AGENDA

GAS, POWER AND TELECOMMUNICATIONS COMMITTEE

June 24, 2021, 1:00 PM
IN THE COUNCIL CHAMBER

Members

Councillor S. Chu, Chair
Councillor D. Farrell, Vice-Chair
Councillor S. Keating
Councillor J. Magliocca
Chief Financial Officer C. Male
Mayor N. Nenshi, Ex-Officio

SPECIAL NOTES:
Public are encouraged to follow Council and Committee meetings using the live stream Calgary.ca/WatchLive

Public wishing to make a written submission may do so using the public submission form at the following link: Public Submission Form

Members may be participating remotely.

1. CALL TO ORDER

2. OPENING REMARKS

3. CONFIRMATION OF AGENDA

4. CONFIRMATION OF MINUTES

   4.1. Minutes of the Regular Meeting of the Gas, Power and Telecommunications Committee, 2021 April 29

5. CONSENT AGENDA

   5.1. DEFERRALS AND PROCEDURAL REQUESTS
   None

   5.2. BRIEFINGS

5.2.1. Status of Outstanding Motions and Directions, GPT2021-0898

5.2.2. Fibre Infrastructure Strategy Annual Update, GPT2021-0632

5.2.3. Update on 5G Readiness – Wireless Infrastructure on City-Owned Assets, GPT2021-0674

6. POSTPONED REPORTS
(including related/supplemental reports)

None

7. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

7.1. Industry Update on Electricity, Natural Gas and Telecommunications, GPT2021-0899

8. ITEMS DIRECTLY TO COMMITTEE

8.1. REFERRED REPORTS
None

8.2. NOTICE(S) OF MOTION
None

9. URGENT BUSINESS

10. CONFIDENTIAL ITEMS

10.1. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

10.1.1. Summary of Current Proceedings, GPT2021-0715
Held confidential pursuant to Sections 23 (Local public body confidences) and 24 (Advice from officials) of the *Freedom of Information and Protection of Privacy* Act.

Review By: 2024 May 13

10.1.2. GPT Bylaw Update (Verbal), GPT2021-1008
Held confidential pursuant to Sections 16 (Disclosure harmful to business interests of a third party) and 25 (Disclosure harmful to economic and other interests of a public body) of the *Freedom of Information and Protection of Privacy Act.*

10.2. URGENT BUSINESS

11. ADJOURNMENT

MINUTES

GAS, POWER AND TELECOMMUNICATIONS COMMITTEE

April 29, 2021, 9:30 AM
IN THE COUNCIL CHAMBER

PRESENT:	Councillor S. Chu, Chair (Remote Participation) Councillor D. Farrell, Vice-Chair (Remote Participation) Councillor S. Keating (Remote Participation) Councillor J. Magliocca (Remote Participation) Chief Financial Officer C. Male (Remote Participation)
ALSO PRESENT:	Legislative Advisor J. Palaschuk Legislative Advisor G. Chaudhary

1. CALL TO ORDER

Councillor Chu called the Meeting to order at 9:30 a.m.

2. OPENING REMARKS

Councillor Chu provided opening remarks at today's Meeting.

ROLL CALL
Councillor Farrell, Councillor Keating, Councillor Magliocca, Chief Financial Officer Male, and Councillor Chu.

3. CONFIRMATION OF AGENDA

Moved by Councillor Farrell

That the Agenda for the 2021 April 29 Gas, Power and Telecommunications Committee be confirmed.

MOTION CARRIED

4. CONFIRMATION OF MINUTES

4.1 Minutes of the Regular Meeting of the Gas Power and Telecommunications Committee, 2021 March 25

Moved by Councillor Farrell

That the Minutes of the 2021 March 25 Regular Meeting of the Gas, Power and Telecommunications Committee be confirmed.

MOTION CARRIED

5. CONSENT AGENDA

Moved by Councillor Farrell

That the Consent Agenda be approved as follows:

5.1 DEFERRALS AND PROCEDURAL REQUESTS

None

5.2 BRIEFINGS

5.2.1 Status of Outstanding Motions, GPT2021-0561

MOTION CARRIED

6. POSTPONED REPORTS

None

7. ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

7.1 Industry Update on Electricity, Natural Gas and Telecommunications, GPT2021-0562

Moved by Councillor Magliocca

That with respect to Report GPT2021-0562, the following be approved:

That the Gas, Power and Telecommunications Committee receive this report for the Corporate Record.

For: (5): Councillor Chu, Councillor Farrell, Councillor Keating, Councillor Magliocca, and Chief Financial Officer Male

MOTION CARRIED

8. ITEMS DIRECTLY TO COMMITTEE

8.1 REFERRED REPORTS

None

8.2 NOTICE(S) OF MOTION

None

9. URGENT BUSINESS

None

10. CONFIDENTIAL ITEMS

10.1 ITEMS FROM OFFICERS, ADMINISTRATION AND COMMITTEES

None

10.2 URGENT BUSINESS

None

11. ADJOURNMENT

Moved by Councillor Keating

That this meeting adjourn at 9:43 a.m.

MOTION CARRIED

The next Regular Meeting of the Gas, Power and Telecommunications Committee is scheduled to be held on 2021 May 13 at 1:00 p.m.

CONFIRMED BY COMMITTEE ON

CHAIR ACTING CITY CLERK

BRIEFING

Item # 5.2.1

Chief Financial Officer's Briefing to

Gas, Power and Telecommunications
2021 June 24

ISC: UNRESTRICTED
GPT2021-0898

Status of Outstanding Motions and Directions

PURPOSE OF BRIEFING

This briefing details the outstanding items for the Gas, Power and Telecommunications Committee from previous meetings.

SUPPORTING INFORMATION

The Gas Power Telecommunications Committee has directed that this briefing be prepared on a monthly basis for each scheduled meeting. As of 2021 June 3, there are no outstanding motions and directions.

ATTACHMENT(S)

None

BRIEFING

Item # 5.2.2

Chief Financial Officer's Briefing to

Gas, Power and Telecommunications
2021 June 24

ISC: UNRESTRICTED
GPT2021-0632

Fibre Infrastructure Strategy Annual Update

PURPOSE OF BRIEFING

In 2015 September, Council approved the Fibre Infrastructure Strategy (GP2015-0485) with an annual update. This report serves as the fifth annual update on the implementation of The City of Calgary's Fibre Infrastructure Strategy. The telecommunications environment is constantly evolving, and the annual report serves to keep Council apprised of the progress, challenges and future strategic direction regarding The City's fibre infrastructure.

In 2020, the COVID-19 pandemic caused one of the most disruptive events in our lifetimes. Connectivity became a lifeline to many citizens and businesses. City fibre supplies and enables key pillars for recovery and our comeback.

SUPPORTING INFORMATION

As noted in Calgary Economic Development's article "Calgary: A leading city in 5G and connectivity" on 2021 March 15, The City of Calgary's fibre optic "...is where Calgary stands out from the crowd. Calgary has the most extensive network in Canada..." with over 575 kilometers of fibre optic. The City's fibre network was able to mitigate a catastrophic loss in network resources during the 2013 flood and continues to provide ongoing resiliency for The City's network through redundant fibre services to City facilities. Through the use of fibre, The City's award-winning Long Range Low Power Wide-Area Network (LoRaWAN) has the capacity to connect tens of thousands of Internet of Things (IoT) sensors throughout Calgary.

For the last 20 years, Information Technology has been leveraging capital works projects to take advantage of economies of scale to deploy fibre optic to support City services. Excess capacity in City fibre optic has been licensed to civic partners, universities, school boards, businesses and carriers. All revenue is transferred to the Information Technology Reserve and is used for future fibre builds for City services and to support operating costs.

5G/Small Cell is the next advancement in mobile and wireless technology that will enable automation, connected and autonomous vehicles, smart homes and field sensors. Deployment of 5G will depend on City fibre and access to municipal assets like streetlight poles and facilities. Administration is expecting the federal government to enact new legislation that will reduce municipal government's control of their assets to enable broadband deployment. Administration has taken steps to engage in the process and provide a municipal perspective.

ATTACHMENT(S)

Attachment 1 – Fibre Infrastructure Strategy Annual Update

The City of Calgary

Fibre Infrastructure Strategy Annual Update

2021 May 13

Chief Financial Officer’s Department - Information Technology

Executive Summary

On 2015 September 28, the Fibre Infrastructure Strategy was presented and unanimously approved by Council. This report serves as the 2020 annual update.

In 2020, the pandemic caused one of the most disruptive events in our lifetimes. Connectivity became a lifeline to many citizens and businesses. City fibre supplies and enables key pillars for recovery and our comeback.

By the end of 2020, over **782** facilities and assets (e.g. traffic controllers) have been fibre-connected while **avoiding** third-party communication costs estimated to be **$8 million per year.**

In 2020, revenues saw a modest increase due to the effects of the pandemic and shifting priorities both internally and externally.

Corporate Analytics and Innovation (CAI), Roads and Information Technology continue to work with wireless service providers on **Master Agreements** for access to municipal assets for the installation of **5G**. CAI will be providing a report independently.

In 2020 January, The Legislative Review Expert Panel released their recommendations to the Federal Government for changes to the suite of legislation that governs Telecommunications, Broadcasting and Radio-communications. These recommendations are concerning and look to strip municipal authority from exercising full control over their assets.

The total capital budget approved for the 2019 to 2022 budget cycle is $12 million. An additional $6 million in capital infrastructure funding was obtained through the Government of Alberta Municipal Stimulus Program. This capital funding must be used in 2021 and will accelerate builds to City sites.

Background

The Fibre Infrastructure Strategy is critical to ensure The City of Calgary continues to provide fibre optic to deliver next-generation municipal services in a cost-effective manner.

Investment in City fibre is even more important today and into the next business cycle as The City's dependence on technology and data increases. City fibre is fundamental to delivering City services which contributes to **resiliency**, service **growth** and innovation and is the **foundation** of all connectivity which City business units rely on to excel as a smart, safe and prosperous city now and into the future.

2015 – 2020 Accomplishments

a. Connecting Assets

In 2020, over 782 facilities and assets (e.g. traffic controllers) are fibre-connected, increasing business-unit capabilities with unlimited bandwidth and avoiding third party communication costs estimated to be $8 million per year.

Current trends indicate that devices like traffic controllers, sensors and antennae are connecting at a faster rate. The Internet of Things (IoT) is expected to increase demands for connectivity far into the future.

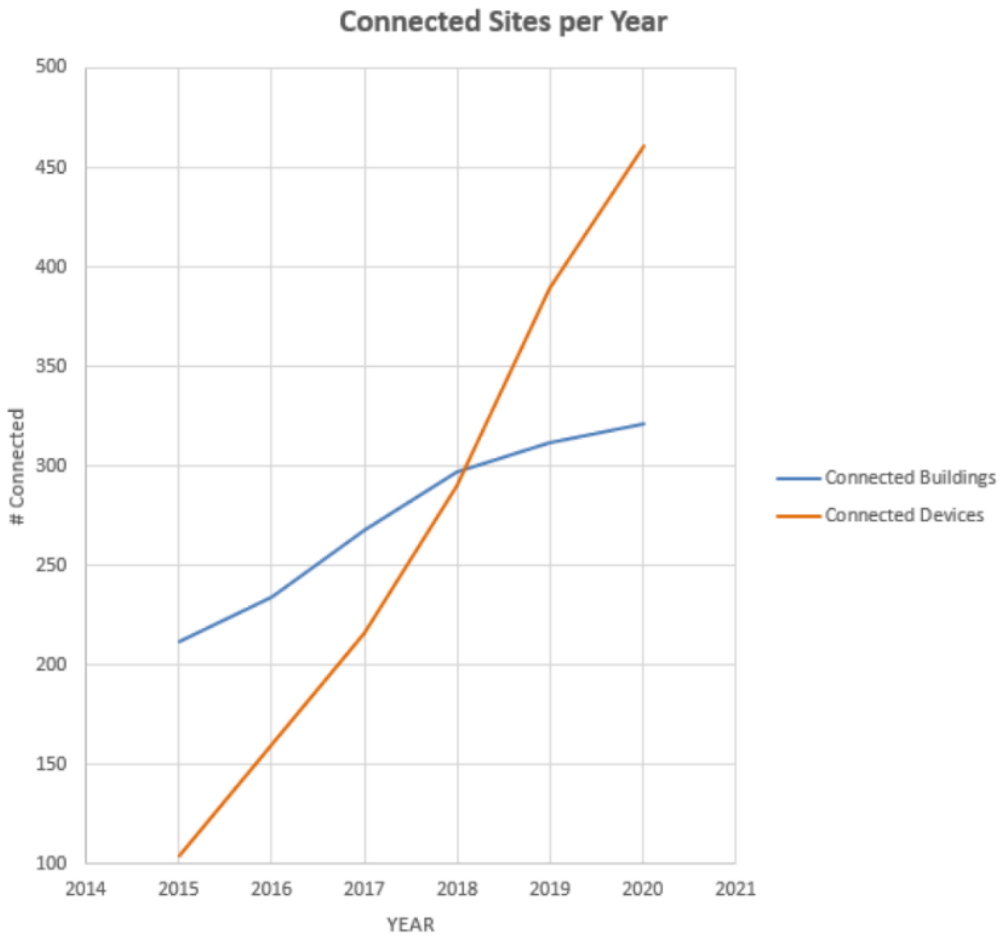


Table 1: 2020 Trends in Number of Assets Connected with City Fibre

b. Enabling Networks

City fibre enables numerous networks for City business units, civic partners, post-secondary institutions and external agencies. The City alone has more than 20 different networks specific to its applications. As an example, the network that operates the Light Rail Transit is much different than the network that ensures clean water, but both rely on City fibre.

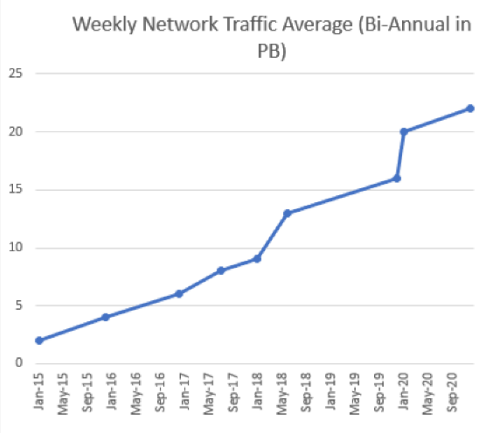


Figure 1: CCN: Bandwidth Consumption for City services [1 Petabyte (PB) = 1 million Gigabyte]

City fibre allows business units to upgrade their networks quickly and easily to enable new types of services. For instance, Calgary Police Service was able to upgrade their network to facilitate body cameras and other new innovations due to the capacity that City fibre provides.

The Calgary City Net (CCN) is The City's largest, most resilient network which provides high bandwidth, redundancy and security for business units. CCN's success is represented by the rate of adoption by business units. During the last budget cycle, the CCN's bandwidth demands have increased **1000%** (*see Figure 1)* as business units deploy connected devices to enrich and modernize their services.

c. Increasing Resiliency

City fibre increases the resiliency of City services which, in turn, enriches citizen confidence. When a city **owns** its fibre, it can respond with greater agility during extreme events. This was exemplified during the 2013 flood where a catastrophic loss in network resources was mitigated due to the control, agility and capacity afforded through City fibre. This could not have been achieved without full control of the fibre asset.

City fibre increases the resiliency of all services. As an example, the Roads department can monitor and control traffic signals remotely through their Management Information System for Transportation (MIST) network. The more reliable the network, the more reliable the service. Prior to The City launching its fibre strategy, the MIST network was only up 65% of the time. Currently, the MIST network is up 98% of the time. City fibre reaches over **370** traffic controllers, resulting in an **increase** of service uptime by **50%** (*see Figure 2)* and improving traffic flow through the city.

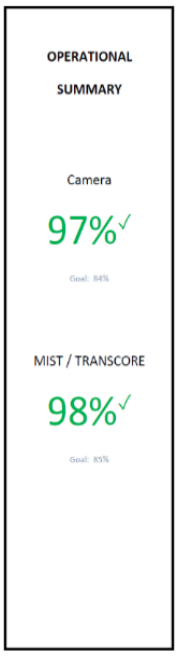


Figure 2: Traffic Network Uptime

City fibre also enhances the resiliency of **mission-critical networks** operated by other agencies that offer **critical services** to citizens. Healthcare and power utility organizations license City fibre to strengthen the resilience of their services.

d. Other Notable Accomplishments

- The University of Calgary research on City Fibre as a Sensor was published in the Journal of Applied Geophysics, December 2020.
- 2019 revenues broke through the $1 million milestone.
- Calgary Police Service exclusively uses City fibre to build their core network and recently upgraded that network to accommodate body-camera technology.
- The new Calgary Remand Center is now fibre-connected.
- Shepard's Solar Project is now fibre-connected.
- New Southwest Bus Rapid Transit stations are connected to City fibre.
- Calgary 911 and Corporate Security are leveraging City fibre for enhanced services and increased resiliency.
- The Calgary Public Library uses City fibre as a preferred option.
- The City won the Minister's Award for Municipal Excellence for Municipally Owned Fibre Infrastructure (2016).
- University of Calgary research on Quantum Key Distribution published their findings in Nature Photonics in 2016. Access to City fibre was acknowledged in the research paper "Quantum teleportation across a metropolitan fibre network" for assisting in testing their research in a real-life environment.
- The City won the Ministers Award for Municipal Excellence for Municipally Owned Internet of Things Wireless Network (2018). This network is enabled by City fibre.
- The Calgary Internet Exchange is rapidly growing, in part, due to City fibre making Internet faster for everyone.
- Participated in a number of Canadian Radio-television and Telecommunications Commission consultations influencing policy to include municipal interests.
- Calgary Economic Development includes City fibre as a technology enabler to attract companies to Calgary.
- Participated in regional efforts to increase the importance of municipal fibre through speaking engagements, presentation to rural council and local meetings.
- Contributed and responded to provincial consultations like the Provincial Broadband Strategy.
- City fibre transports video from over 3,000 cameras used by Corporate Security, Transit, Roads and Calgary Parking Authority.
- Fibre infrastructure plays an important role in security by design.
- City fibre is a key element to delivering on business-friendly initiatives for Living Labs in conjunction with Calgary Economic Development.

City Fibre Strategy Alignment

Connectivity plays an important role in all aspects of our society: economic, social, health, education, resilience and next-generation municipal services. Just as we move people, goods and services, fibre optics moves information – the digital version of people, goods and services.

Stranded Facilities

Connectivity demands for field computing, the Internet of Things, 5G and smart-city solutions are increasing every day, and this should be considered the new normal. These new demands emphasize the change in society and how cities need to adapt quickly.

Smart and resilient cities will be impacted by the rapid evolution and adoption of technology and reliance on data. What this means for The City is that connectivity through fibre and wireless will experience **sustained and continuous** demand incenting a greater integrated approach in the planning process for both public and private sectors. By incorporating digital infrastructure into an integrated solution, The City can mitigate new technology being "bolted on" to assets with a preferred, seamless and aesthetically attractive solution emerging.

Lesson Learned: *Stranded facilities are no longer finite as sustained and continuous demands for connectivity is the new normal.*

Cost Avoidance

Building infrastructure and self-provisioning services is always weighed against leasing infrastructure and services. Comparing the two scenarios is difficult to do with one metric or model; rather, a comparison on various models provide insights into how The City **avoids** third party service costs. The following are some cost-avoidance scenarios:

1. City fibre avoids leasing third party fibre at a cost of **$28 million** per year.
2. The City's Calgary City Net fibre network avoids approximately **$8 million** per year in third-party network services.
3. City fibre-connected traffic controllers avoid operating costs of **$1.8 million** per year.

Revenues

As part of the Fibre Infrastructure Strategy, The City operates as a dark-fibre-optic provider and licenses excess fibre-optic capacity to other public-sector organizations, businesses and/or carriers. This revenue is growing and serves to finance further construction activities. In 2020, revenues reached **$1.1 million** and is anticipating steady growth going forward. Through Council support of the fibre strategy, a dramatic increase in revenue growth has been achieved (*see Figure 3*). Emerging markets, spurred by the trend to densify networks (5G/Small Cell, Internet of Things), will provide new revenue opportunities.

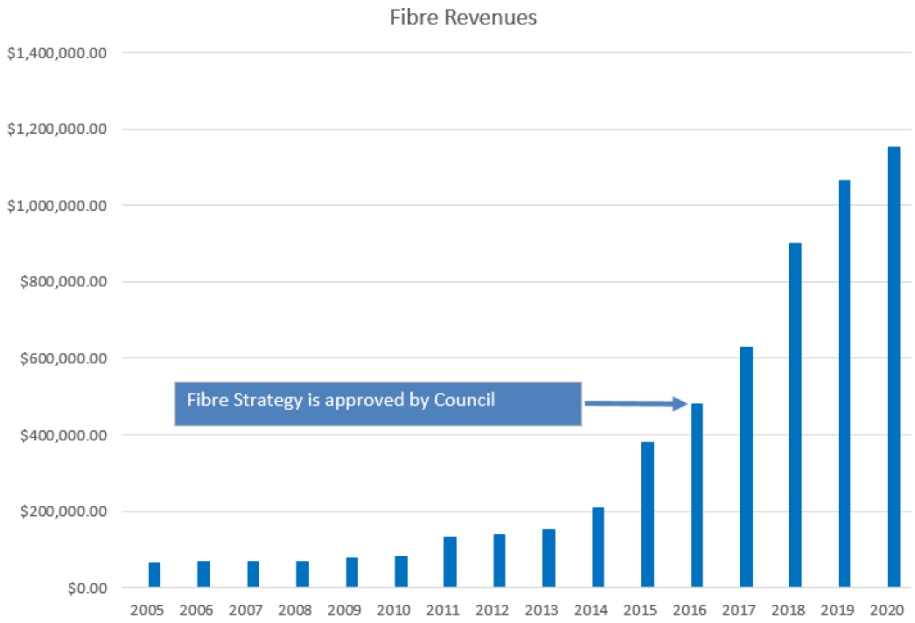


Figure 3: Current Revenues

Understanding that future demand will be continuous, and to mitigate risks arising from capital funding short falls, more emphasis on becoming **self-funded** is highly recommended. To achieve full self-funded status, revenues or alternate funding sources of $3 million to $4 million per year will be required.

***2020 Status Update*:** In 2020, there was not as much engagement with outside agencies due to the pandemic and shifting priorities.

Future Opportunities

5G/Small Cell and the Evolution of Wireless Opportunities

5G/Small Cell is the next advancement in mobile and wireless technology important to connected, resilient and smart cities. It refers to wireless infrastructure that will enable many sectors and drive the digital economy by enabling automation, connected and autonomous vehicles, smart homes and field sensors. 5G/Small Cell represents a major uplift in infrastructure for wireless service providers. It's more than a small antenna on a pole, it also encompasses fibre optics, large cabinets, new power cables, power meters, networking equipment, etc.

The drive for advancing wireless infrastructure is both a risk and an opportunity for The City. Wireless service providers' successful deployment of 5G will depend on access to municipal assets like streetlight poles and facilities resulting in thousands of third-party assets integrating with City assets. New standards, processes and agreements will manage both operational and financial risks while preserving aesthetics and public safety.

Integrated planning can mitigate the operational and financial risks affiliated with wireless infrastructure deployment on City assets and presents opportunities for new sources of revenues. Wireless infrastructure requires fibre optic to transport data and some wireless service providers lack sufficient fibre optic to achieve this. Other potential sources of revenue can be found in attachment fees for antennas or co-location fees in City buildings.

***2020 Status Update*:** The 5G opportunity is being led through Corporate Analytics and Innovation as part of the Wireless Infrastructure Deployment Program and is addressed through the collaboration of numerous business units and individuals throughout The City (Law & Legislative Services, Supply, Treasury, Information Technology and Roads). Updates are provided to the Gas, Power, and Telecommunications Committee by the Wireless Infrastructure Deployment 5G team.

Smart City, Economic Diversity, Digital Economy, Innovation, Collaboration
As The City of Calgary, in collaboration with community stakeholders, builds our communities' smart-city strategy, continued investment in digital infrastructure is key to success. A smart city invests in technology and data solutions to provide excellent services to citizens.

To support Council's Business-Friendly directive, and as part of the smart city focus of diversifying our economy, The City of Calgary is partnering with Calgary Economic Development to create the "Calgary as a Living Lab" initiative. As one of the largest owners of infrastructure in Calgary, The City is formalizing the process to open our infrastructure (where suitable) for companies and researchers to test, try and demo their products in real-world environments. The goal is to accelerate the commercialization of new products, services and research findings. It is not intended as a route for City solutions as there are avenues for those requests through existing procurement channels. For example, The City opened up Shepard Landfill for companies like Lougheed-Martin and NASA to test drone technologies. The Calgary Film Centre was used by an augmented reality software company to demo their products to potential clients.

***2020 Status Update*:** The Living Labs program is achieving success with numerous projects assisting companies to advance their technology.

Miscellaneous Opportunities
From time to time, unique opportunities arise which can contribute to the expansion of City fibre. These opportunities can contribute in reducing construction costs, providing conduit (Greenline) and possible funding.

Regulatory, Legislation and Advocacy
Consistent with the 2015 Fibre Infrastructure Strategy, The City's participation as an **advocate** in the regulatory and legislative domain is still a priority to ensure that municipal interests are represented.

Of importance is the **legislative review** of the Telecommunications, Broadcasting and Radiocommunications Acts. This review was initiated to modernize the Acts in relation to how technology is evolving in our society. An expert panel was assembled and a call for comments was initiated in 2018 September.

Early indications suggest that some proposed legislative amendments will have significant ramifications to municipalities - impacts that could last for decades. The most significant risk municipalities face is **loss of jurisdictional control** over some components of municipal infrastructure and assets. This is mainly driven by the proliferation of wireless technologies like 5G/Small Cell whereby the wireless carriers want access to municipal assets (streetlight poles, buildings) to install antennas. Though advanced wireless networks are attractive to any modern city, a careful balance between municipal and industry interests are important considerations. By participating in the review, The City has helped shape and influence the legislative outcomes.

***2020 Status Update*:** The Legislative review panel completed their final report "**Canada's communications future: Time to Act"** on 2020 January 20. The following recommendations raise concerns for regulatory oversight on municipal assets:

> "34. The locations at which facilities must now be installed to pursue network deployment have broadened. We recommend that subject to any exclusions the CRTC may determine:
>
> - **the CRTC's authority over passive infrastructure should clearly include access to all public property capable of supporting such facilities, such as street furniture;**
> - the scope of access should include **radiocommunication facilities** and the **telecommunications facilities** necessary to operate them;
> - the scope of access should also include non-discriminatory access to the support structures of **provincially regulated utilities**;
> - the *Telecommunications Act* should be amended to authorize the **CRTC to mandate access to inside and in-building wire, support structures, and rooftops** within and on multi-dwelling unit buildings and be available to all providers of an electronic communications service; and
> - the Minister of Industry should assign operational oversight of the radiocommunication and broadcasting antenna siting process to the CRTC, including **managing the interaction with municipalities and land-use authorities**.

36. We recommend that the *Telecommunications Act* be amended to require the CRTC to **consult with the relevant municipality** or other public authority prior to exercising its discretion to grant permission to construct telecommunications facilities. We further recommend that the Act be amended to empower the CRTC to **review and vary the terms and conditions of access** to the support structures of provincially regulated utilities, to ensure non-discriminatory arrangements."

The above recommendations **impose on municipal authority** and **operations**. It is still not clear what the next steps are in the legislative review which was delayed due to the pandemic. It is expected to resume shortly, and The City will attempt to insert itself into the conversation to bring a municipal voice forward.

Advocacy and regulatory participation remain a high priority of the Fibre Infrastructure Strategy to protect municipal interests.

One Calgary (2019- 2022) Capital Budget

Due to reduced access to capital, the One Calgary (2019-2022) capital budget was significantly decreased compared to the Action Plan (2015-2018) budget.

Current and Future Operating Budget:

Current

The 2020 annual operating expenditure budget for the City Fibre Team is $1.888 million.

Future

The 2021 to 2022 annual operating expenditures for the City Fibre Team remains at $1.888 million.

Revenues derived from dark fibre licenses are applied to the operating budget. Modest increases in revenue are expected.

Current and Future Capital Budget:

Current

Total capital budget approved for 2019-2022 is $12 million.

These funds are committed for new fibre projects such as intelligent intersections, stranded facilities and next-generation City infrastructure.

An additional $6 million in capital infrastructure funding was obtained through the Government of Alberta Municipal Stimulus Program. This capital funding must be used in 2021.

Future

As network and fibre deployments continue to expand rapidly there may be future opportunities for partnerships and collaborations that provide funding to expand the fibre infrastructure.

In the 2019-2022 budget cycle, the Fibre Infrastructure Team will continue to focus on:

a. Leveraging capital projects such as Greenline, Bus Rapid Transit's Airport Trail, etc.
b. Collaborating with stakeholders such as Transportation, Water, Facility Management, Integrated Civic Facilities, Calgary Police Service, Calgary 911, Planning and Development, Real Estate & Development Services and ENMAX.
c. Pursuing alternate funding sources such as grants or joint builds.
d. Establishing partnerships to leverage opportunities to expand the fibre plant or generate additional revenues through technology advancements like 5G, automated meter reading, smart city applications, etc.
e. Reducing deployment costs by leveraging ENMAX's utility pole infrastructure.
f. Promoting and marketing dark fibre through speaking engagements.

Works Cited

Government of Canada Innovation, Science and Economic Development Canada and Canadian Heritage, "*Government of Canada launches review of Telecommunications and Broadcasting Acts",* https://www.canada.ca/en/canadian-heritage/news/2018/06/government-of-canada-launches-review-of-telecommunications-and-broadcasting-acts.html (June 5, 2018).

Government of Canada Innovation, Science and Economic Development Canada, Broadcasting and Telecommunications Legislative Review, "*What We Heard Report",* https://www.ic.gc.ca/eic/site/110.nsf/eng/00011.html (June 2019).

Government of Canada Innovation, Science and Economic Development Canada, Broadcasting and Telecommunications Legislative Review, "*Canada's communications future: Time to Act*"**,** https://www.ic.gc.ca/eic/site/110.nsf/vwapj/BTLR_Eng-V3.pdf/$file/BTLR_Eng-V3.pdf (January 2020).

BRIEFING

Item # 5.2.3

Deputy City Manager's Office Briefing to
Gas, Power and Telecommunications
2021 June 24

ISC: UNRESTRICTED
GPT2021-0674

Update on 5G Readiness – Wireless Infrastructure on City-Owned Assets

PURPOSE OF BRIEFING

The purpose of this briefing is to provide an update on The City's work to respond to inquiries from wireless service providers seeking access to municipal assets for the installation of small cell antennas and other wireless infrastructure.

SUPPORTING INFORMATION

What is 5G?

5G is a catch-all phrase for the 'fifth generation mobile network'. It is the next evolution in mobile and wireless technology. 4G and earlier generations required the use of macro cell sites such as towers and rooftop antennas.

Unlike previous generations, the successful implementation of 5G will require a densified network of small cell sites, attached to City and private assets. Most notably, City-owned street light poles are ideal support structures due to height, power availability and locations across the city.

Why is 5G important?

As outlined in the *5G and Connectivity* study commissioned by Calgary Economic Development, "While forecasts vary, 5G promises greater speed (to move more data), lower latency (to be more responsive) and the ability to connect far more devices at once (for sensors and smart devices). The 5G Council of Canada, an industry group of telecom operators, characterizes 5G as the 'next generation' of mobile wireless standards and technologies. It says 5G will enable a fully connected mobile society and deliver unprecedented benefits to citizens, industry and government." The study goes further to say, that "5G has great potential, but it is imperative to separate marketing from reality. 5G service offered in Canada in 2021 is a combination of 5G and 4G systems. A true, universal 5G network is still on the horizon."

Are there other factors impacting the rollout of 5G?

The rollout of 5G depends on the wireless service providers' investment commitments, which are generally market driven. An additional factor for the launch of 5G in Canada is related to the necessity for wireless service providers to acquire access to the radio frequency spectrum, which is managed by Innovation, Science and Economic Development Canada. Spectrum auctions began in March 2019 with the 600 MHz band. The auction for 3,500 MHz is scheduled to start on 2021 June 15. Administration anticipates that most of the initial inquiries and installations will enhance the current 4G network and lay the foundation for future 5G equipment.

Has there been any changes to the regulatory environment?

On 28 February 2019, the Canadian Radio-television and Telecommunications Commission (CRTC) issued a notice of consultation (Telecom Notice 2019-57) which included a review of the future of mobile wireless services in Canada, with a focus on reducing barriers to infrastructure deployment. On 2021 April 15, the CRTC published its decision (Telecom Regulatory Policy CRTC 2021-130).

The CRTC determined that there is no persuasive evidence that municipalities systematically act as barriers to deployment and the concept of municipal consent to right-of-way access is built into the Telecommunications Act. The CRTC's determinations are significant because they acknowledge the important role of municipalities and of municipal consent as a fundamental statutory prerequisite.

TELUS has sought leave to appeal aspects of CRTC's recent Regulatory Policy – Review of Mobile Wireless Services decision including the access to public property, filing an application with the Federal Court of Appeal. The appellant says the CRTC had boundary issues in its recent Wireless Review, failing to exercise its authority in one case; overreaching its jurisdiction in another. The appellant asserts that CRTC has the right to permit carriers to affix its equipment onto public places (e.g. light standards, lamp posts, bus shelters, and buildings) if a carrier is unable to obtain consent from municipalities. Yet at the same time, the appellant argues that CRTC overreached when it imposed new conditions on the national wireless carriers which conflict with the conditions of licence for spectrum licences; the power to issue this sort of condition lies solely with the Minister of Innovation, Science and Economic Development and that department.

Is The City ready?

To support innovation and remain an attractive city to start or grow a business, The City has established a streamlined approach for wireless service providers (WSPs) to inquire about accessing designated City-owned assets to install WSP-owned wireless equipment.

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

Two WSPs have subsequently 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 WSPs, and sets out the framework for the efficient and timely attachment of WSP wireless equipment onto City-owned and operated assets.

Industry Update on Electricity, Natural Gas and Telecommunications

RECOMMENDATION(S):

That the Gas, Power and Telecommunications Committee:

1. Receive this report for the Corporate Record and for discussion.

HIGHLIGHTS

- The Gas, Power and Telecommunications Committee has requested that this report be prepared every second meeting.
- Natural gas and electricity markets are analyzed to provide an understanding of energy prices which affect The City's utility costs, Calgarians who pay for utility services and franchise fee revenue.
- Policy issues in Alberta's regulated utilities and general utility industry developments that could have an impact on The City's interests are reviewed to keep committee members informed of issues that may require future regulatory intervention or impact The City's operations.
- Attachment 1 provides details on recent developments in Alberta's utilities industry.
- This report is in alignment with the mandate of the Gas, Power and Telecommunications Committee.

DISCUSSION

- In this report the recent Regulated Rates for Electricity and Natural Gas are graphed.
- The remainder of this report consists of analysis on utility and telecommunications topics.

STAKEHOLDER ENGAGEMENT AND COMMUNICATION (EXTERNAL)

☒ Public Communication or Engagement was not required

IMPLICATIONS

Social

This report aligns with The City's Triple Bottom Line Policy Framework. The analysis determined that no social implications were applicable.

Environmental

This report aligns with The City's Triple Bottom Line Policy Framework. The analysis determined that no environmental implications were applicable.

Economic

This report aligns with The City's Triple Bottom Line Policy Framework. The analysis determined that no economic implications were applicable.

Service and Financial Implications

Industry Update on Electricity, Natural Gas and Telecommunications

No anticipated financial impact

RISK

No business plan implications arise from this report.

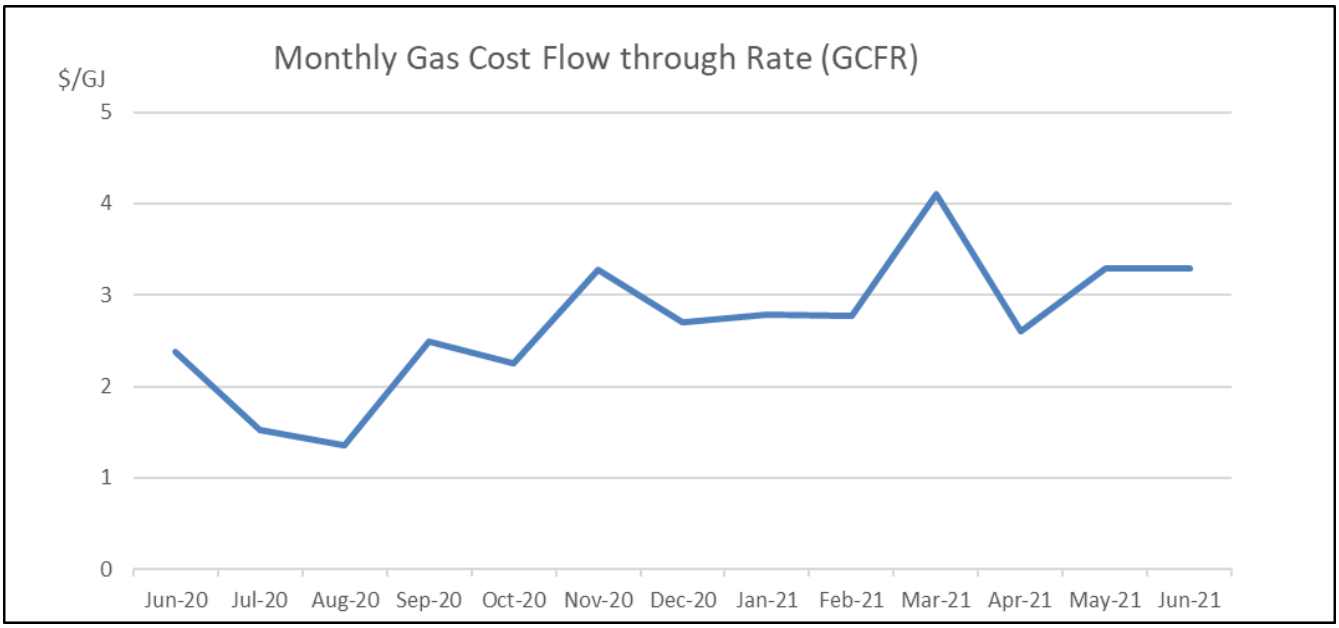
ATTACHMENT(S)

1. Attachment 1 - Industry Update on Electricity, Natural Gas and Telecommunications

ENERGY PRICES AND MARKETS

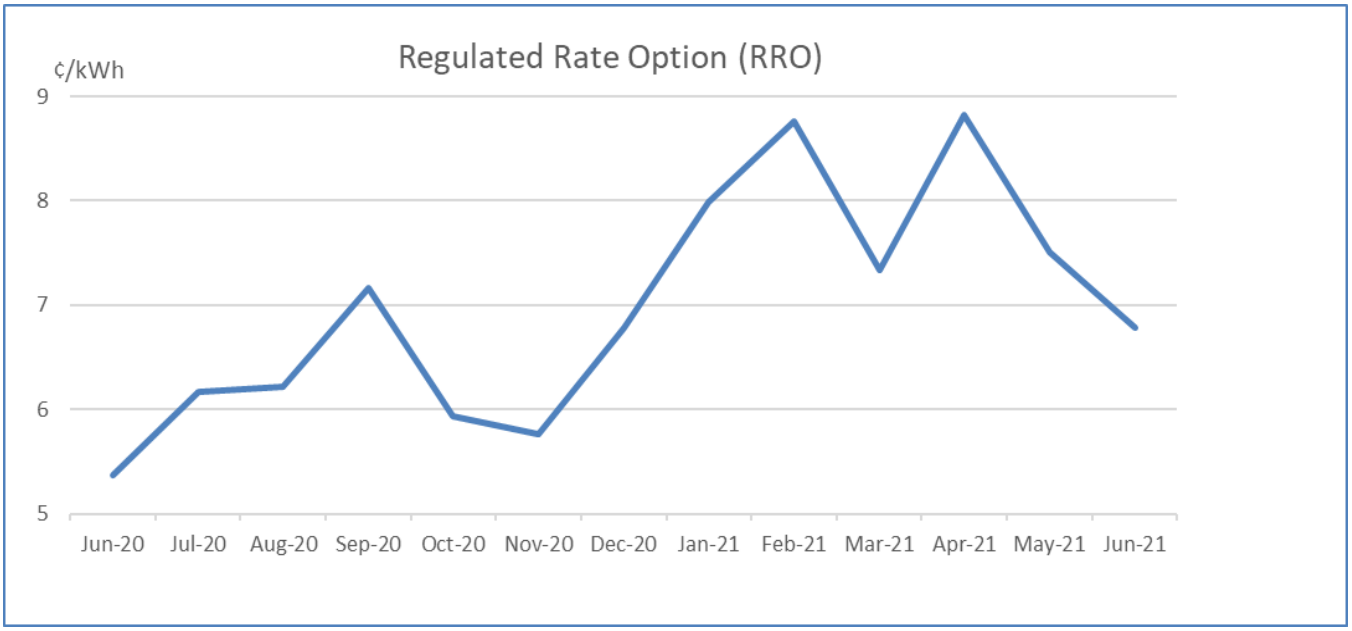
Natural Gas

The 2021 June gas cost flow-through rate was $3.28 per gigajoule. The generally accepted natural gas industry price forecast is for relatively stable prices through 2021.



Electricity

The ENMAX regulated rate option price for 2021 June was 6.78 cents per kilowatt-hour.



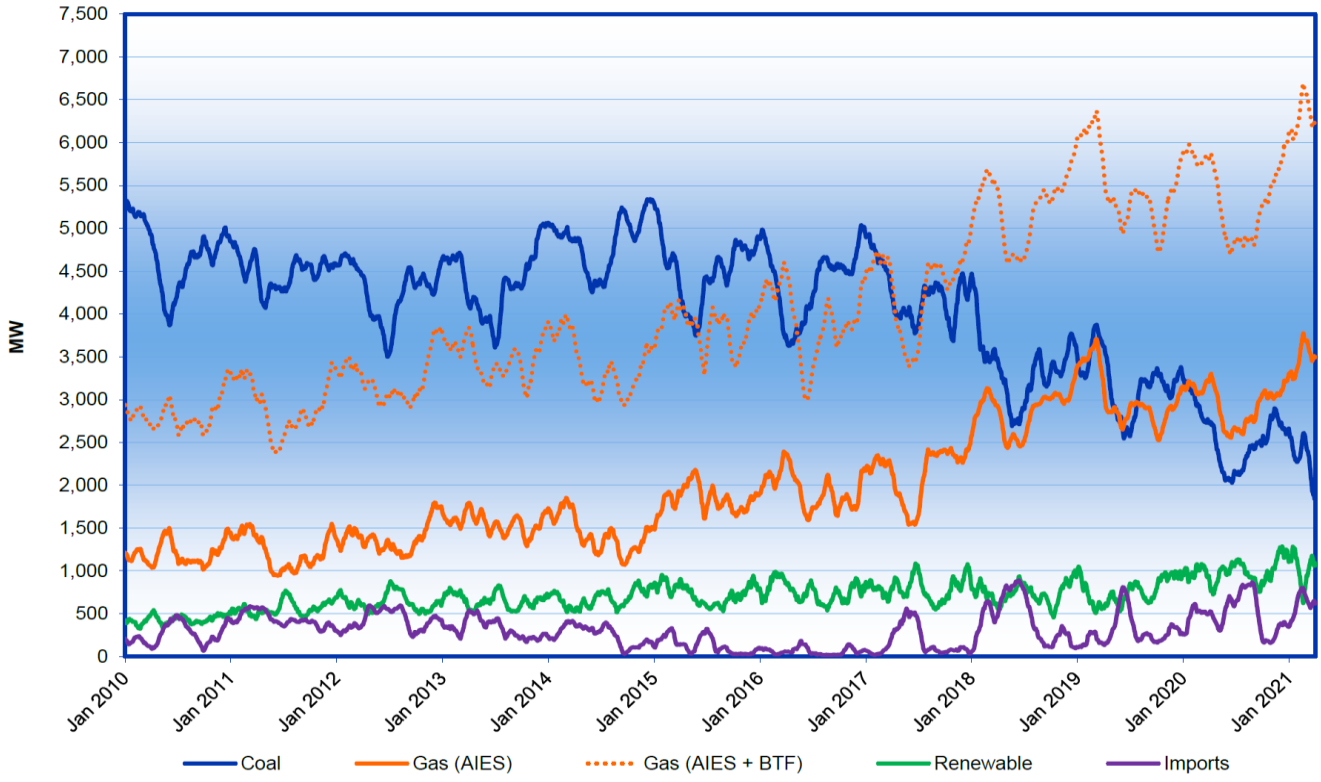
The month to date all-hours average power pool price for 2021 May 31 was 8.21 cents per kilowatt-hour. For reference, the all-hours average price for 2020 May was 2.64 cents per

kilowatt-hour. The generally accepted power industry price forecast has prices averaging at 7.32 cents per kilowatt-hour for the remainder of 2021.

UTILITIES AND INDUSTRY DEVELOPMENTS

End of Alberta coal generation near?

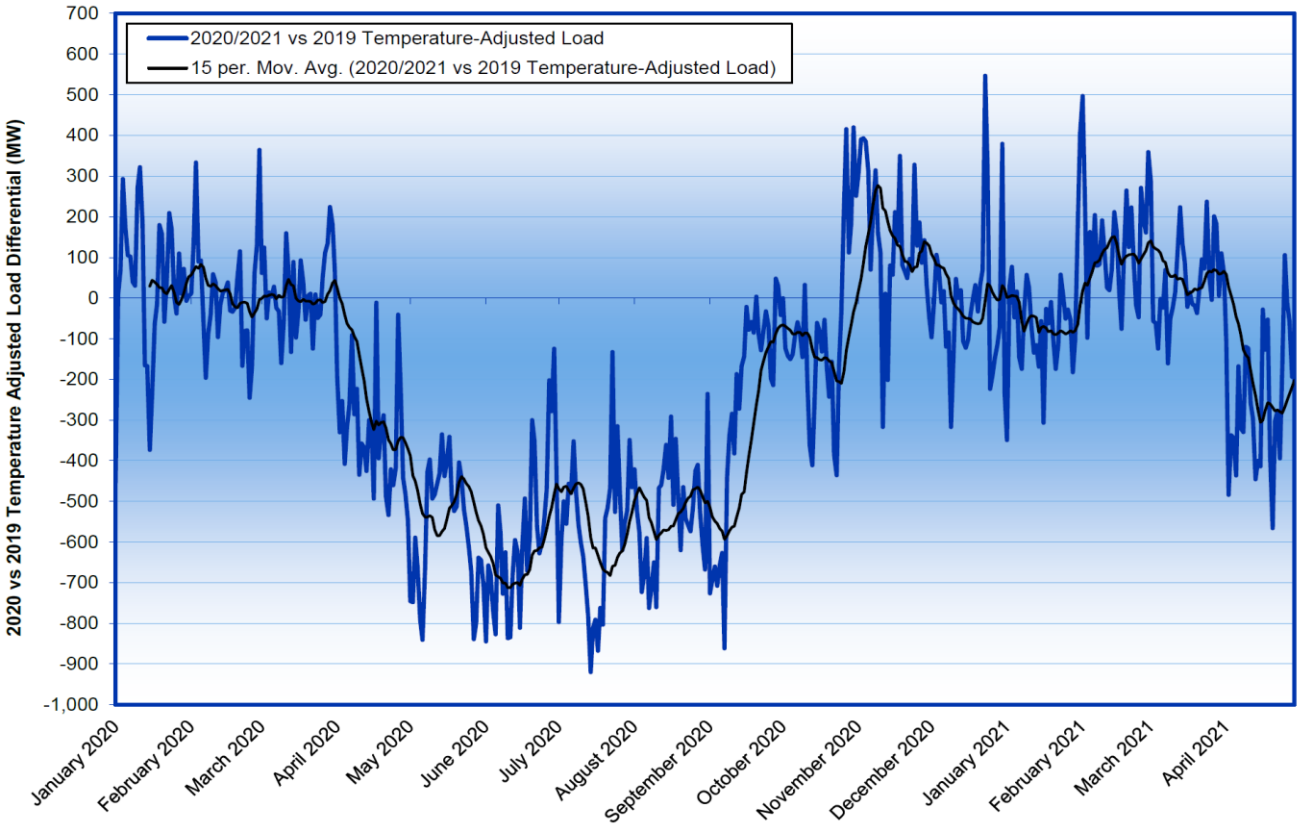
The graph below shows the steady decline of coal-fired output (solid blue line) since 2017. This decline is a result of coal generation unit mothballs/retirements/conversions due to the combination of low Alberta natural gas prices and accelerating environmental compliance costs. The lost coal-fired output has been primarily absorbed by gas-fired generation (solid orange line). Based on current announcements, Alberta is expected to be completely off coal with respect to the generation of electricity, by the end of 2023. For reference, Alberta has about 30 billion tonnes of coal reserves. An average of 25 to 30 million tonnes of coal is produced each year from Alberta's 9 mines.



*AIES – Alberta Interconnected Electric System
** BTF – behind-the-fence (generation behind the meter, primarily for on-site use)

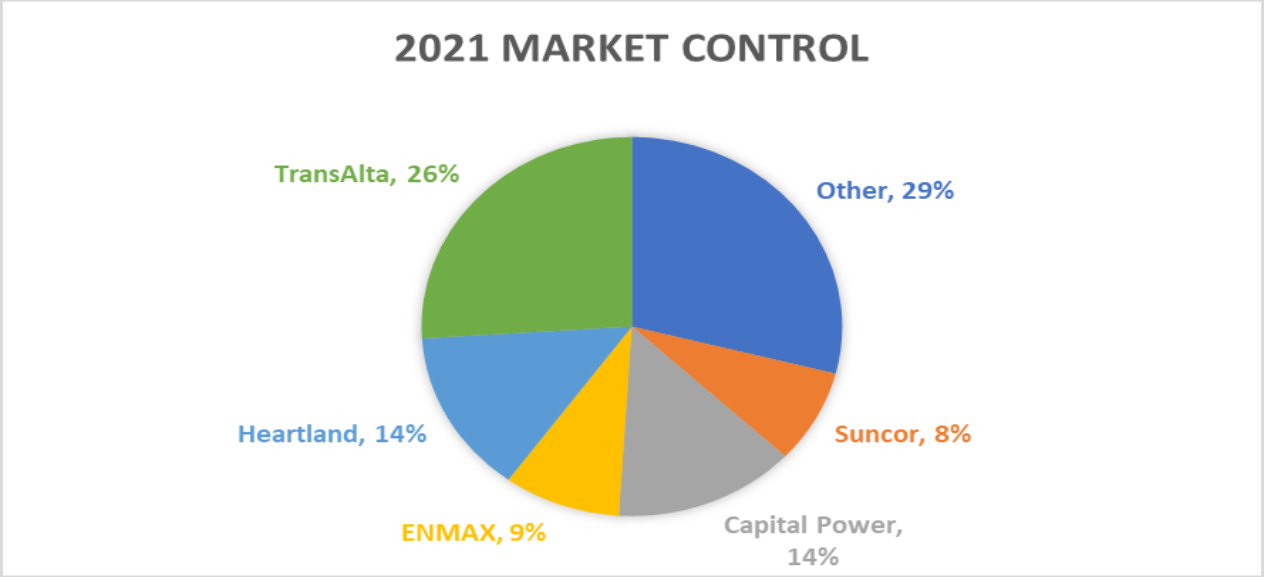
Impact of Covid-19 on Alberta electricity demand

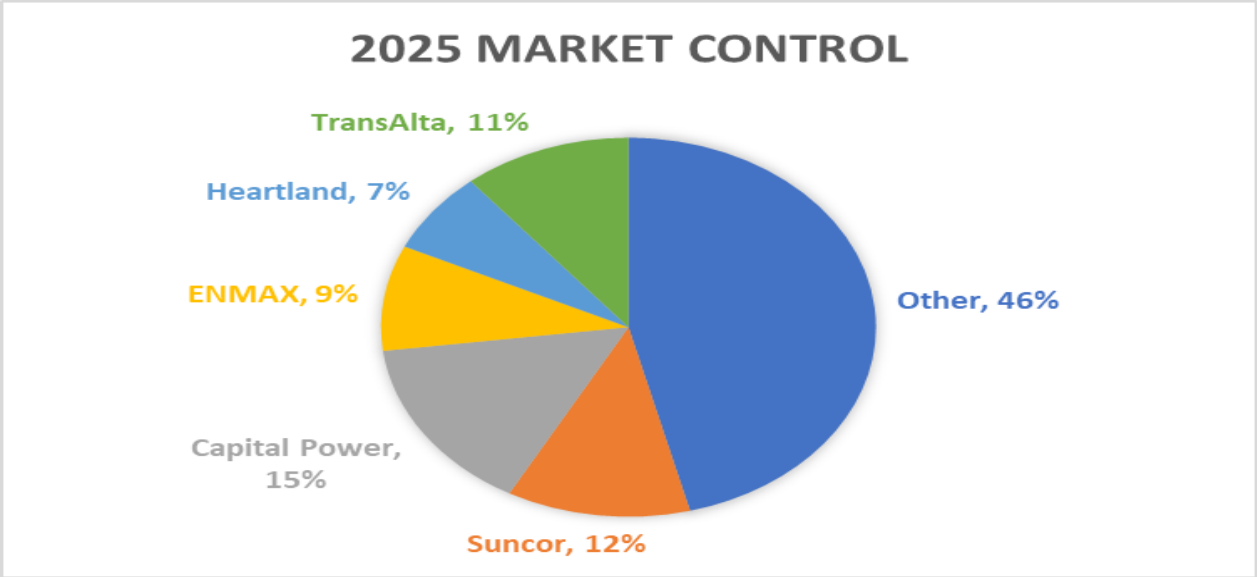
The graph below illustrates the daily temperature-adjusted load differential compared to 2019 (pre-COVID conditions) which shows that the electricity demand destruction reached 900 MW at its peak. Alberta was able to push back into strong positive territory at the beginning of the year as crude oil production returned and many businesses started reopening. However, increased restrictions in April to try to contain surging cases of COVID-19 eventually put enough downwards pressure on electricity demand that the province's weather-adjusted load returned to being negative relative to pre-pandemic 2019 levels.



Alberta electricity market control

The power market in Alberta remains in a state of limited competition, in which the market is shared by a small number of electricity generators (known as an oligopoly). The first pie chart shows the current market share and the chart below it shows the expected change in market share that is forecast to occur over the next five years or so.





*2025 forecast from EDC Associates Q2-2021 Forecast Update

The growing blue piece of the pie represents smaller independent power producers coming on-line. However the so-called “big-five” are still forecast to maintain control over half of the Alberta power generation in the near future.

TELECOMMUNICATIONS DEVELOPMENTS

Canadian Telecomm regulator ruling in favor of “Big-Three”

On 2021 May 27 the Canadian Radio-television and Telecommunications Commission (CRTC) ruled that it would not significantly lower the rates that small companies must pay to access the high-speed broadband networks of larger rivals, including Bell Communications, Telus Corporation and Rogers Communications, known as the Big Three.

That followed a CRTC ruling in 2021 April when it asked large telecom firms to offer wholesale wireless access to so-called smaller companies known in the industry as Mobile Virtual Network Operators (MVNOs). These smaller competitors could then resell the capacity at reduced retail prices and pass on the savings to consumers.

This ruling will allow the big carriers to charge rates similar to those that were originally set in 2016 for wholesale access to their broadband networks.

The Big Three operators control 89.2% of subscribers and 90.7% of revenue in Canada's telecom industry. Analysts have warned the market concentration will only intensify if Rogers' planned $26 billion acquisition of Shaw Communications is allowed to proceed. Regulatory will continue to monitor and report on the progress of the proposed transaction of Rogers acquiring Shaw.

Telus appealing Canadian Telecomm Regulator Decision

In 2019 January, the CRTC launched a national review of wireless services (Telecom Notice 2019-57). The consultations had three focus areas:

1. Competition in the retail wireless market;
2. The wholesale regulatory framework, including access by competitors to existing wireless networks; and
3. **The future of mobile wireless services in Canada, with a focus on reducing barriers to infrastructure deployment (related to 5G deployment)** ***[emphasis added]***

As the consultations unfolded, several carriers argued that municipalities constituted a barrier to the future deployment of 5G technology.

The Federation of Canadian Municipalities (FCM) organized a strong response to these attempts at sidelining the municipal role in rights-of-way management and municipal control over other taxpayer assets.

On 2021 April 15, the CRTC published its decision: **Telecom Regulatory Policy 2021-130** which supported the role of municipalities.

On May 14, 2021 TELUS filed a leave to appeal the recent CRTC decision to the Federal Courts. TELUS was opposed to the CRTC's assertion that they did not have the authority to allow carriers to "break-up" the roads and other municipal assets (Street Light Poles) to install wireless (5G) equipment. TELUS also asserted their carriers should have access rights to all public assets.

FCM is planning a response to TELUS' appeal which is due 2021 June, 20. The City of Calgary has supplied FCM with arguments for their submission.