MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

Rely on us.

TO: Commissioners Mital, Schlossberg, Helgeson, Brown and Carlson

FROM: Susan Ackerman, Chief Energy Officer

DATE: April 7, 2020

SUBJECT: 2020 Power Market, Budget Hedging, and Generation Update

OBJECTIVE: Information Only

Issue

The purpose of this backgrounder is to provide an annual update of wholesale power markets and a generation resource outlook.

Background

The Power Planning and Trading Operations sections manage EWEB's power supply and wholesale market activities consistent with utility financial objectives, in accordance with Board Policy contained in SD8, and as further described in the EWEB Energy Risk Management Procedures. Generation manages EWEB's owned generation assets.

Summary

Wholesale markets averaged near historic lows in 2019, with a few shorter periods (days/weeks) of volatile pricing. For 2020 and beyond, staff expects market prices to remain low, but recognize that unplanned events may cause additional periods of volatility, which could impact purchased power costs and wholesale energy sales.

Maintenance and repair continues at several EWEB generation facilities. Where necessary, repairs are being coordinated with FERC. The winter has been dryer and warmer than normal. Maintenance and hydrologic conditions will likely result in less generation than is historically expected.

This update for markets and generation is reflected in our current financial projections.

Discussion

Market Price Update

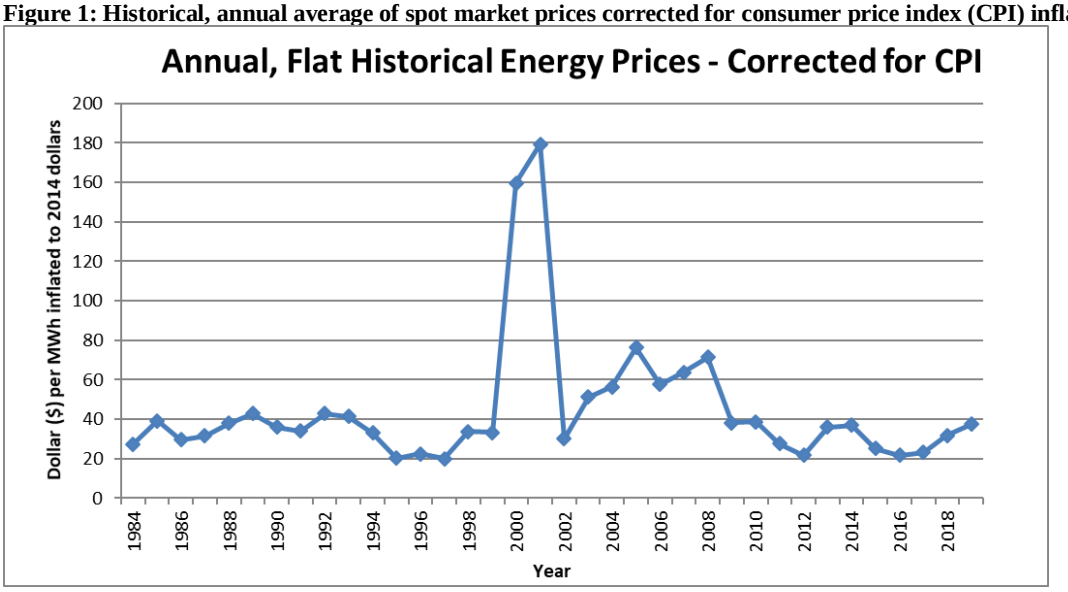
Wholesale energy markets can generally be described as either near term "spot markets" or longer term "forward markets"[1]. For spot markets, prices are impacted by weather (e.g., temperature and precipitation) and operational phenomena (e.g., generation and transmission availability), while forward markets tend to reflect longer term market expectations of energy supply and consumer demand.

Spot Markets

The 2019 average, annual spot market price finished higher than 2018 due in large part to short duration price excursions (over $900/MWh) in February and March. The primary cause of these events were shortages in natural gas supply[2] during a prolonged period of cold weather, though there were other complicating elements such as low hydro production and electric transmission outages. While there was some concern that market price volatility would last into the summer, these fears went mostly unrealized as various repairs to west coast gas infrastructure[3] went into effect and the gas supply issue resolved.

Year to date, spot market prices have been unseasonably weak (~$21/MWh). In contrast to 2019, 2020 has been warmer than normal[4] and natural gas market prices are at, or near, historical lows[5] from overproduction of supply[6]. Both of these factors have contributed heavily to some of the lowest regional wholesale electricity prices seen in several years.

Figure 1: Historical, annual average of spot market prices corrected for consumer price index (CPI) inflation



[1] Spot markets typically refer to markets where commodities are traded for immediate (next day, next hour) delivery, whereas forward markets imply markets where the traded commodity is delivered in a future period.

[2] Natural gas generation typically determines energy market prices. When natural gas is short in supply, electric market prices can increase dramatically.

[3] While natural gas is relatively abundant, the west coast has recently suffered a series of natural gas compression, pipeline and storage issues, which at times, have created periods of localized supply scarcity

[4] https://www.wunderground.com/article/news/weather/news/2020-02-28-warm-winter-2019-20-what-does-that-mean-spring-2020-temperature

[5] https://www.eia.gov/todayinenergy/detail.php?id=42835

[6] https://www.eia.gov/todayinenergy/detail.php?id=42935

Forward Markets

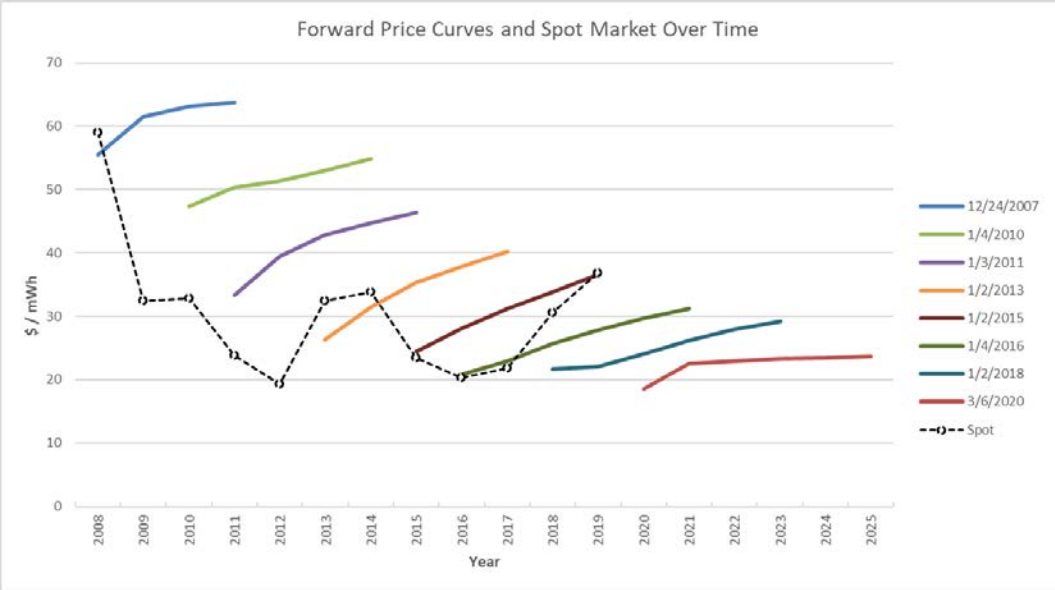
Forward prices had shown strength during last year's gas supply event, but that price support evaporated when gas infrastructure issues were corrected. Further, the U.S. Energy Information Administration ("EIA") anticipates that Henry Hub[7] natural gas commodity prices will stay relatively flat through 2021[8]. At this time, staff anticipates that forward power markets will continue to remain flat, but marked with periods of potential volatility due to extraneous issues, such as continued efforts to decarbonize the regional supply stack.[9]

Forward markets do not account for emergent policy issues like the development of complementary energy imbalance, capacity and carbon markets, which are expected to trade outside of traditional energy markets. The value of these emergent markets to EWEB will largely be a function of implementation. As such, staff continue to take a proactive advocacy role in these regional conversations.

Finally, forward market prices are subject to change with emergent conditions. Some recent factors that are driving market uncertainty include electrification efforts (e.g., transportation and space heating), the strength of the US economy, the impact of the COVID-19 pandemic, and the global oil trade (which is highly correlated with domestic natural gas production).

Figure 2, below, shows both forward market price curves, and spot market prices, over time. A forward curve reflects prices for future periods of delivery, which can be traded at today. The first line reflects a forward curve taken at the end of 2007. Trades executed during this time would likely reflect this sort of pricing. The subsequent lines reflect changing forward price curves for the years that followed. Over the last decade, forward market price curves have consistently declined and flattened.

Figure 2: Historical forward price curves and spot prices



Surplus Position Hedging Update

[7] Henry hub (located in Louisiana) is the physical delivery point for natural gas traded on the NYMEX and ICE. As such, it generally serves as the primary benchmark reference for US natural gas commodity prices

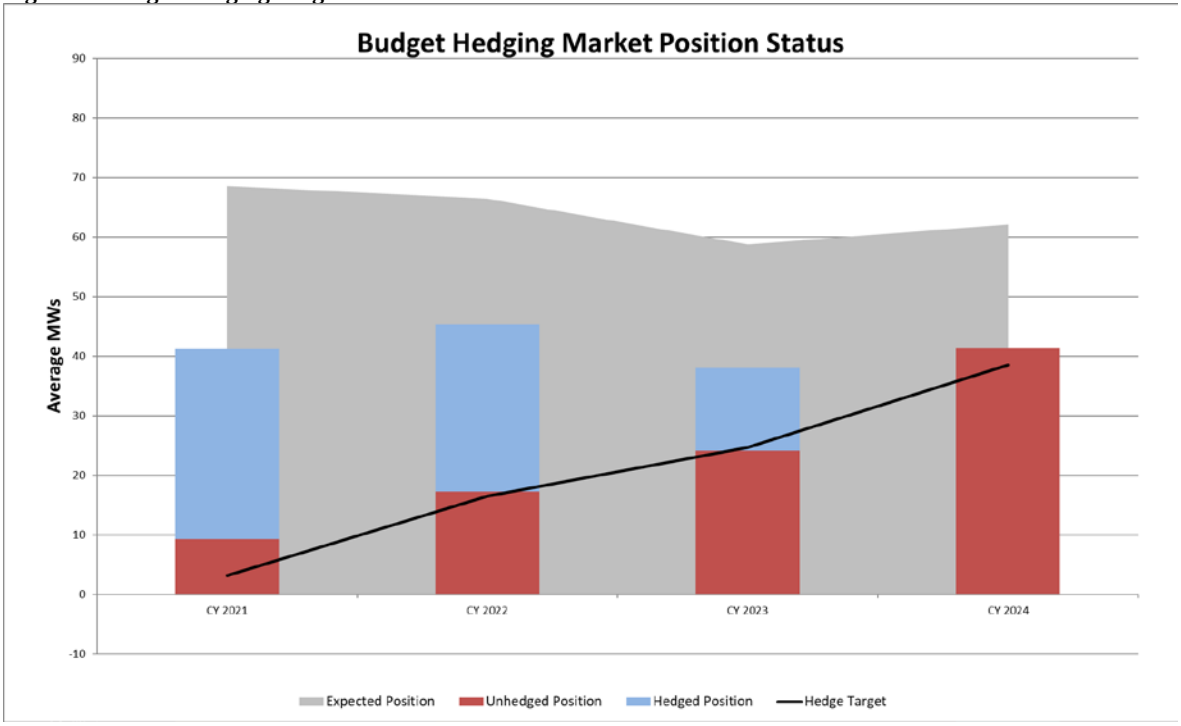
[8] https://www.eia.gov/todayinenergy/detail.php?id=42496

[9] Resource stack decarbonization, achieved by replacing base load resources (e.g., coal) with variable energy resources (e.g., wind and solar), can at times increase hourly and daily price volatility

In accordance with EWEB's Risk Management Procedures, staff hedges[10] a portion of its surplus position up to five years in advance. This provides two benefits: 1) it reduces financial exposure related to market prices; and 2) it results in sales executed at various times which diversifies the sales price by "dollar cost averaging" through time. This strategy results in near term years being fully hedged while year five is the least hedged, with interim years somewhere in between. Beyond five years EWEB does not hedge any surplus energy.

Figure 3, below, shows EWEB's surplus market position for 2021-2024 based on the budget hydro assumption which is 90% of expected hydro generation. The top of each stacked column indicates EWEB's original surplus market position; i.e., the amount of forecasted generation EWEB expects to realize in excess of that which is forecasted as being necessary for reliable load service. The blue bar represents the volume of energy hedged by staff. The red bar represents the remaining unhedged surplus. The black line reflects the desired pace of hedging activity the Risk Management Committee (RMC) would like to achieve over time. The gray area behind the stacked columns reflects EWEB's expected surplus, without the budget hydro assumption.

Figure 3: Budget Hedging Progress



[10] A hedge is a trade or set of trades that reduces the market price exposure risk inherent in EWEB's portfolio length. EWEB hedges to provide greater wholesale revenue certainty.

EWEB Owned-Generation Update
The Leaburg power canal and powerhouse remain offline due to dam safety concerns identified in late 2018. In 2019, EWEB completed investigation work approved by FERC necessary to inform the design of repair efforts. Design of the repairs necessary to return the canal to service are currently underway. EWEB has also initiated a risk-informed decision making process with FERC that will help guide EWEB's future decisions with regard to the Leaburg project. EWEB's current anticipated return to service date for the Leaburg project is the fourth quarter of 2021. The Carmen-Smith facility is operating again following the 2019 reconstruction of the Carmen substation. In 2020, EWEB is expecting to replace one of the two turbine runners and rewind one of the two generators at the Carmen Powerhouse, while the second turbine/generator unit continues operating. The second unit will be rebuilt in 2021. We continue to develop plans for FERC's approval that will address the sinkhole concerns identified at Carmen Diversion Reservoir.

Following a warmer and dryer winter in Oregon than normal, the 2020 hydrologic year for the Oregon Cascades, which will affect EWEB's owned hydroelectric resources, looks to be below average. As a result, we expect to operate the Walterville facility using low-flow guidance for the third year in a row following the planned May 2020 maintenance outage.

EWEB's other owned generation facilities continue to operate normally and are expected to do so throughout 2020. They are scheduled to have typical minor maintenance outages throughout the year. Excepting for unplanned revisions to schedule, these maintenance outages are included in the current budget.

Requested Board Action - None