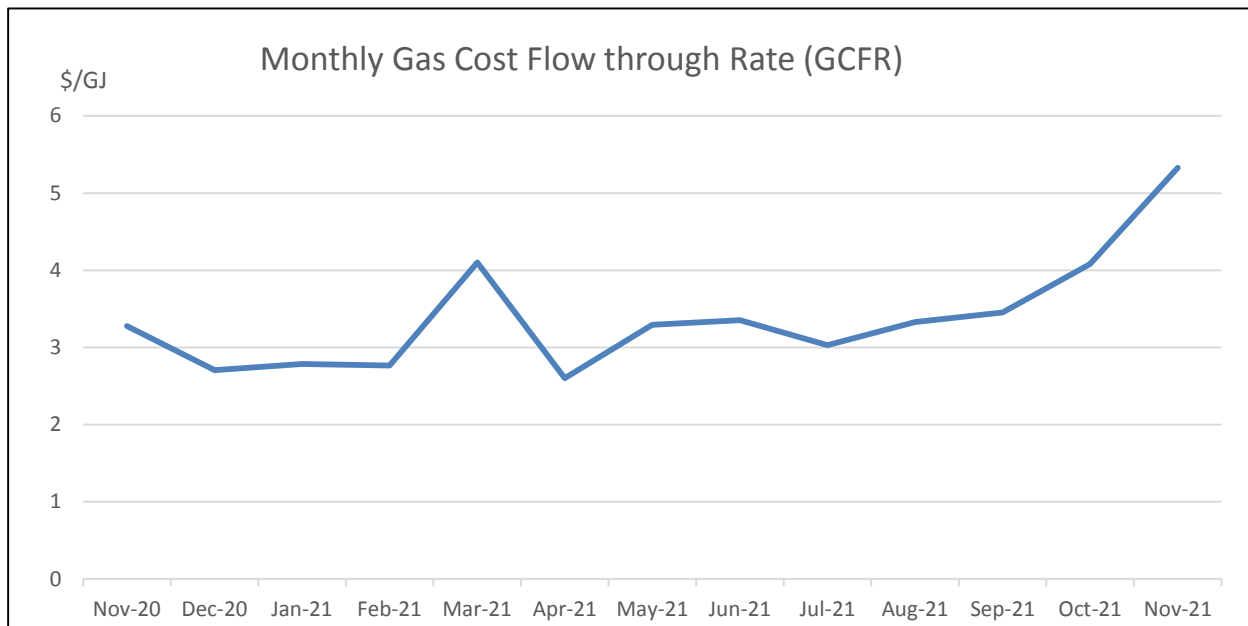
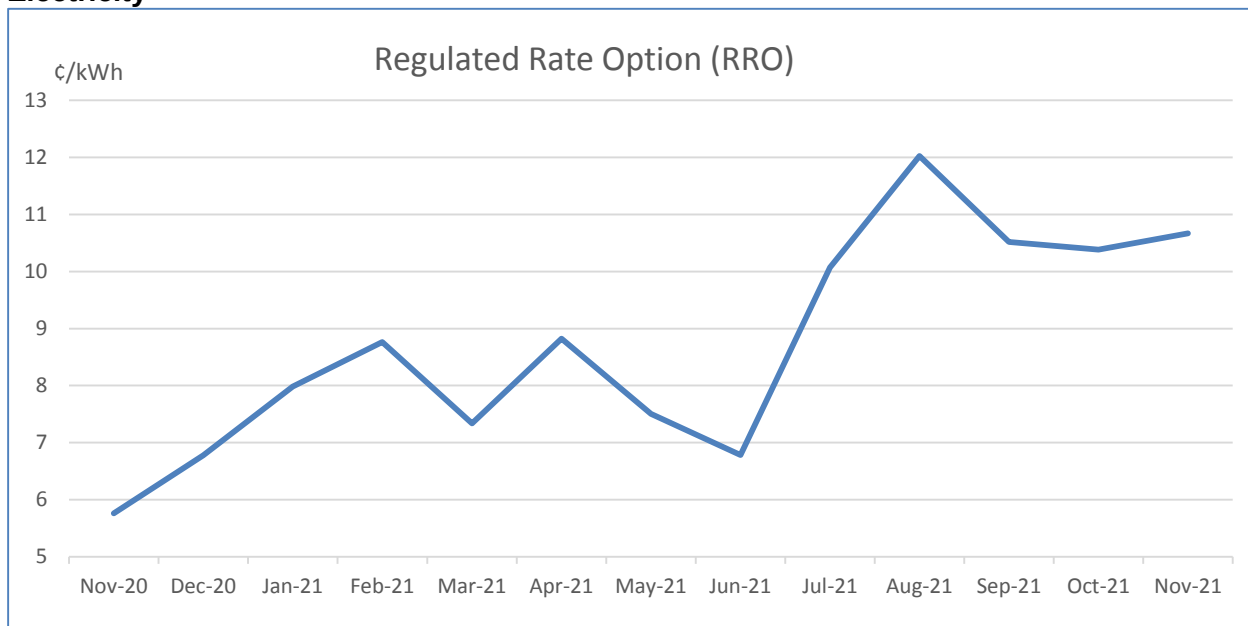


ENERGY PRICES AND MARKETS**Natural Gas**

The 2021 November gas cost flow-through rate was \$5.33 per gigajoule. Natural gas prices in Alberta are presently at their highest monthly levels since early 2014. Prices have risen as Canadian and US natural gas production has fallen alongside the shut-in of oil wells associated with natural gas production. Other factors include colder-than-normal weather and rising liquefied natural gas exports, which have helped to keep natural gas storage levels low. The generally accepted natural gas industry price forecast has prices averaging around \$5 per gigajoule until early 2022 before falling back to the \$3 per gigajoule range in the spring of 2022.

**Electricity**

The ENMAX regulated rate option price for 2021 November was 10.67 cents per kilowatt-hour.

The ENMAX residential regulated rate option price has fallen from its nine year high of 12.02 cents per kilowatt-hour in 2021 August. Nonetheless, regulated rate option prices persist as wholesale electricity prices remain strong.

Year-over-year, higher electricity prices in Alberta have been driven by increased demand, additional generator outages, fewer imports of electricity, a more aggressive price for carbon, higher generator offer prices, and strength in natural gas prices. As the retirement of coal-fired generators accelerates and natural gas-fired units are gaining prominence in the production of electricity to meet baseload demand in Alberta, natural gas prices are becoming an even more important cost driver in determining Alberta electricity prices. 2021 January to October Alberta electricity prices have averaged 10.03 cents per kilowatt-hour. The generally accepted power industry price forecast has prices averaging at 9.59 cents per kilowatt-hour for the remainder of 2021. For reference, 2020 January to October prices averaged 4.81 cents per kilowatt-hour, while 2020 November to December prices averaged 3.84 cents per kilowatt-hour.

UTILITIES AND INDUSTRY DEVELOPMENTS

Alberta introduces Bill 86, *Electricity Statutes Amendment Act*

On 2021 November 17, Bill 86, the *Electricity Statutes Amendment Act*, was introduced in the Alberta legislature. If passed, Bill 86 would amend existing laws and regulations governing the storage, sale, and transmission of electricity in Alberta. The provincial government has stated that Bill 86 would help further modernize Alberta's electricity system by encouraging adoption and investment in emerging energy systems and technologies that can lead to long-term benefits for ratepayers and the electricity industry.

The provincial government highlighted four key changes from the passing of the *Electricity Statutes Amendment Act*:

1. Integration of energy storage into Alberta's interconnected electricity system in both the competitive electricity market and the transmission and distribution system.
2. Allow unlimited self-supply with export, technology that allows electricity to be generated on-site with excess power sent to the grid.
3. Build on the Alberta Utilities Commission Distribution System Inquiry by modernizing Alberta's electric distribution system to ensure the cost-effective integration of distributed energy resources.
4. Add a requirement for distribution owners to prepare long-term plans as per future regulations.

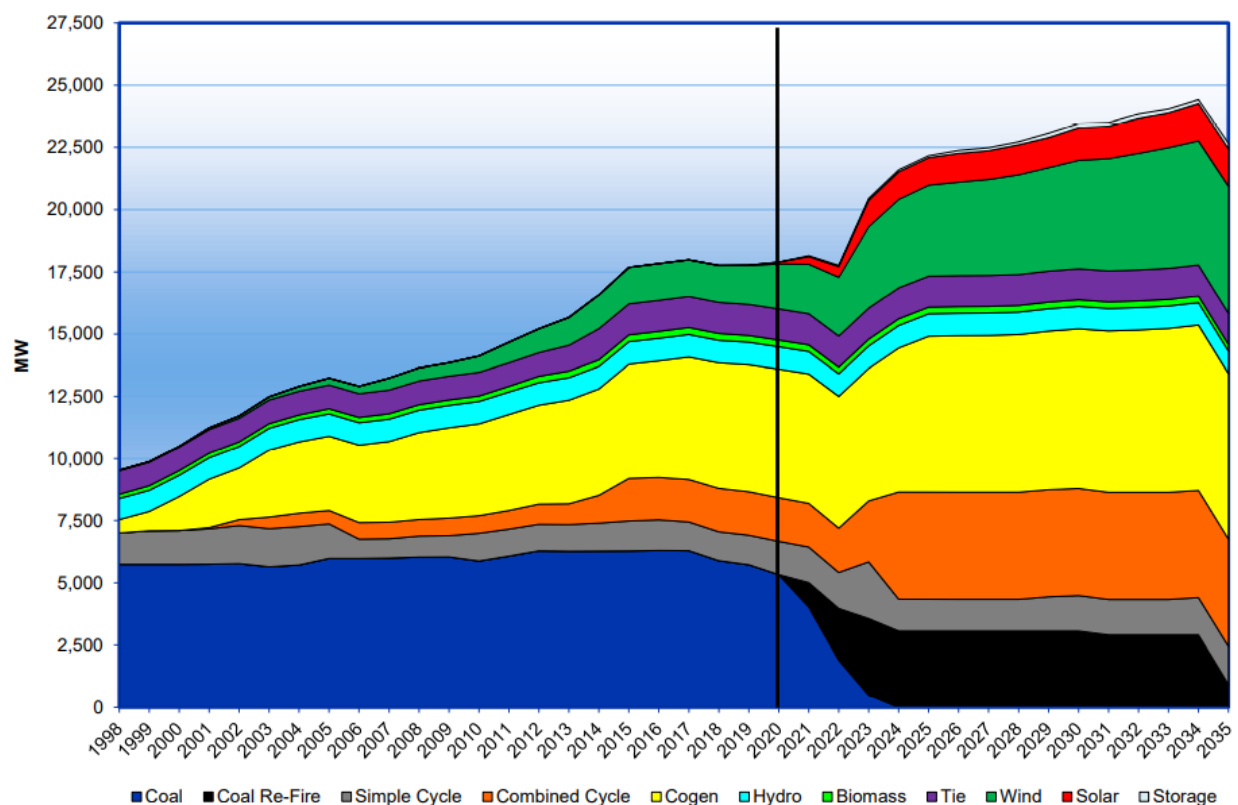
The provincial government has stipulated that in addition to meeting public health and safety requirements on generators, Bill 86 will force new self-suppliers and sellers to pay a tariff set by the Alberta Electric System Operator so that these new Alberta pool participants can't bypass transmission costs and drive up prices for consumers.

The Alberta Utilities Commission released its Distribution System Inquiry final report on 2021 February 19, raising concern that emerging technologies can affect the supply and demand of electricity, potentially allowing customers to bypass utility service and associated tariff charges, creating competitive pressures where none existed before.

The provincial government has announced that if the *Electricity Statutes Amendment Act* is passed, the amendments will be finalized in 2022.

The Changing Face of Alberta's Electricity Generation – Past, Present and Future

The graph below shows how Alberta's installed electricity generation capacity (by fuel source) has evolved from 1998 to the present, along with a forecast out to 2035. Multiple trends are noticeable. Baseload generation (i.e. generation that is considered more predictable/reliable and typically runs around the clock) has evolved from coal (dark blue area) to combined cycle (orange), largely as a result of increasing environmental legislation making coal fired power more expensive and decreasing natural gas prices since the mid 2000s as a result of shale gas plays. Coal fired generation is expected to be fully retired and/or converted to natural gas sources by the end of 2023. The environmental legislation coupled with technological improvements have also led to strong forecasts for further proliferation of renewable energy sources (wind and solar) in Alberta.



Source: EDC Associates, Q4-2021 Forecast Update

Alberta generating unit offer behaviour following the expiration of power purchase arrangements on 2020 December 31

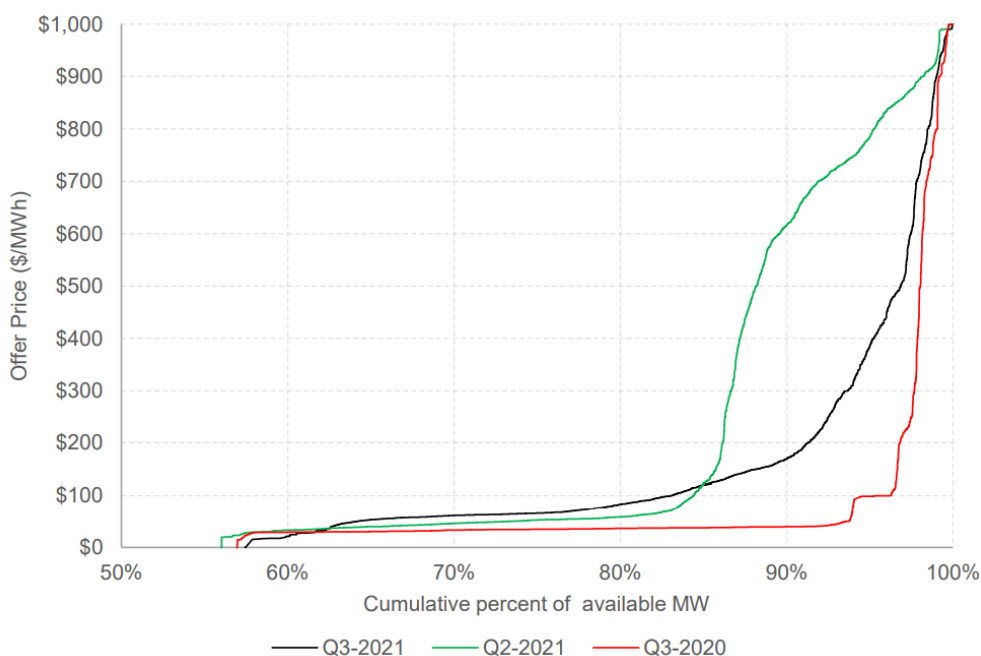
On 2020 December 31, the final power purchase arrangements for electricity generating units in Alberta expired. With the expiration of these power purchase arrangements, offer control for many units changed hands from the power purchase arrangement holder back to the owner of the generating unit. The largest cumulative change was the effective transfer of offer control

from the Balancing Pool (a former power purchase arrangement holder) back to utilities including TransAlta, Capital Power, and Heartland Generation – the owners of these former power purchase arrangement units.

In its management of the power purchase arrangements prior to expiry, some market participants had alleged that the Balancing Pool did not operate the generating units for which it had offer control through the power purchase arrangements in a “commercial manner.”¹

In its 2021 quarterly reports, the Market Surveillance Administrator has analyzed the offer behaviour of electricity generating units in Alberta, comparing the distribution of offer prices from generators both before and after the 2020 December 31 power purchase arrangement expiries.

The three duration curves in the chart below show how the distribution of offers from Alberta’s electricity generation have differed from the third quarter of 2020 (red line) versus the second and third quarters of 2021 (green and black lines). The Market Surveillance Administrator has described the shift in offer behaviour between 2020 and 2021 as a result of the expiry of the power purchase arrangements as a “material change” and is a contributor to the year-over-year increase in observed Alberta 2021 electricity prices.



Source: Market Surveillance Administrator, Q3 2021 Quarterly Report

TELECOMMUNICATIONS DEVELOPMENTS

Deployment of 5G Small Cell Infrastructure in Calgary

The City of Calgary has established a streamlined approach through the Wireless Infrastructure Deployment Program to enable wireless service providers like Telus and Rogers to build the next generation of wireless networks, where The City’s role is to remove barriers to deployment

¹ For instance, please see Alberta Utilities Commission Decision 23828-D02-2020.

and streamline processes for wireless service providers to access City-owned infrastructure while balancing taxpayers' interests. The Canadian Radio-television and Telecommunications Commission has formally acknowledged the important role of municipalities in wireless infrastructure deployment and of municipal consent as a fundamental statutory prerequisite.

5G is promoted as a major economic driver and wireless service providers like Telus and Rogers are investing millions of dollars to deploy 5G. The rollout of 5G will continue to depend on the wireless service providers' investment commitments, which are generally market driven.

Since 2020 January, an interim agreement has been in place to allow Administration to respond to requests from wireless service providers to attach wireless equipment to City-owned assets. Work has been underway on Master Agreements (including cost recovery) between The City and wireless service providers under an open access network model.

Under the established interim agreements, nearly one hundred feasibility inquiries representing a maximum of 20 sites per inquiry have been submitted by wireless service providers and reviewed by Administration for feasibility. It is anticipated that the wireless service providers will only choose a portion of these sites to proceed to the design stage.

In June 2021, two wireless service providers signed a master licence agreement which replaces the interim agreements. Master licence agreements formalize the streamlined and business-friendly processes and standards developed in collaboration with the wireless service providers and sets out the framework for the efficient and timely attachment of wireless service provider wireless equipment onto City-owned and operated assets.

The City of Calgary's Wireless Infrastructure Deployment program marked a significant milestone in late October, as Rogers Communications completed the construction and installation of the first 5G small cell antenna on a City of Calgary streetlight pole. Wireless service providers are most interested in accessing streetlight poles (City-owned) because they are ideal support structures for wireless infrastructure equipment due to their height, power availability and locations throughout the city.

Since then, Rogers has completed construction of several dozen 5G-ready streetlight poles with small cell attachments.

These 5G small cells have not yet been energized, as they are in the process of acquiring the required electrical permits from The City, but we can anticipate these antennas going live by the end of November.