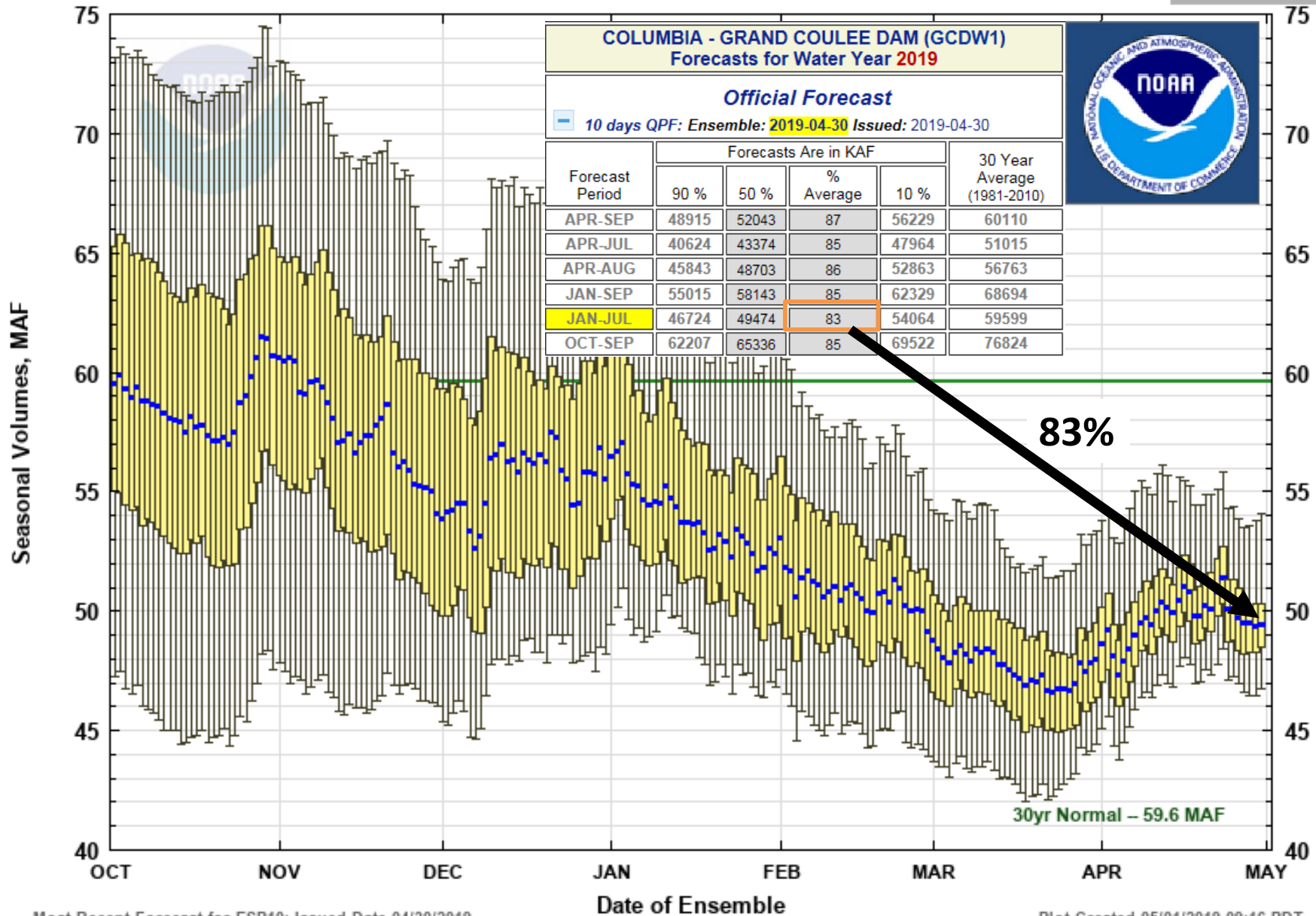


	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Long Term Slice - Avista			5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Slice Product 34 - Powerex		5.0%	5.0%	5.0%	5.0%	5.0%						
Slice Product 30 - Avangrid	5.0%	5.0%	5.0%	5.0%	5.0%							
Slice Product 29 - Morgan	5.0%	5.0%	5.0%	5.0%								
Slice Product 26 - Morgan	5.0%	5.0%	5.0%									
Slice Product 22 - Avista	5.0%	5.0%										
Slice Product 18 - Exelon	5.0%											

WY 2019 Water Supply Forecast

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

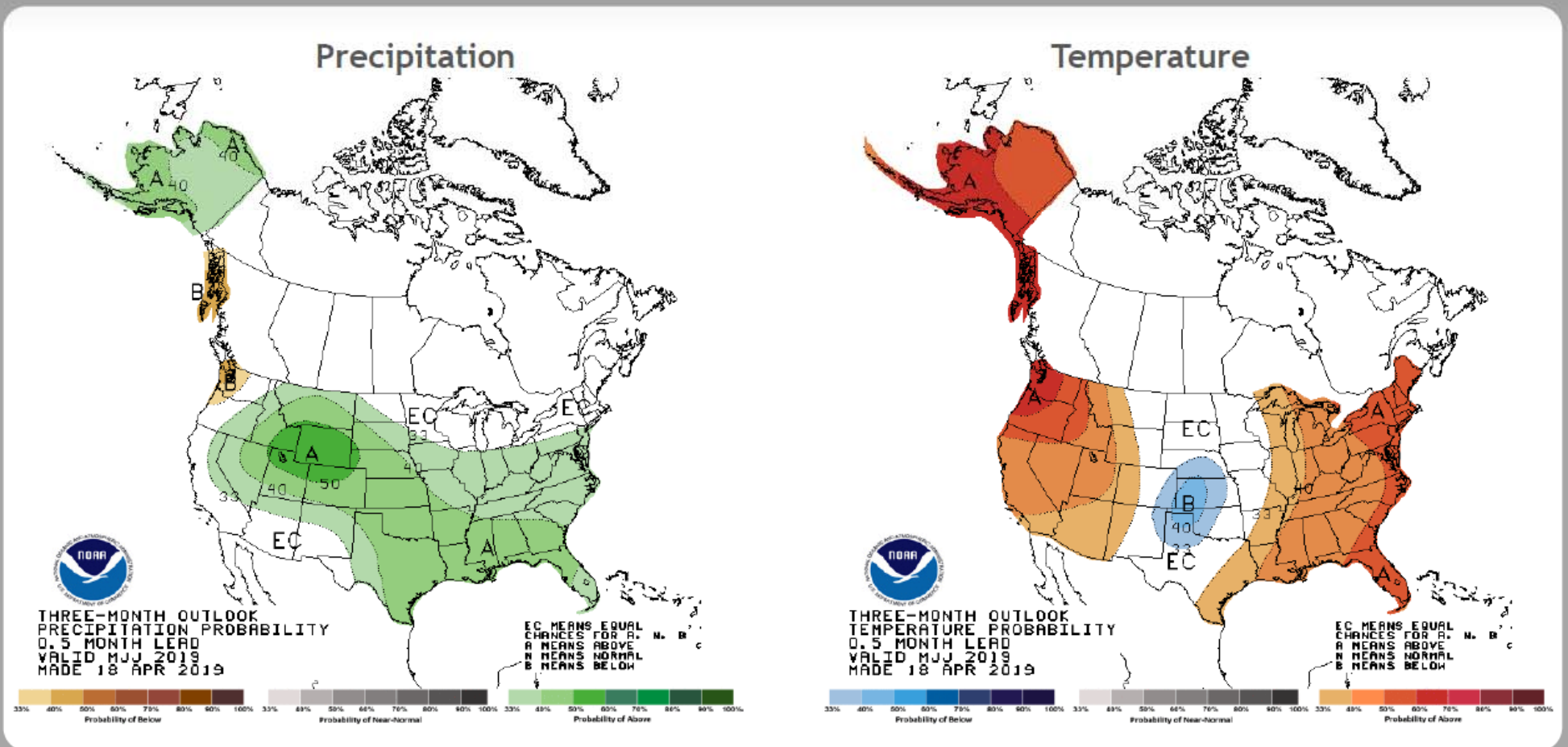
— 30yr Normal
■ ESP10



U. S. Seasonal Outlooks

May-July 2019

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



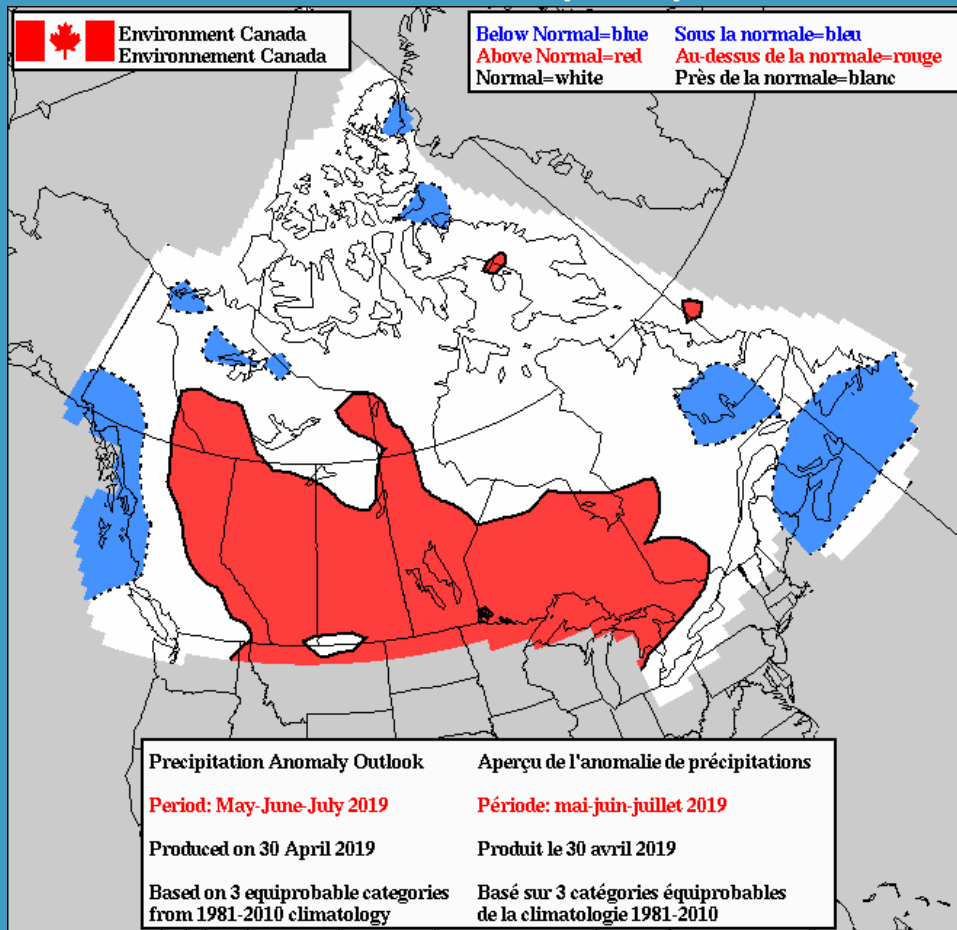
Canadian Jan-Mar forecasts

Temperature and precipitation deterministic forecasts

Precipitation

Red = Above (wetter)

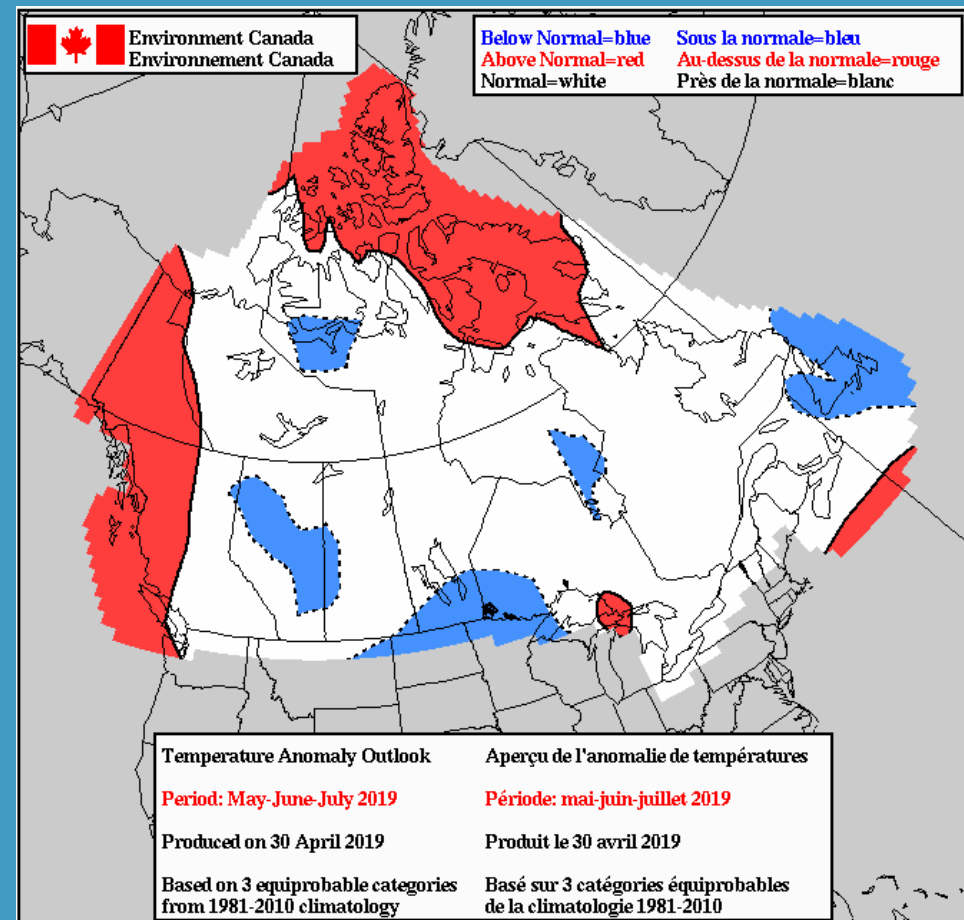
Blue = Below (drier)



Temperature

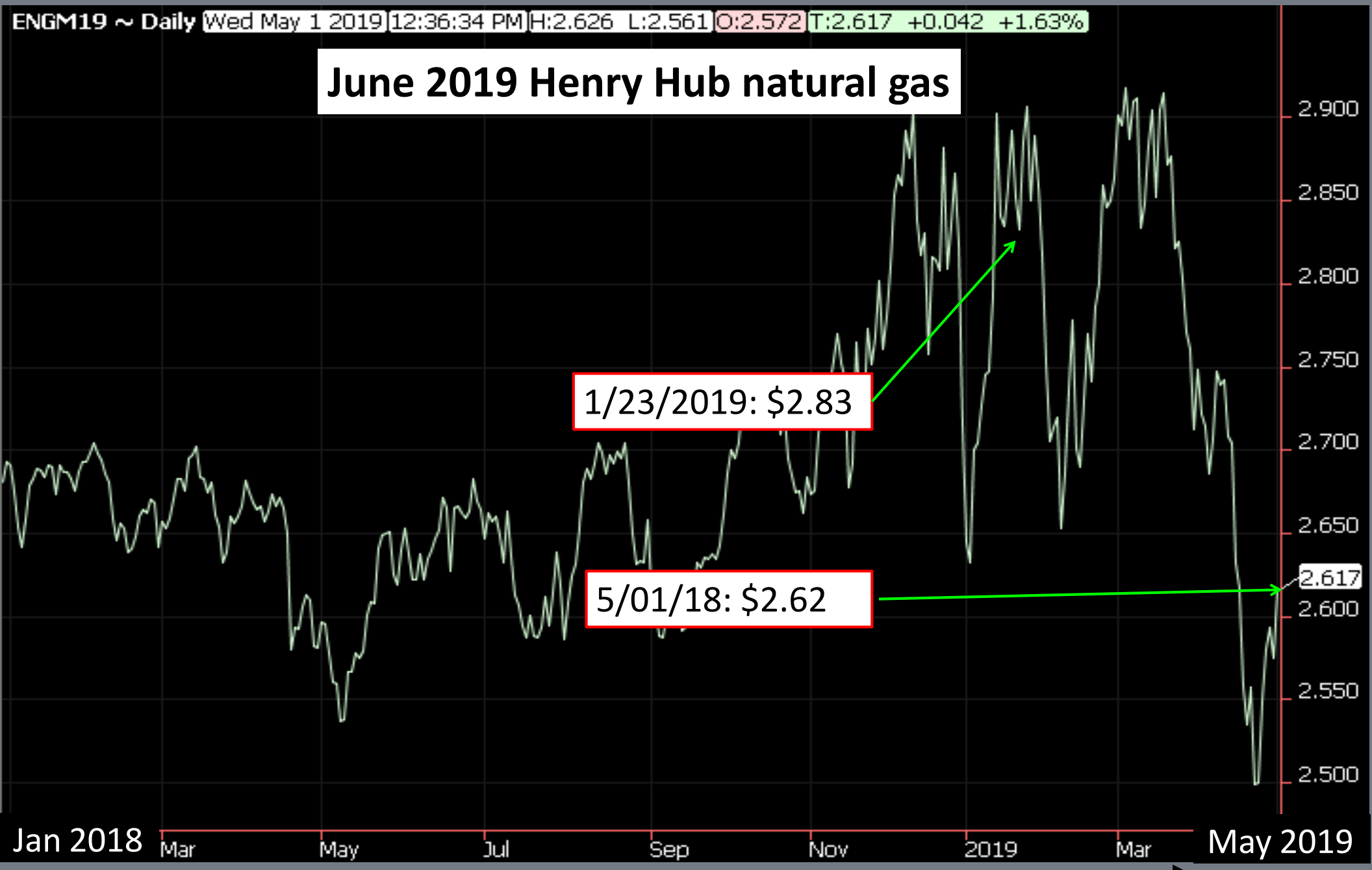
Red = Above (warmer)

Blue = Below (colder)

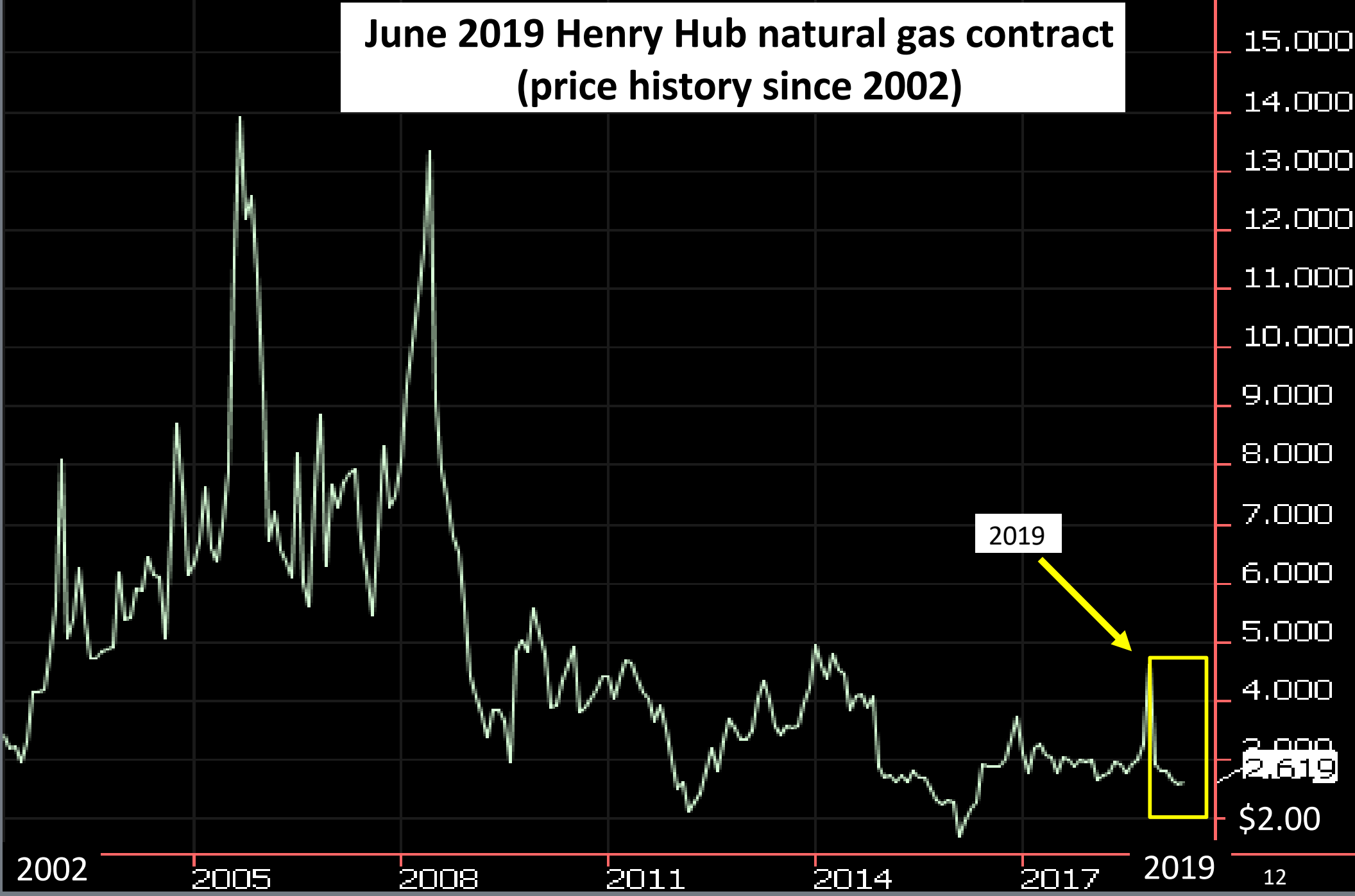


ENGM19 ~ Daily Wed May 1 2019 12:36:34 PM H:2.626 L:2.561 O:2.572 T:2.617 +0.042 +1.63%

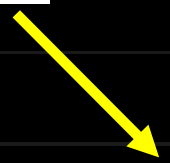
June 2019 Henry Hub natural gas



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



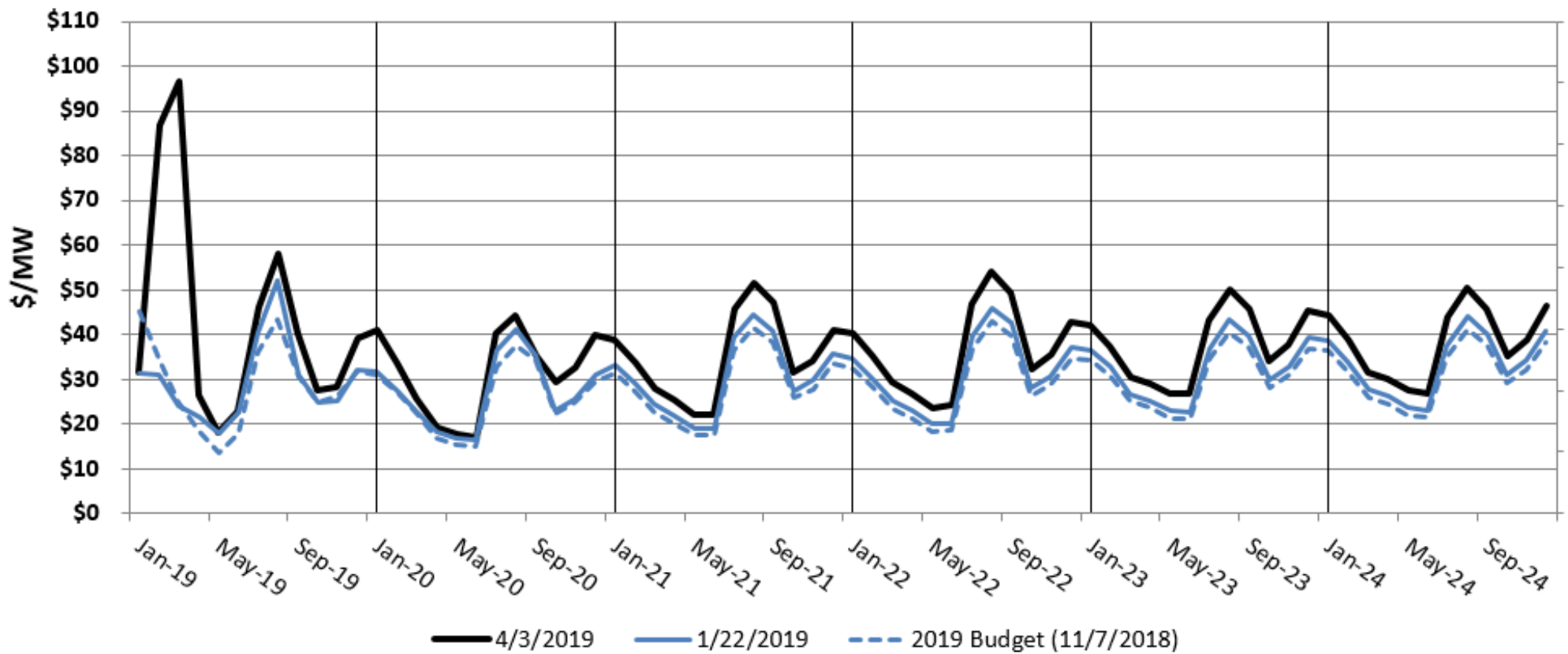
2019



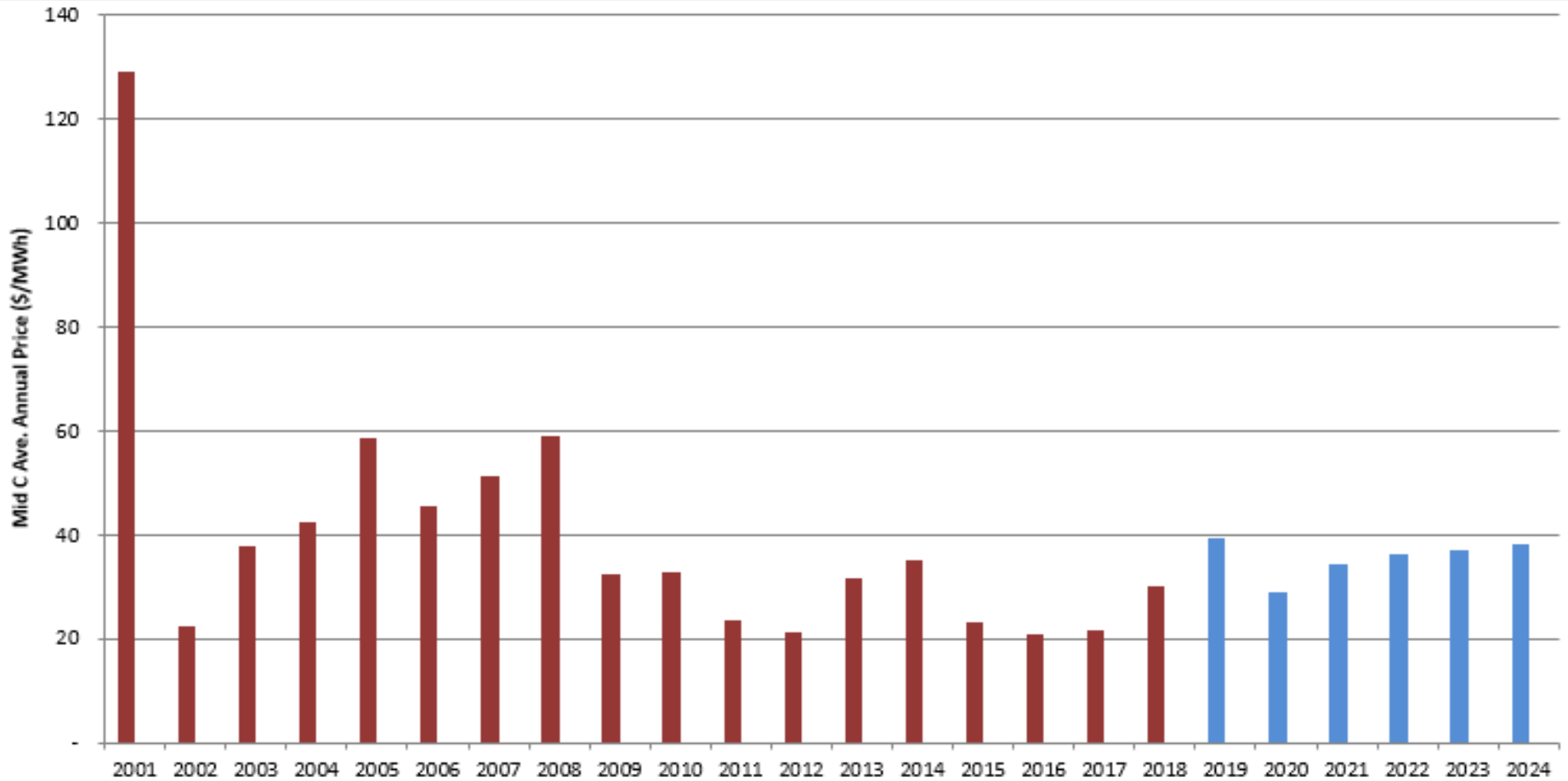
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MIDC forward price curve

**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		\$ 72.5		\$ (22.4)
Specified Source Premium	\$ 6.7		\$ 5.3		\$ (1.4)
Renewables- Bundled	\$ 0.8		\$ 0.7		\$ (0.1)
NWR Sub-total [2]	\$ 102.4		\$ 78.5		\$ (23.9)
Off-System End-Use Revenue					
Off-System End-Use Sales [3]	\$ -		\$ 12.8		\$ 12.8
Off-System End-Use Sub-total	\$ -		\$ 12.8		\$ 12.8
Other Energy-Related Revenue					
LT Power Contract- Retained Surplus	\$ -		\$ 18.4		\$ 18.4
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		\$ 8.2		\$ 1.2
Other Energy-Related Sub-total	\$ 10.6		\$ 30.2		\$ 19.6
NWR and Other Energy-Related Revenue	\$ 112.9		\$ 121.4		\$ 8.5

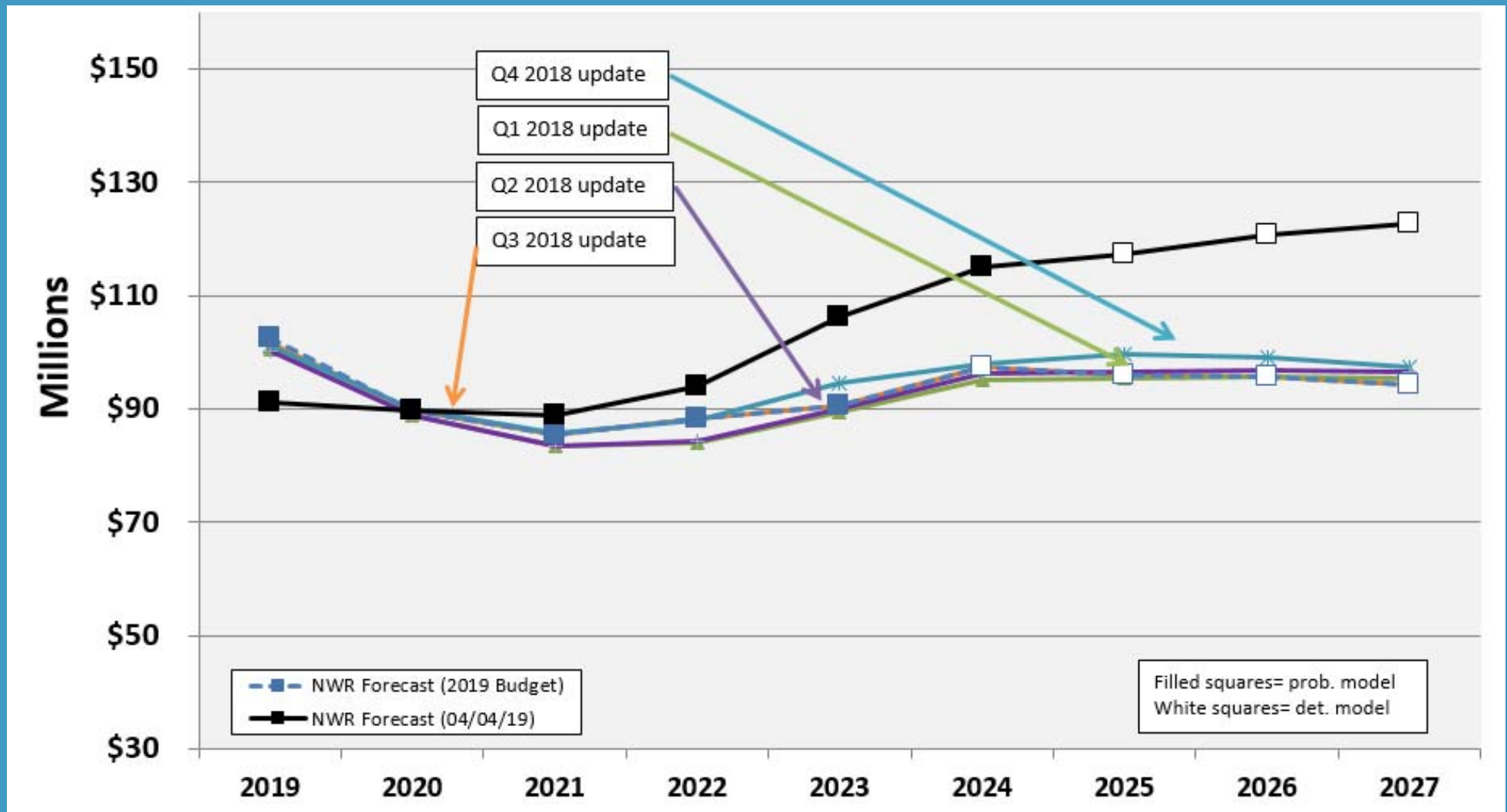
[1] 2019 forecast based on preliminary Jan-Mar actuals and Apr-Dec estimates (4/4/19 NWR forecast).

[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.

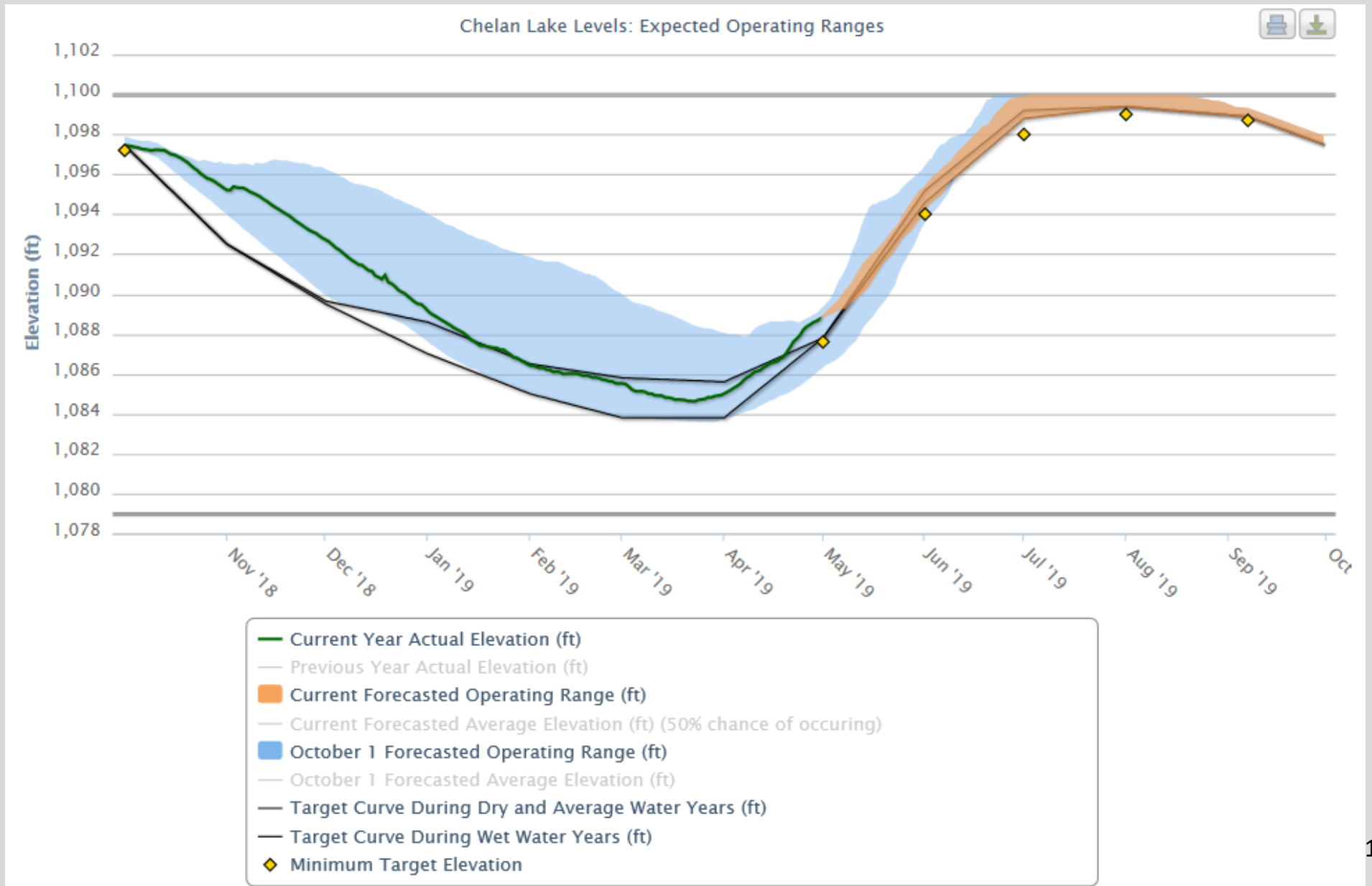
[4] Other includes scheduling & admin fees and the sale of reserves.

Net wholesale revenue + off-system end-use sales forecast



Lake Chelan lake level webpage

(04/30/19)



Market Info

Federal forecast predicts another challenging wildfire season for CA

- Above normal large fire potential in Northern California in June
- Going into spring/summer months California power and natural gas markets could be facing a serious challenge from possible heatwaves, low gas storage levels and a possible shortfall of imported hydro, but the focus will be most keenly on wildfires

West Coast gas market price volatility likely to intensify this summer

- Prices across the western US are in for a wild ride as multiple factors limit supply and downstream deliverability.
- Price spikes in the West have become increasingly commonplace
- Heavy summer maintenance and repair schedule is scheduled on Westcoast Energy's BC Pipeline which will cut cross-border flows from Canada by as much as 40% from July to early September
- Alternative gas supply moving in from the Rockies is restricted by a key compressor station in southeastern Oregon

Q1 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
0.40	\$ 550,000	\$ 16.62	\$ 1,280,000

1 Pending metering and verification and based on expected NEEA savings

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

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QUESTIONS?



CHELAN COUNTY