PUGET SOUND ENERGY

Explanation of Commodity Cost Variances

2019 Purchased Gas Adjustment

REDACTED VERSION

Shaded information is designated as confidential per WAC 480-07-160

September 19, 2019

Shaded information is designated as confidential per WAC 480-07-160

Contents

1. Introduction

Each year, Puget Sound Energy ("PSE") sets its rates for natural gas service through the Purchase Gas Adjustment ("PGA"). Since these rates are based on forward looking costs estimated up to a year in advance, actual costs differ from the estimates included in rates.

For the year-to-date period of November 2018 through July 2019, the expected PGA commodity cost included in rates was $158 million. Actual commodity costs were [redacted] higher, net of gains achieved through the hedging program.

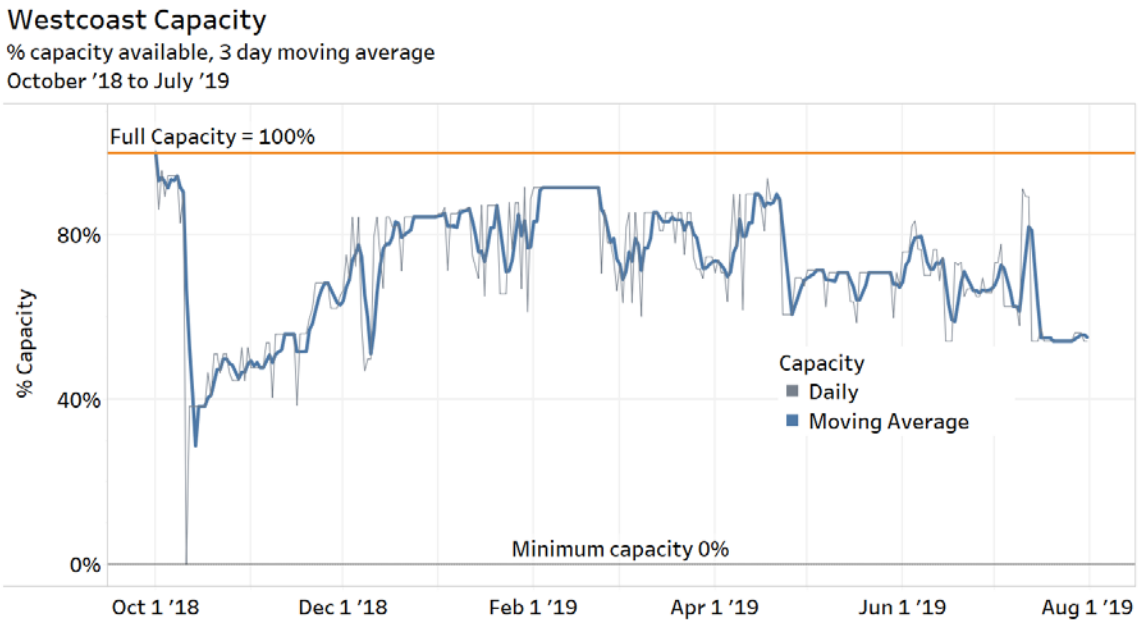
This variance resulted primarily from a greater reliance on the Sumas supply hub at higher prices than assumed in the PGA. The four major drivers of this increased gas cost were:

1. A rupture on the Westcoast Pipeline,
2. Cold weather that resulted in higher than normal loads,
3. Operational constraints on pipeline and storage facilities, and
4. High gas prices at the Sumas and Rockies supply basins that resulted from these market events.

2. Westcoast Pipeline Rupture

On October 9th, 2018, Westcoast Pipeline's 36 inch pipeline from Station 2 to Sumas ruptured. This pipeline transports natural gas from supply sources in northern Canada to the trading hub at Sumas. The rupture resulted in reduced capacity as the pipeline's owner, Enbridge Inc., performed repairs and testing. Since October, availability has ranged from 0% to 92% of full capacity as shown in Figure 1. Testing continued throughout the summer, so Westcoast availability averaged 73% of full capacity through July.

Figure 1: Westcoast Capacity



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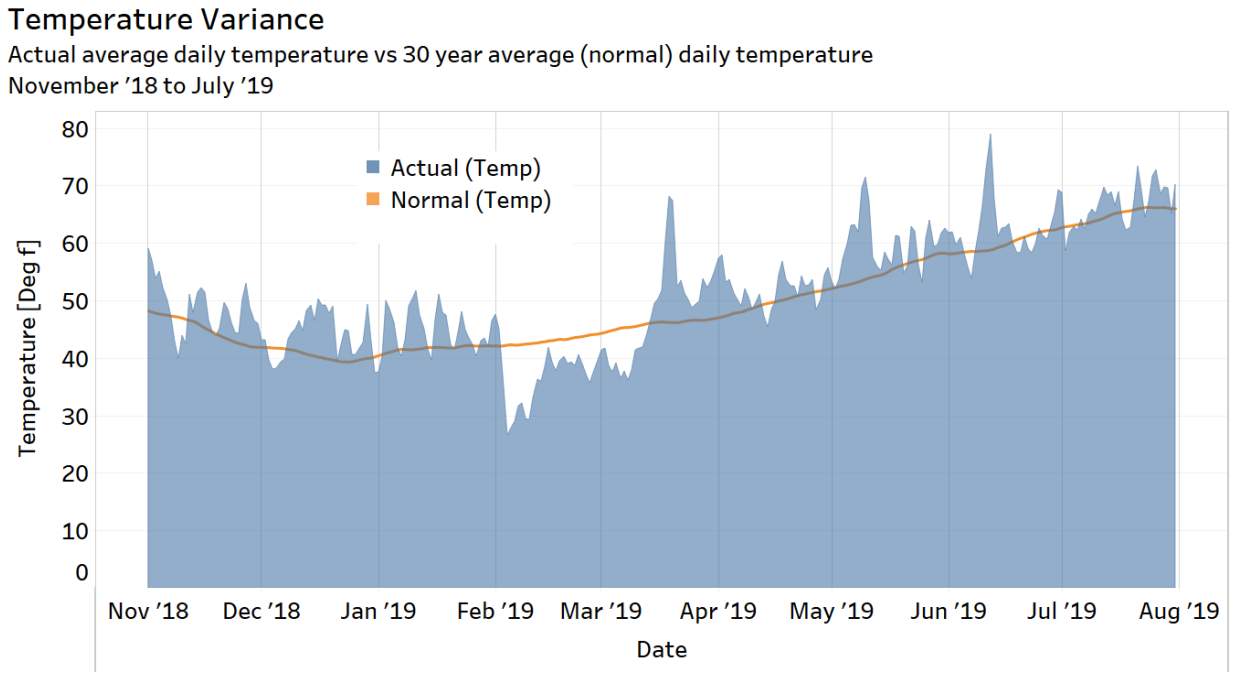
3. Cold Weather Events

Colder than normal temperatures in February and early March led to higher loads relative to the PGA forecast.

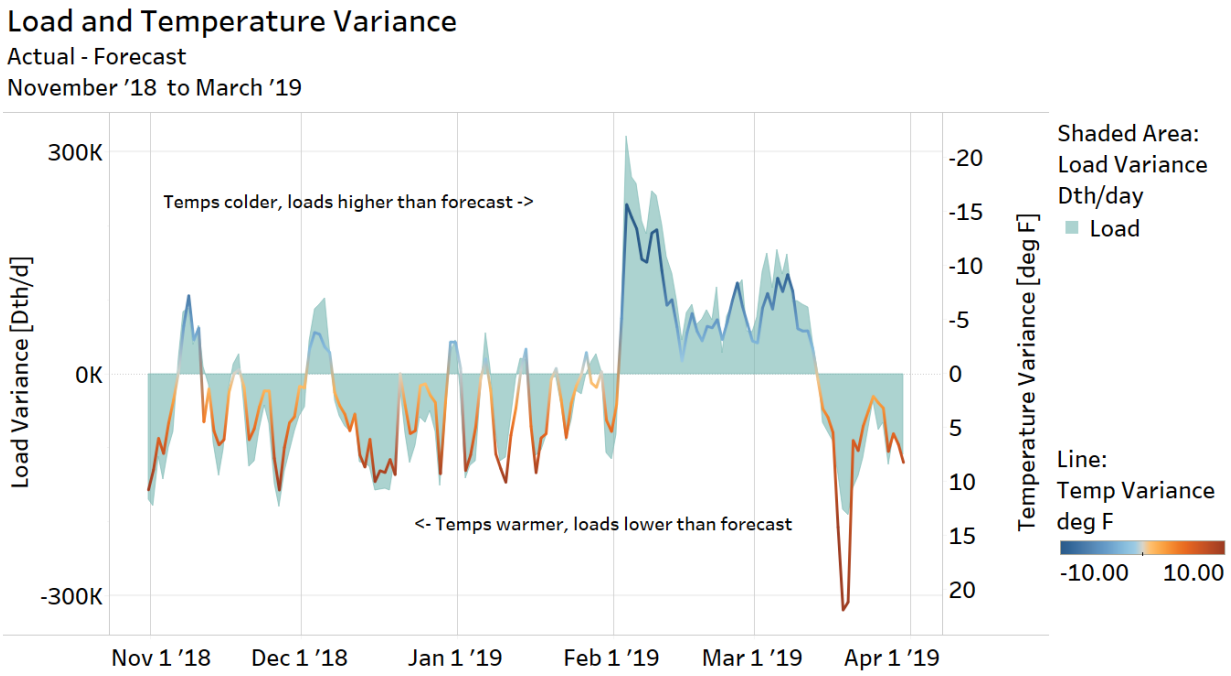
Near the end of January, major weather services forecasted February temperatures to be near normal. Once in February, temperatures quickly turned colder. This was the coldest February since 1989 for PSE's service territory. Figure 2 illustrates average daily temperatures relative to normal temperatures. During the period from February 1 through March 12 temperatures were six degrees below normal on average.

Figure 2: Actual and Normal Daily Temperatures



Loads during this period were 30%, or 122,000 Dekatherms per day (Dth/day) above the PGA forecast. In Figure 3, the shaded area shows the load variance from the normal forecast used to project costs, and the line represents the temperature variance from normal temperatures. This chart illustrates the correlation between abnormally low temperatures and abnormally high loads in February and early March.

Figure 3: Load and Temperature Variance



4. Operational Constraints on Pipeline and Storage Facilities

During the November 2018 – July 2019 period, PSE was impacted by operational restrictions imposed by Northwest Pipeline ("NWP"). In an environment of extreme price differentials between Sumas and Rockies, NWP managed its system by issuing Operational Flow Orders ("OFOs") and entitlements.

OFOs direct shippers to source gas from specific points. PSE was obligated to comply with OFOs, which reduced the ability to flow a portion of less expensive supply from the Rockies region, thus requiring increased purchases at the Sumas market to balance demand.

Entitlements require shippers to match supplies to within a percentage of demand depending on the severity of the operational pipeline constraints. Stage 1 entitlements are the most restrictive and require shippers to balance within 3% of demand.

During the 120 day period from November 2018 through February 2019, PSE was required to comply with NWP operational flow orders on 107 days and entitlements on 72 days.

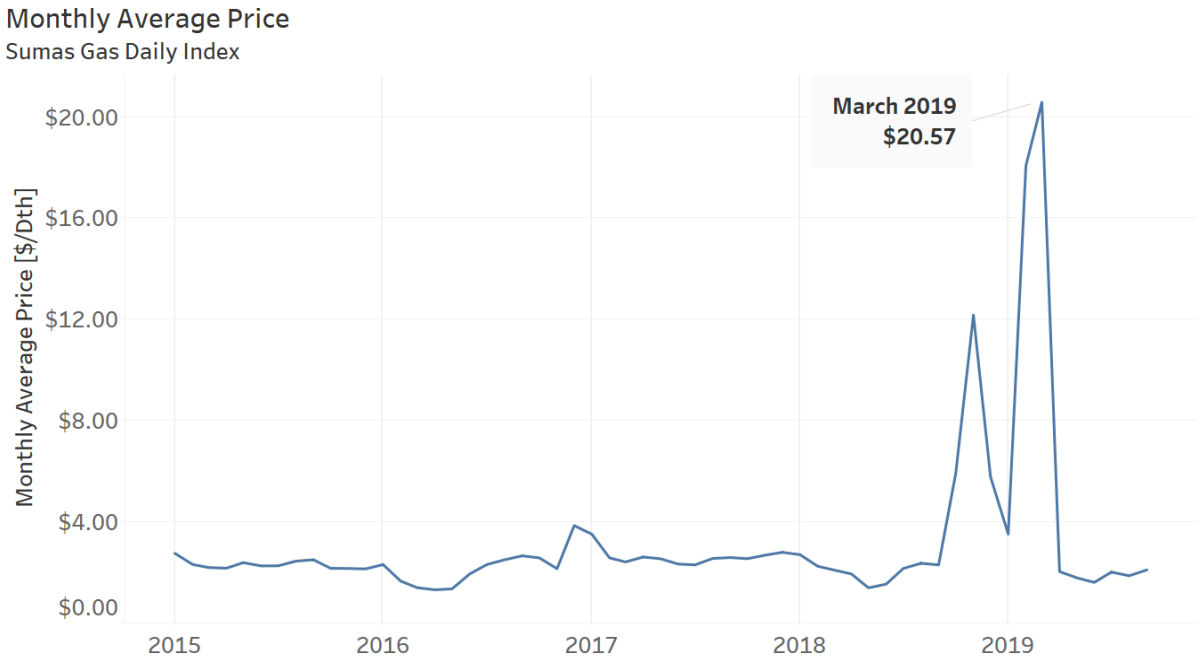
A compressor at Jackson Prairie failed on February 9th and was out of service until March 7th. This limited PSE's ability to withdraw from storage.

Shippers depend on the flexibility afforded by storage and pipeline capacity to economically meet unanticipated changes in load. In the absence of that flexibility, PSE had to source more gas in the daily market at Sumas to reliably meet load.

5. High Gas Prices

Commodity prices have been relatively low over the last five years, but spiked in late 2018 and early 2019 as a result of the market events outlined above. Figure 4 presents monthly average commodity prices at the Sumas trading hub from 2015 through 2019.

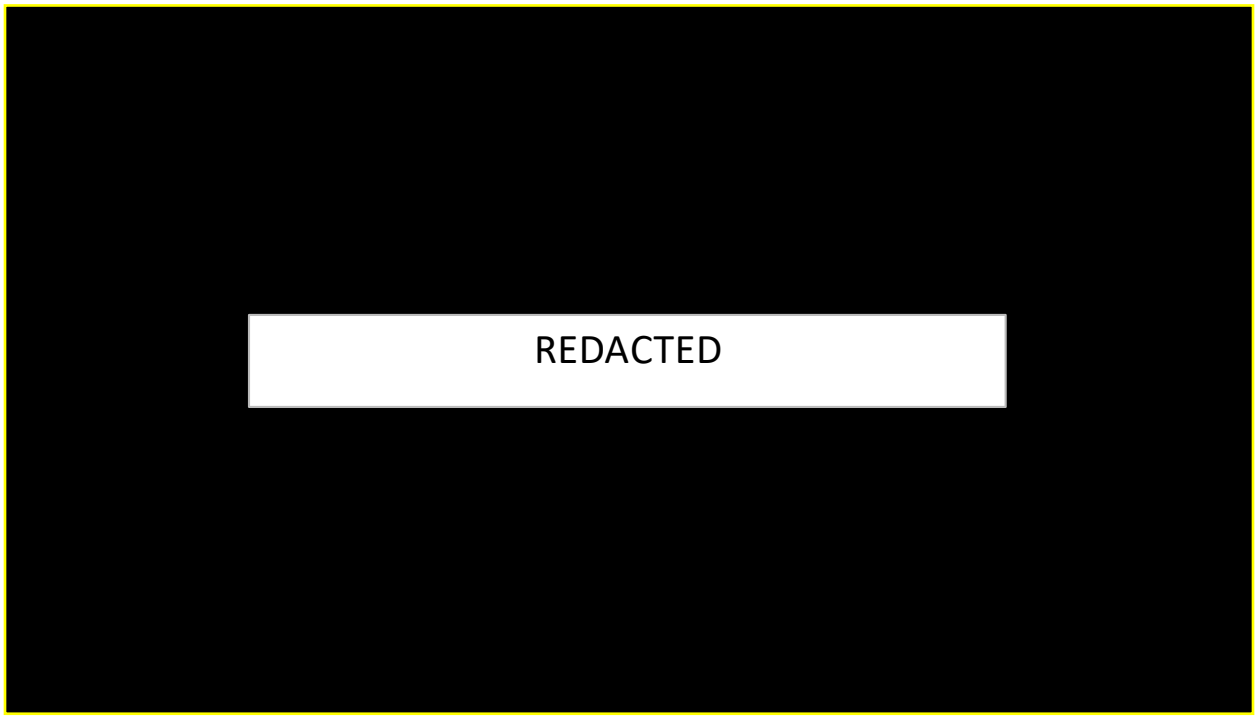
Figure 4: Monthly Average Sumas Commodity Prices



Source: Platts Gas Daily

Reduced supplies flowing from the Westcoast pipeline after the rupture immediately resulted in higher Sumas prices: October spot prices averaged $2.63/Dth before the rupture and rose to $7.63/Dth after the rupture. Prices stabilized in January, and increased again in February and March, reaching a high of $159.27/Dth when the cold weather and pipeline and storage restrictions impacted the market. As illustrated in Figure 5, from November to March the Gas Daily index at Sumas averaged $11.89/Dth compared to $2.60/Dth in the PGA.

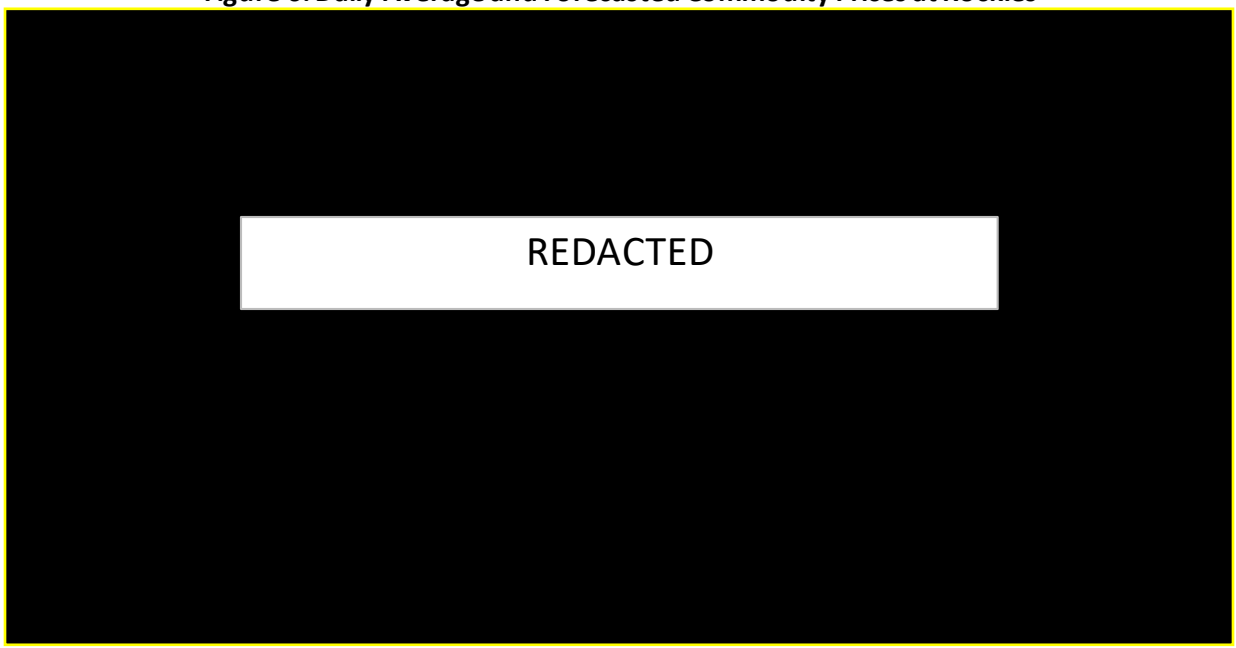
Figure 5: Comparison of Daily Actual and Forward Sumas Prices



Source: Platts Gas Daily

Although Rockies prices were favorable compared to Sumas, actual daily prices at Rockies were considerably higher than the levels assumed in the PGA filing, as illustrated in Figure 6.

Figure 6: Daily Average and Forecasted Commodity Prices at Rockies



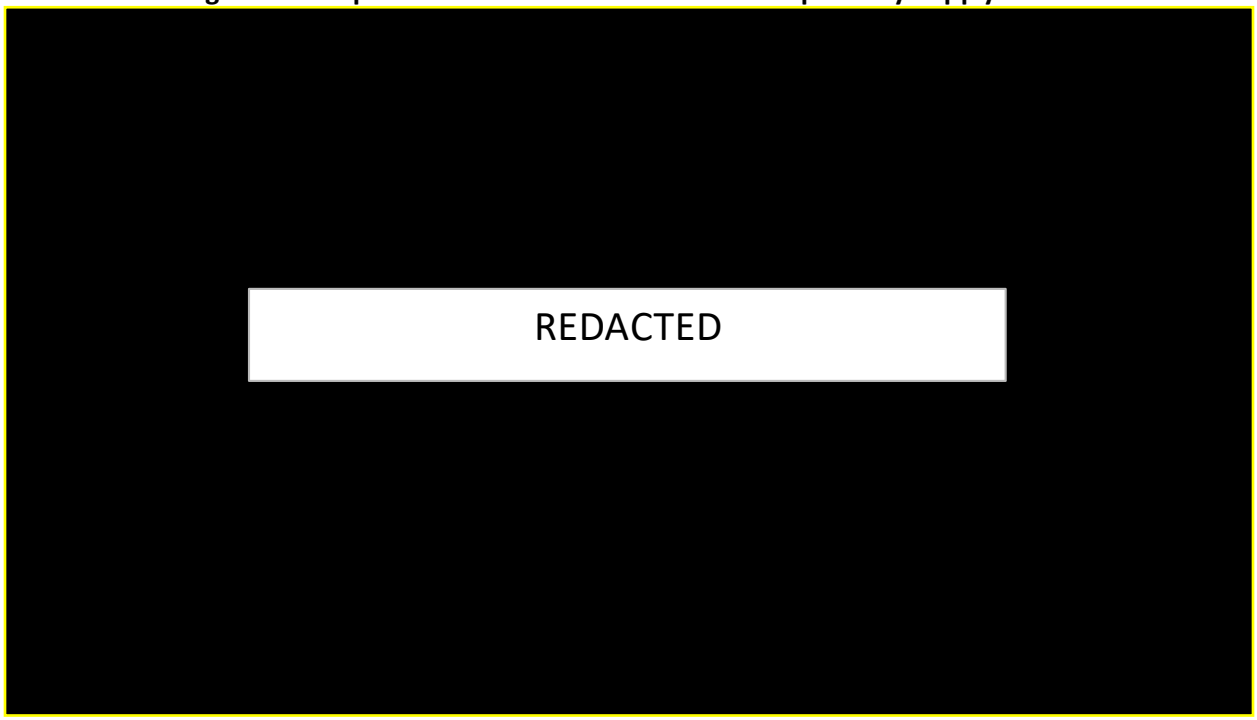
Source: Platts Gas Daily

6. Impact to PSE's Gas Portfolio

For the PGA forecast, PSE determines the least cost dispatch between four basins (Sumas, Rockies, Aeco and Station 2) based on load forecasts, price forecasts and assumptions about pipeline and storage capacity. Actual dispatch varies from forecasted dispatch because loads, prices and capacity availability differ from these assumptions. In the winter of 2018-2019, three major market events put upward pressure on prices, especially at Sumas and Rockies. The Westcoast capacity reduction limited the availability of supply at Station 2. OFOs on NWP limited the ability to buy from the Rockies, and pipeline entitlements and restrictions at a major storage facility limited shippers' flexibility to meet unexpected fluctuations in demand. A severe cold snap in February and early March drove demand higher concurrently with these supply issues. As a result, PSE and other shippers relied more heavily on the Sumas market.

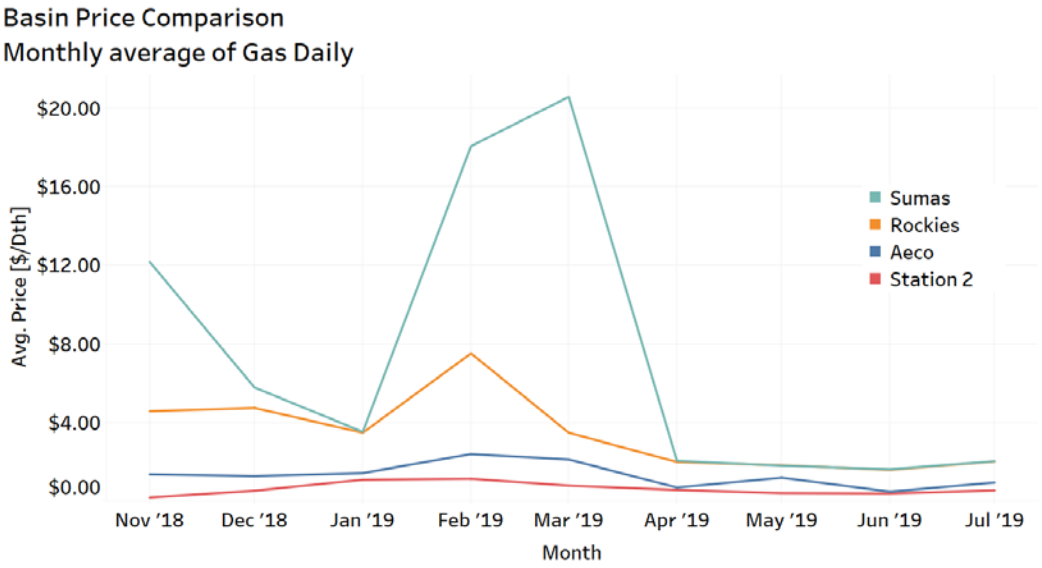
Figure 7 illustrates the volume variance between actual dispatch and planned dispatch at each trading hub. PSE purchased lower volumes from Station 2 than projected for the entire period. From the Rockies, PSE purchased less than projected from November through January. Rockies supply in February and the first half of March, although higher than projections of close to zero, was still lower than desired due to OFOs. Aeco dispatch remained consistent with forecast. From November through early March, particularly during the cold snap, PSE compensated for these shortfalls with purchases at Sumas.

Figure 7: Comparison of Actual and Forecasted Dispatch by Supply Basin



These market disruptions led to higher prices at Sumas, and to a lesser extent, Rockies, as illustrated in Figure 8. Aeco and Station 2 prices remained low, as there was not enough export capacity to allow gas from those hubs to get to the Sumas market.

Figure 8: Monthly Average Commodity Prices by Basin



Source: Platts Gas Daily

Figure 9 breaks out the commodity cost variance by supply basin. Commodity cost is a function of price and volume, and the combination of increased purchases and higher prices at Sumas created most of the variance between November and March. Elevated purchases and prices at Rockies during periods of high demand also contributed.

Figure 9: Monthly Commodity Cost Variance by Supply Source

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