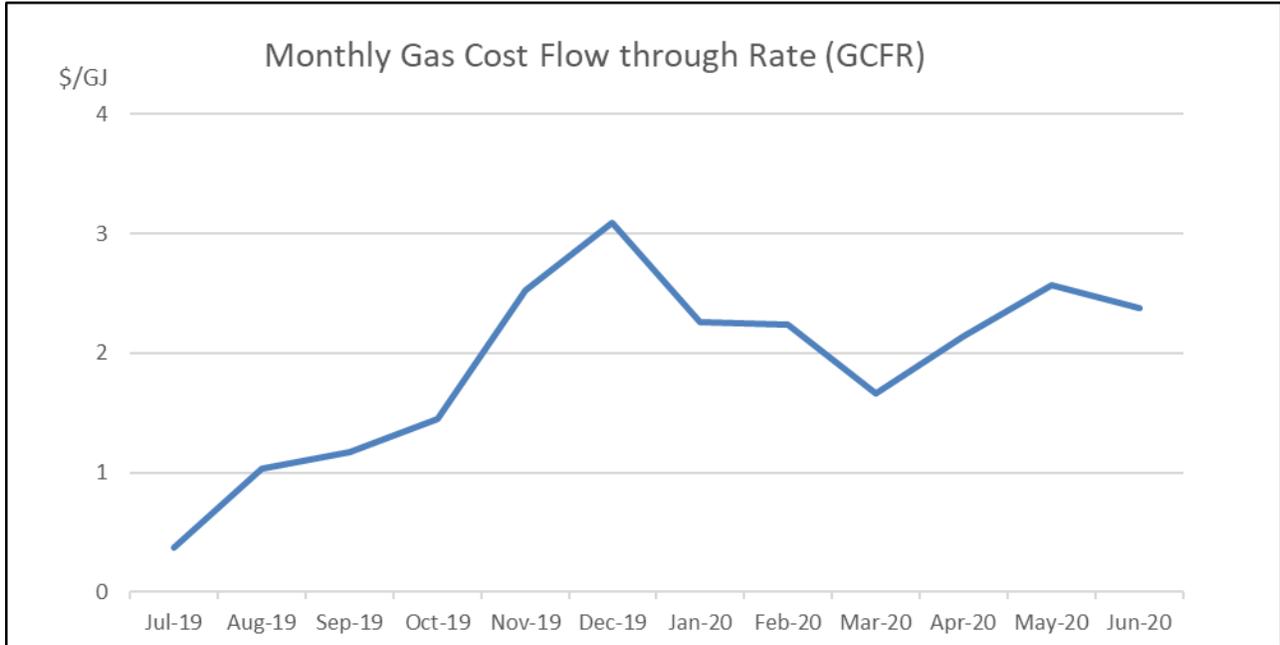


ENERGY PRICES AND MARKETS

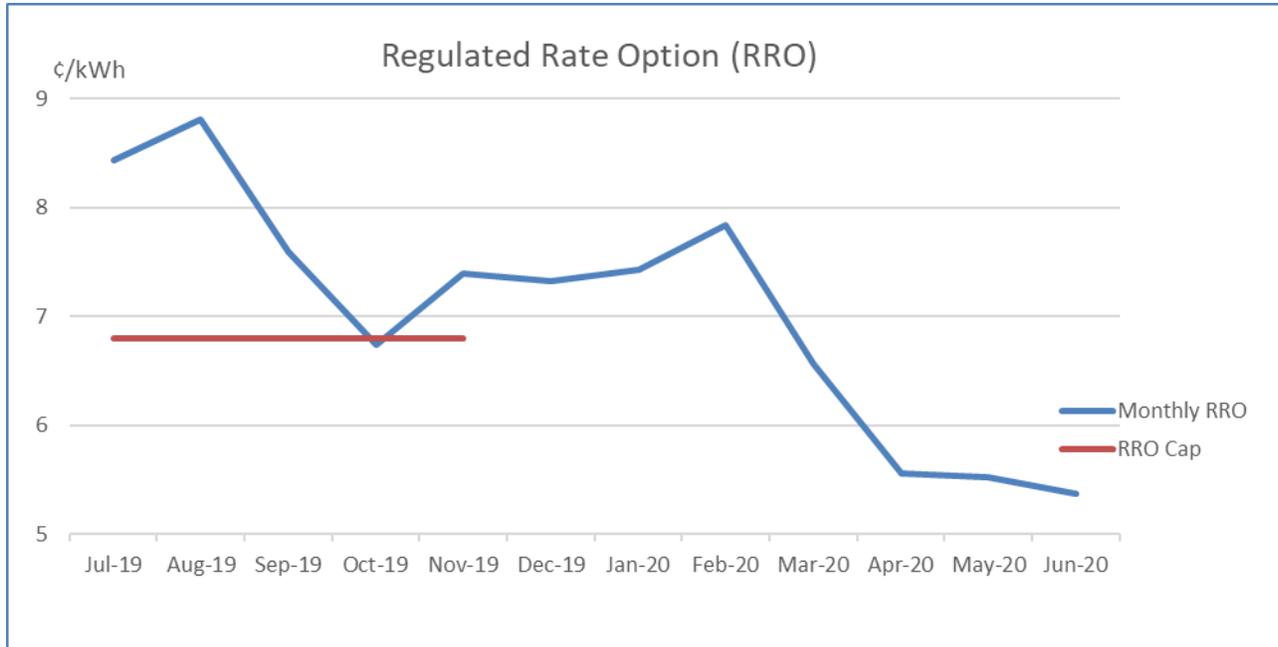
Natural Gas

The 2020 June gas cost flow-through rate (GCFR) was \$2.38 per gigajoule. Prices are forecast to remain stable for the remainder of 2020. Natural gas costs for The City thus far in 2020 are 13.3 percent (\$694,000) lower relative to 2019, largely due to a warmer winter in 2020.



Electricity

The ENMAX regulated rate option (RRO) price for 2020 June was 5.37 cents per kilowatt-hour. The price cap of 6.8 cents per kilowatt-hour is no longer in effect as of 2019 December. Electricity costs for The City thus far in 2020 are 3.2 per cent (\$934,000) lower relative to 2019, largely due to decreased transit electricity usage.



The month-to-date all-hours average power pool price for 2020 June 22 was 3.48 cents per kilowatt-hour. For reference, the all-hours average price for 2019 June was 5.35 cents per kilowatt-hour. Power pool prices are forecast to remain between 4 and 6 cents per kilowatt-hour for the remainder of 2020.

UTILITY REGULATION UPDATE

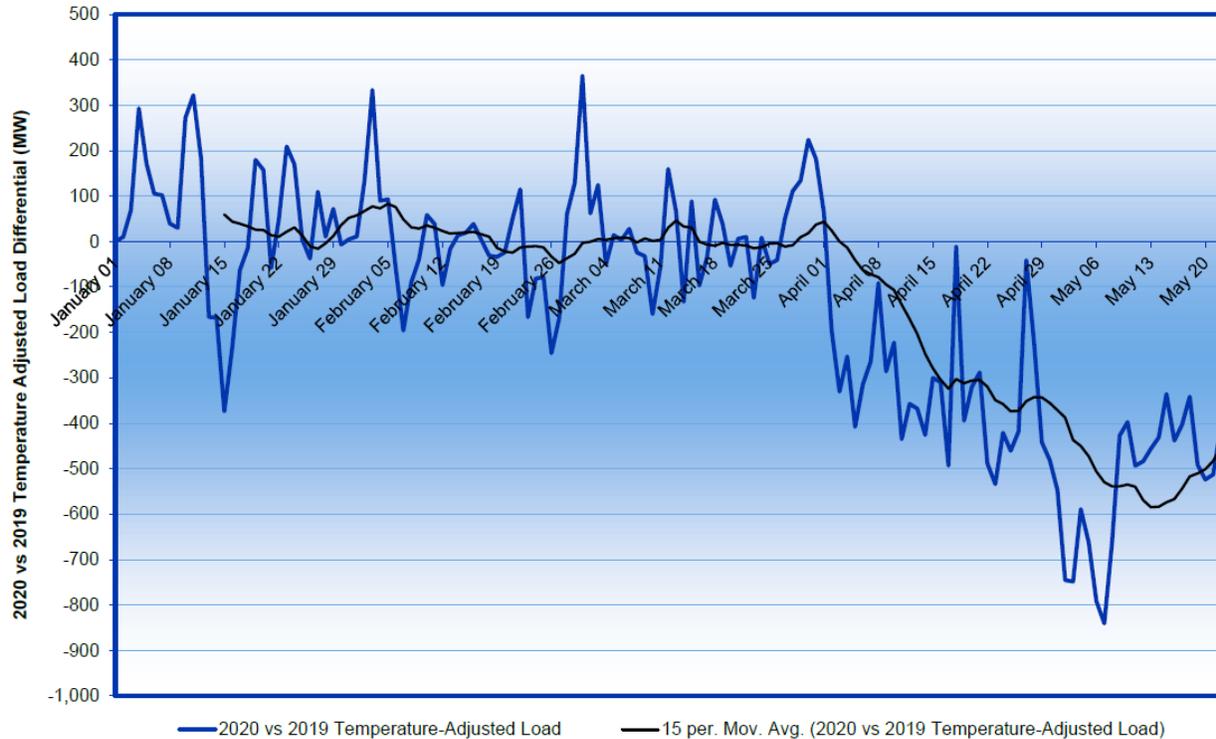
New Alberta Utilities Commission Chair

On 2020 June 24 Carolyn Dahl Rees was announced as the Interim AUC Chair, replacing Mark Kolesar. The Alberta Government announced that the new Chair would focus on streamlining regulatory processes and reducing red tape. This was a surprise as Mark Kolesar was scheduled to host a webinar with industry on 2020 June 24, and he was appointed as AUC Chair for a five year term that began on 2018 May 1. It is expected a new permanent Chair will be appointed no later than 2021 June.

UTILITIES AND INDUSTRY DEVELOPMENTS

Impact of COVID-19 and Low Oil Prices on Alberta Electricity demand

Beginning in 2020 April the economic shutdown began to impact provincial electricity demand. Daily temperature adjusted load was over 800 MW lower in the beginning of May on a year-over-year basis. By mid-May electricity consumption had begun to improve. The graph below shows the daily temperature adjusted load differential (2020 vs 2019).



*Source – EDC Associates Q2-2020 update

Alberta electricity demand should continue to bounce back as the province opens back up and oil prices improve.

Impact on Power Price

The Alberta power market operates as an oligopoly – the top 5 firms control roughly two-thirds of available supply, and this is not expected to materially change as the grid evolves over the coming years. The large capital costs of building large generation stations is one factor which contributes to market power being concentrated in five main companies.

<u>Company</u>	<u>Control (MW)</u>	<u>%</u>
TransAlta	3,268	20.6%
Heartland Generation	1,796	11.3%
ENMAX	1,446	9.1%
Capital Power	1,321	8.3%
Suncor	1,182	7.5%

The portfolios of the top firms are driven by carbon costs and natural gas prices, not the price of oil. The near term base case scenario sees prices climbing above 6 cents per kilowatt-hour and slowly increasing into 2021 and 2022. The near term downside scenario sees prices remaining near 4 cents per kilowatt-hour with little increase until 2022. These forecast prices are not significantly different than what was budgeted for franchise fees and City electricity costs.

Electricity sector capital investment remains strong

Some recent good news has been the continued ability of the Alberta electricity sector to attract capital to develop new supply resources, especially renewable energy. Innogy's 22 MW Vauxhall solar project connected to the grid in 2020 mid-February, followed by Innogy's 25 MW Hull project towards the end of April. Hull is Alberta's largest solar farm commissioned to-date, with the title previously held by Elemental Energy's 15 MW Brooks Solar park. In 2020 April, CryptoStar Corp., a cryptocurrency mining and data centre operator, signed a letter of intent to secure up to 120 MW of power. CryptoStar anticipates commercial operation of its data mining facilities to begin Q2-2020, with additional data centres coming online throughout 2020. TC Energy announced 2020 mid-May that it has closed an equity investment in Turning Point Generation's Canyon Creek pumped hydro facility.

Afternoon electricity supply surplus

During the afternoon of 2020 May 3 the electricity market experienced a supply surplus event where prices hit \$0 per MW. This was only the second time in history for a zero price hour to occur in the afternoon (last time was 2004 December). Strong wind generation coupled with lower demand was the cause of the supply surplus.

Over half of all the available generation is offered into the market at \$0/MWh almost all the time. These zero dollar offers at the bottom of the merit order are made up of: non-dispatchable cogeneration, a large chunk of coal capacity, imports, units providing ancillary services, intermittent resources such as wind farms, a portion of hydro and biomass units and most cogeneration units.

All electricity that is bought and sold on the grid in Alberta is done through a competitive wholesale market (called the Power Pool) operated by the Alberta Electric System Operator (AESO). The AESO manages the grid to perfectly match supply (electricity generated/imported) with demand (electricity consumed/exported). Alberta generators and importers of electricity submit supply offers to the AESO a day ahead of each hour with the price (\$/MWh) at which they are prepared to sell their power. The supply offers with the lowest price are used (dispatched) each minute of that hour by the AESO to meet demand until all of the demand has been satisfied. The list of price/quantity pairs sorted by price is referred to as the merit order. The system controller dispatches the generating units, starting with the lowest offer, and moves up the merit order until sufficient supply has been dispatched to meet demand.

As electricity demand shifts up and down during the day, the system controller keeps supply and demand in balance by dispatching offers in the merit order. The price of the last offer that is dispatched establishes what is known as the system marginal price or SMP. This SMP is recorded for each minute within the hour. At the end of the hour (also known as a settlement interval), the average of the 60 SMPs is the pool price for that hour. Each generator that dispatched electricity into the grid in that hour is paid that pool price for its electricity regardless

of the price specified in its supply offer – even those who offered electricity at \$0/MWh get paid the pool price for the hour.

The Table below details the offer behaviour in 2020 January and February of the various types of generation in Alberta.

Distribution of Unit Offers (January, February)						
Unit Classification	\$0	\$0 to \$25	\$25 to \$50	\$50 to \$100	\$100 to \$750	\$750+
Coal - 2020	52%	7%	33%	6%	1%	1%
Coal - 2019	48%	9%	34%	8%	2%	1%
Natural Gas (Cogen) - 2020	89%	6%	4%	0%	0%	1%
Natural Gas (Cogen) - 2019	87%	7%	5%	0%	0%	0%
Natural Gas (Combined-Cycle) - 2020	50%	34%	10%	2%	1%	2%
Natural Gas (Combined-Cycle) - 2019	49%	16%	26%	2%	3%	3%
Natural Gas (Simple-Cycle) - 2020	41%	4%	16%	3%	4%	33%
Natural Gas (Simple-Cycle) - 2019	45%	10%	14%	6%	3%	23%
Hydro (Dispatchable) - 2020	28%	0%	2%	2%	27%	40%
Hydro (Dispatchable) - 2019	25%	0%	6%	5%	34%	31%
Hydro (Run of River) - 2020	100%	0%	0%	0%	0%	0%
Hydro (Run of River) - 2019	100%	0%	0%	0%	0%	0%
Wind - 2020	100%	0%	0%	0%	0%	0%
Wind - 2019	100%	0%	0%	0%	0%	0%

*Source – EDC Associates Q2-2020 update