

Attachment 3: RouteAhead Annual Report

Introduction

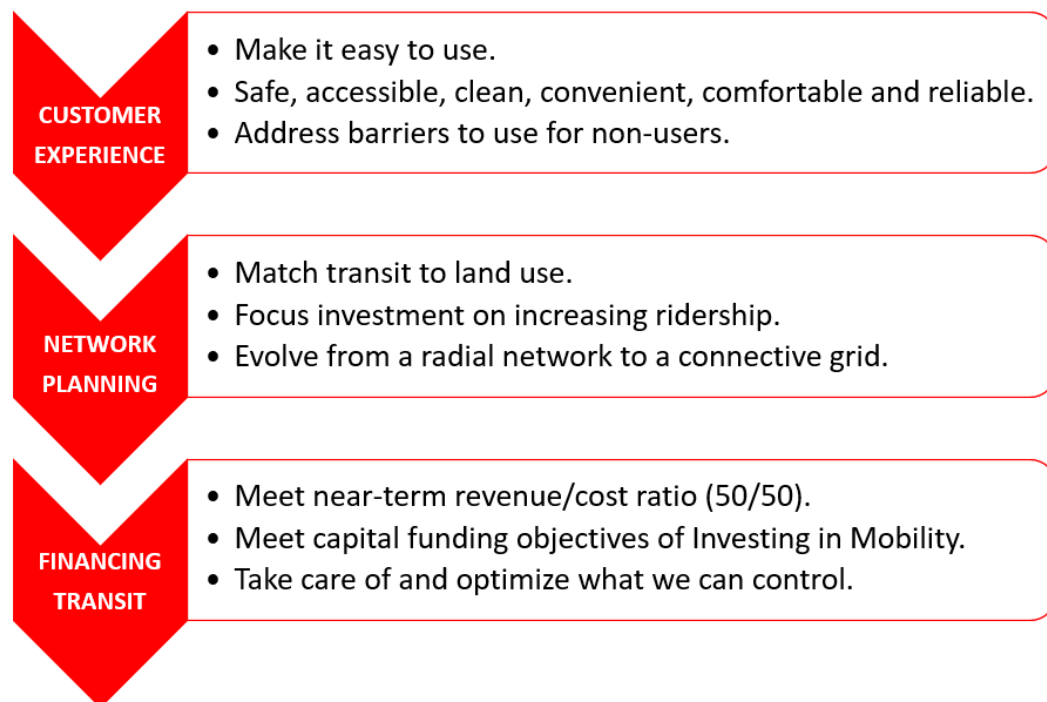
The COVID-19 pandemic has impacted transit ridership, revenues and service delivery in ways that could not be foreseen in 2019. At the height of the pandemic in April 2020, ridership was approximately 14 per cent of 2019 levels. By fall 2021, the return of activity was seen in the ridership on Calgary Transit, which increased to approximately 40 per cent of pre-pandemic levels in December 2021, and is currently sitting at 39 per cent of pre-pandemic levels with 75% of pre-pandemic service as of mid-January 2022. Calgary Transit Access (CTA) shared ride trips were approximately half of pre-pandemic levels in December 2021, and approximately 43 per cent of pre-pandemic levels in mid-January 2022.

Calgary Transit surveys suggest customer satisfaction has declined amongst transit users, with continued fatigue from the pandemic and uncertainty about returning to work. The return to normal ridership will take time. Calgary Transit anticipates ridership in 2022 will increase to 60-75 per cent of pre-pandemic levels. Ridership return is dependent on several factors, including public health guidance, work from home policies, in-class learning, and levels of perceived comfort with transit.

Outline

This report serves as Calgary Transit's 2021 annual update on the status of RouteAhead: a 30-Year Strategic Plan for Transit in Calgary, approved by Council in March 2013. RouteAhead is organized around the following core principles outlined in Figure 1.

Figure 1: Core Principles for Public Transit in Calgary.



An overview of the customer experience amid the COVID-19 pandemic and recovery is described in the first section of this report. Current and upcoming initiatives to improve the customer experience as part of Calgary Transit's recovery in 2021 and beyond are also described. The next section focuses on network planning, including capital projects, fleet and facilities. The last section of this report focuses on financing transit amid the current and projected impacts on revenues due to the pandemic. Strategies to mitigate the impacts on ridership/revenues are discussed, including fare strategy, On Demand service, and application of "Mobility as a Service" (MaaS).

Customer Experience

Customer Commitment & Surveys

Calgary Transit's Customer Commitment is a promise to deliver the six qualities of service customers and employees identified as the most important: safe, reliable, helpful, informative, easy to use, and clean. It shows what Calgary Transits strives to achieve, projects to invest in, and initiatives that positively impact customer experience.

Calgary Transit conducts regular customer research to determine customer perceptions and needs, monitor trends, collect data for decision making, tracking of metrics, and provide actionable business intelligence on the Customer Commitment and other metrics.

In 2018, Calgary Transit implemented a monthly tracker of Calgary Transit Users. The goal of this research was to focus on the most recent trip (within the last seven days) to capture dynamic customer feedback across multiple service divisions. The monthly tracker was put on hold following March 2020 when the pandemic caused a significant reduction in ridership. In January 2021 the monthly tracker was reinstated.

Key findings from the 2021 monthly trackers include:

1. Continued fatigue from the pandemic is negatively impacting current and especially former customer's long-term choices around transit use.
2. Ratings are down strongly across most metrics and there is sometimes not a direct reason why, but it's believed to be linked to general pessimism from the pandemic.
3. Service impacts from cutbacks and adjustments are straining customer limits with overall trip times.
4. Many former customers are unsure when they'll be returning to the office and therefore when they would need to use transit again.
5. Safety related to security is becoming a larger customer concern as the pandemic goes on.

Despite a significant reduction in overall trip satisfaction from 89 per cent in Q1 2020 to 77 per cent in Q2 2021, Figure 2 demonstrates satisfaction scores rebounded to 83 per cent in Q3 2021, with 2021 results highlighted in the grey box. Results of trip satisfaction analysis, displayed in Figure 3, continue to showcase the importance of trip length and the overall

transfer experience. Overall, these two-trip features account for 48 per cent of riders' overall trip satisfaction.

Figure 2: Overall Satisfaction with Transit Trip from Q1 2018 to Q3 2021.

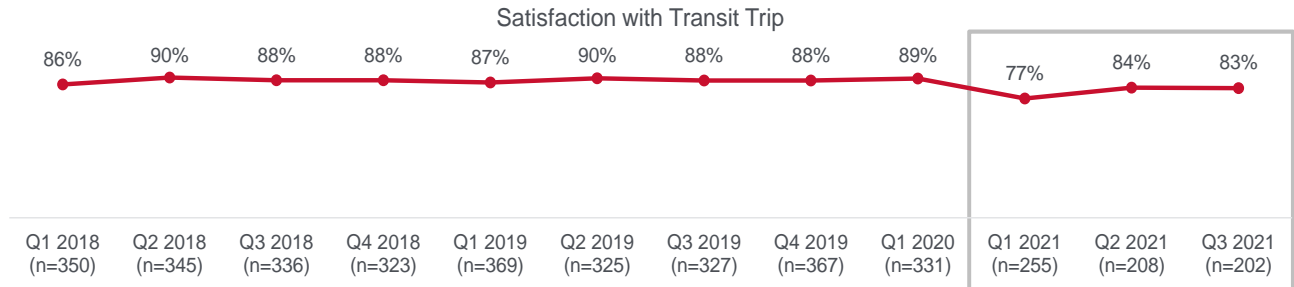
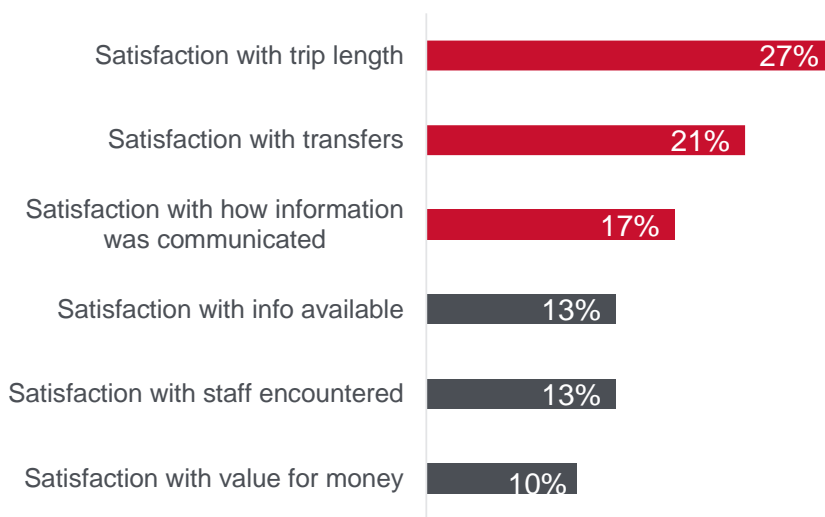


Figure 3: Key Drivers of Overall Trip Satisfaction for Q3 2021. A higher percentage indicates strength of importance for customers when determining satisfaction with their trip.

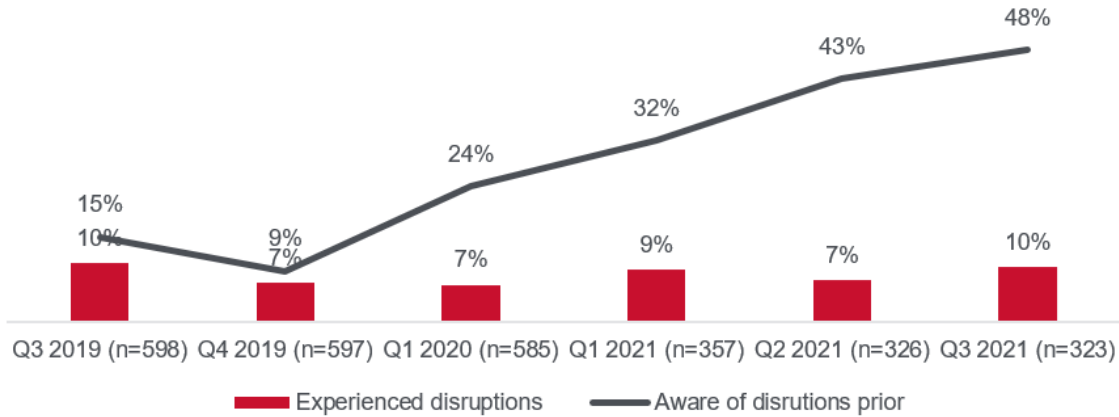


The greatest area of improvement is rider awareness of disruptions such as delays or changes to their routes during their trip prior to departing for their trip. As seen in Figure 4, 48 per cent of riders in Q3 2021 noted they were aware of disruptions, compared to only 9 per cent in Q4 2019, and 32 per cent in Q1 2021. These results continue to support the notion that riders are looking for transit to provide them with fast, efficient, and hassle-free travel.

Figure 4: Passenger Awareness of Disruptions and Experiences of Disruptions.

DISRUPTIONS

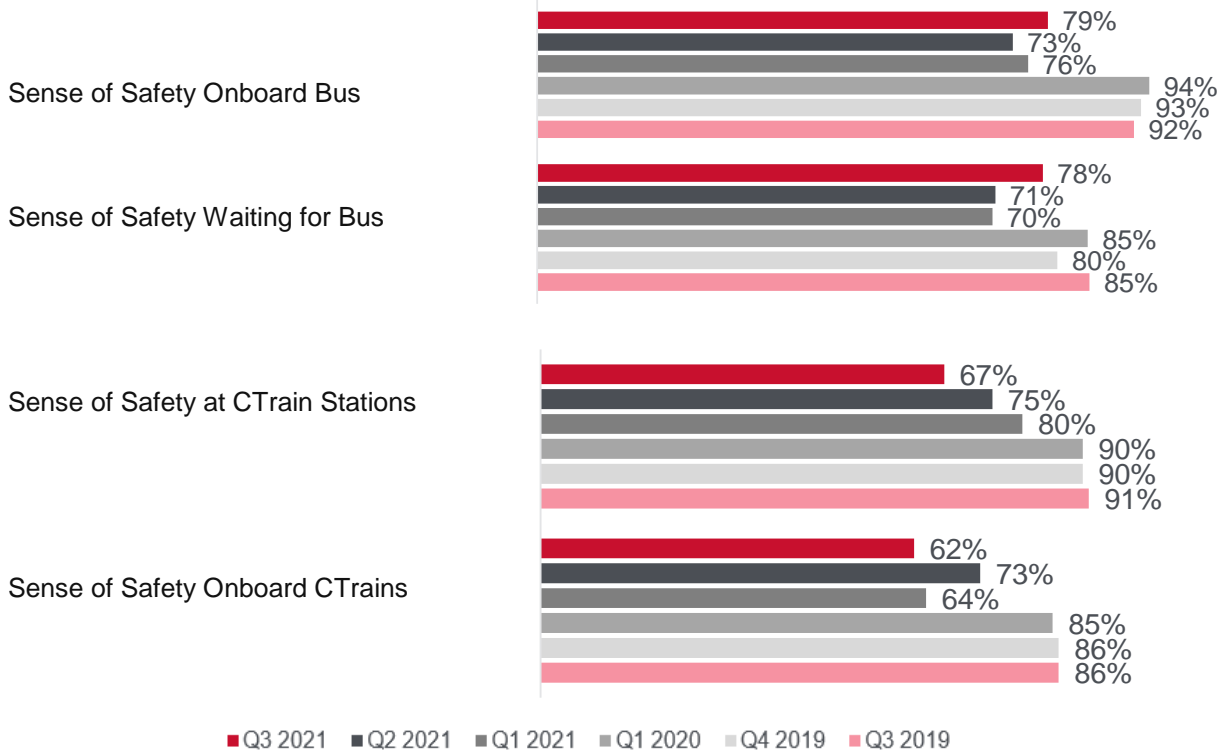
Q. Did you experience any service disruptions such as delays or changes to your routes during your trip?



Continued improvement to customer satisfaction areas will also likely play a role in improving perceptions of value for money. Research to date shows the importance of speed and ease of travel, which directly relates to the personal value for money. As riders spend less time on transit, they have an easier and hassle-free experience. By continuing to focus on the speed of Transit and the transfer experience, Calgary Transit will have a significant impact on several aspects of rider satisfaction.

Perceptions of safety and security both onboard and while waiting for Transit present an opportunity for improvement moving forward. Figure 5 reveals feelings of safety while waiting for and while onboard buses and CTrains have yet to return to pre-pandemic levels, as results from 2021 continue to mark the lowest levels of satisfaction pertaining to safety and security. The COVID-19 pandemic will have long lasting impacts on riders' levels of comfort, and it will be important to better understand the ways in which Calgary Transit can provide feelings of comfort and safety to its riders.

Figure 5: Customer Perceptions of Safety and Security from Q3 2019 to Q3 2021.



Similar to ratings of safety and security, riders continue to report lower levels of comfort onboard buses (69 per cent Q3 2021) and CTrains (72 per cent Q3 2021). September 2021 saw the lowest ratings to date with comfort onboard buses at 49 per cent and CTrains at 65 per cent. These results are consistent with those found in Leger’s Monthly COVID-19 tracker which demonstrated Canadians in general are significantly less comfortable riding public transportation than prior to the pandemic, and levels of comfort have continued to decline over time. Elements of comfort must be expanded beyond the physical environment to consider the psychological environment as riders may have concerns regarding the “invisible threats” related to COVID-19. Significant impacts to comfort since the start of the pandemic suggests levels of comfort go well beyond the physical environment offered by Calgary Transit.

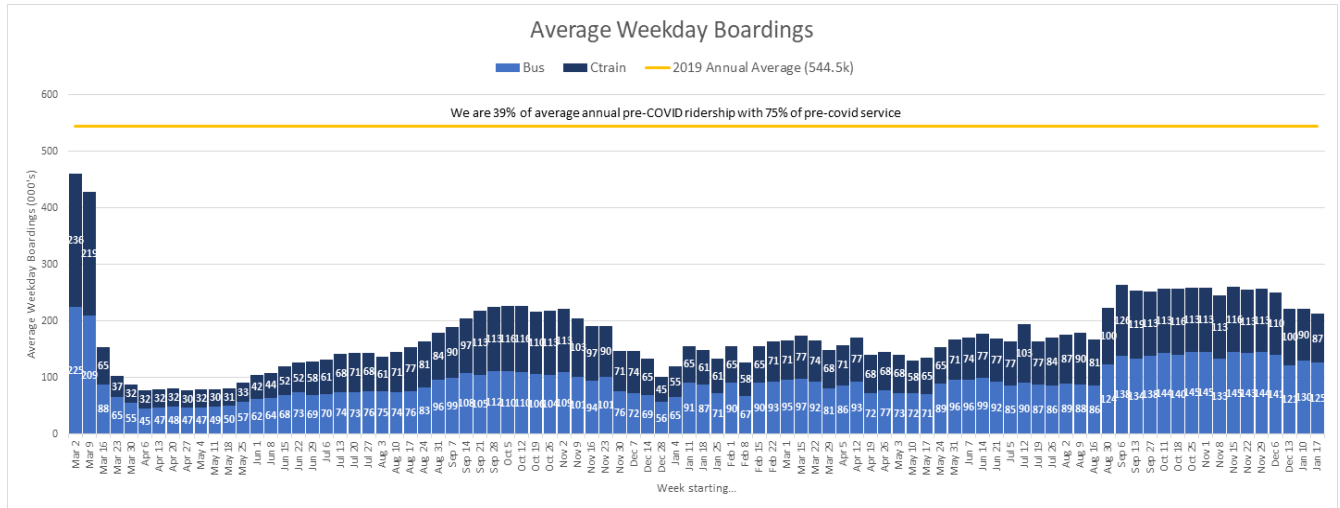
As the COVID-19 pandemic has invariably altered customer perceptions and foundationally changed the rider experience, Calgary Transit is recalibrating customer perceptions and experience baselines and actively working to analyze direct experience data to understand what areas have changed. Calgary Transit is looking at specific areas to determine why and what customer perceptions and expectations are, particularly in areas such as safety, security, and cleanliness.

Ridership Trends

Figure 6 displays average weekday boardings on Calgary Transit since the start of the pandemic. After experiencing a significant drop in ridership in April 2020 with 77,000 boardings-per-weekday at the lowest point, Calgary Transit ridership grew to approximately 220,000

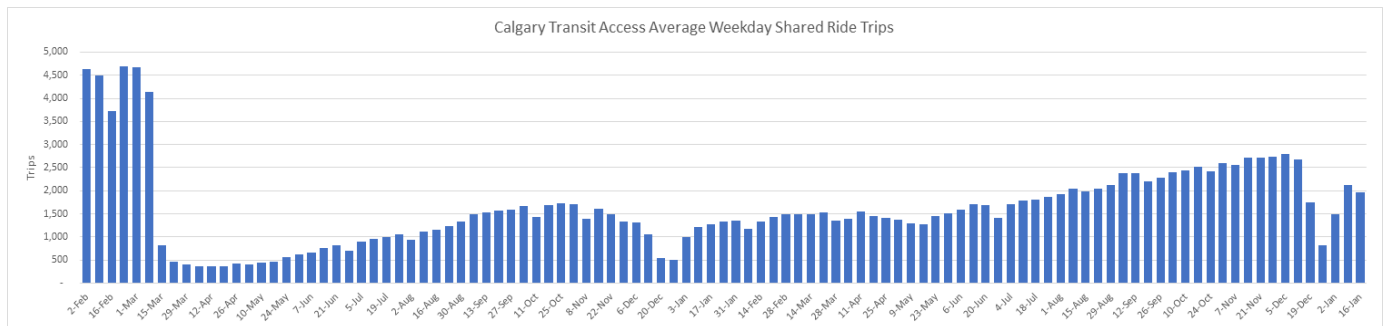
boardings-per-weekday as of 2021 December 13, or 41 per cent of pre-pandemic levels. This is compared to approximately 428,000 boardings-per-weekday prior to the start of the pandemic in Alberta (2020 March 9). As of the week of January 17, 2022, boardings-per-weekday are 212,000, or approximately 39 per cent of pre-pandemic levels.

Figure 6: Average Weekday Boardings for Calgary Transit on Buses and CTrains, from March 2020 to January 2022.



Calgary Transit Access service was similarly impacted according to Figure 7. On the average weekday prior to the pandemic, Calgary Transit Access delivered approximately 5,000 trips. Trips delivered declined 90 per cent initially in spring 2020. Demand has slowly risen, and as of December 13 CTA trips were more than half of pre-pandemic levels with approximately 2,700 per average weekday. As of January 24, shared rides reached 1900, or approximately 43 per cent of pre-pandemic levels.

Figure 7: Calgary Transit Access Average Weekday Shared Ride Trips from February 2020 to January 2022.



Ridership Recovery Projections

Based on current trends and modeling Calgary Transit projects transit ridership returning to 60-75 per cent of pre-COVID (2019) ridership by the end of 2022. While ridership was seen to steadily increase over 2021, factors including customer comfort, perceived levels of risk, post-secondary attendance, and work from home arrangements are changing travel patterns and mode choice for transit customers and Calgarians more broadly.

Calgary Transit is monitoring city wide transportation trends to position itself to increase ridership through the pandemic recovery and adapt to changing customer and travel behaviors. Calgary Transit is also utilizing investments in new technologies to proactively monitor ridership and customer behaviors as ridership recovers.

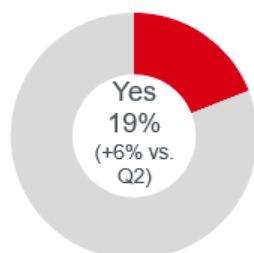
My Fare Phase 2 Implementation

The first phase of My Fare launched in 2020 and included only regular adult and youth fare products. In 2021, Calgary Transit expanded My Fare to offer the UPass, making the transit experience easier and more convenient for post-secondary students. This addition will provide valuable information to Calgary Transit about how the service is being used, giving more accurate data about whether the UPass program cost structure is still appropriate.

My Fare sales reached \$12M in 2021, representing 17 per cent of total fare revenues for the year, surpassing the goal of 10 per cent sales. Figure 8 shows in the Q3 2021 Monthly Tracker My Fare usage increased 6 per cent among respondents. Eighty-nine per cent of customers using My Fare were satisfied with the app.

Figure 8: Survey Respondents who Used My Fare and Satisfaction Levels with My Fare App.

Q. Did you purchase your fare using Calgary Transit's MyFare app on your phone? (Q3 2021, base n=328)



Among riders who did purchase their fare using the MyFare app, **89% (Top 4 Box)** were satisfied with the app.

Safety & Security

Providing a safe transit system is one of the Calgary Transit's customer commitments. Since the onset of the COVID-19 pandemic, Calgary Transit increased cleaning procedures for all fleet and transit facilities. In addition to nightly deep cleans of fleet and CTrain stations, Calgary Transit has "on-the-go" cleaning crews who wipe high-touchpoint surfaces like buttons, railings and handles on CTrains, stations, and bus routes.

To support customers who may feel unsafe, in addition to Help phones located at all stations and in CTrain cars, Calgary Transit launched a text line in 2019 for customers to discreetly report immediate safety or security concerns. The TransitWatch text line (74100) can be used anywhere, anytime and Calgary Transit staff will dispatch officers if needed, this early reporting is key to officers being able to address issues quickly.

The opioid crises along with the COVID-19 pandemic has created some unique challenges and Calgary Transit is collaborating with several agencies to provide appropriate support options. Calgary Transit is currently working on a safety campaign using new methods, like having officers in plainclothes monitor the system. Calgary Transit hired 12 Peace Officers in late 2021 and received additional funding for 10 Peace Officers as part of the 2022 budget adjustments. The Community Outreach partnership with the Alpha House and the DOAP (Downtown Outreach Addictions Program) Team also expanded from one partnership to four, allowing increased weekday coverage and extended coverage to weekends and evenings. This is in addition to the regular patrol teams of Peace Officers who are on duty 24/7. The DOAP Transit team is unique in that it focuses on vulnerable citizens who use the system and works to connect them with resources such as addictions supports and housing. For example, the DOAP Team had up to 14 vans in service throughout each 24-hour period through the recent cold snap. From December 31 to January 2, the DOAP Team received 278 calls, resulting in 164 transports and 128 welfare checks.

With winter weather, CTrain stations are becoming 'unsupervised warming centres.' Calgary Transit is working closely with multiple business units to coordinate a response that balances the safety and needs of both unhoused Calgarians and other Transit customers. The Safety for All Plan was established to respond to a significant rise in safety concerns at CTrain stations, since they do not have necessary amenities (heat, washrooms) to support wellbeing or address emergencies. Taking a compassionate approach and partnering with emergency shelters and the Calgary Police, Calgary Transit is making every effort to support those living rough at transit facilities. Starting Monday, January 10, several LRT stations were closed to support moving those sheltering at stations to better-resourced community shelter facilities. Calgary Transit, in partnership with other organizations, offered temporary transport to shelters from CTrain stations, support services during relocation, and coordination with shelter facilities.

Calgary Transit Access

Calgary Transit continued to improve accessibility by procuring a new fleet of low-floor Calgary Transit Access shuttle vehicles in 2021. Part of the criteria in selection of the new bus was customer accessibility, safety and employee comfort. This is the first time The City of Calgary has purchased paratransit vehicles. The shuttles are currently being tested by CTA and they are expected to be in service in Q2 2022.

Network Planning

RouteAhead 10-Year Update & Updated Project Prioritization

A comprehensive review of RouteAhead is planned for 2022 to ensure it remains current and practical for decision makers and aligns with the new Municipal Development Plan and Calgary Transportation Plan. RouteAhead contains assumptions and forecasts now 10 years old. These

should be updated to reflect land use plans and data available today and current information on project plans. New route alignments and updated cost/benefit information is also available. The RouteAhead update will not be as intensive as the process to create the original plan but will include public engagement, comprehensive analysis, and review and approval by City Council.

The updated Plan will focus on:

- Describing mobility for transit customers over the next 30-years to align with Municipal Development Plan and Calgary Transportation Plan goals and changing development patterns.
- Describing what a strong transit system provides to support economic development and global competitiveness.
- Driving customer and citizen value in collaboration with other business units and departments.
- Identifying best practices to ensure the customer service-oriented culture at Calgary Transit is continually improved.
- Identifying service hour increases required to meet the objectives of the Calgary Transportation Plan (CTP).
- Identifying the ways in which services that are delivered may need to change over time to meet CTP long-term goals.
- Identifying a model of cost, revenues, and fares that will facilitate service delivery objectives.
- Incorporating opportunities from emerging trends in the transit industry (i.e. climate change, greenhouse gas reduction, changing travel patterns).
- Guiding future network planning (i.e. new rapid transit projects and Primary Transit Network corridors).

The RouteAhead update provides the opportunity to incorporate the following tools and innovations in greater detail:

- Application of Calgary's Equity Analysis Tool.
- Regional Transportation Model updates.
- Emerging trends in data and technology.
- Fare integration, and its opportunities for regional transit.
- Smaller, non-route related capital projects packaged together as programs (i.e. bike racks, all-door boarding, operator washrooms).
- A programmatic approach to project planning that packages transit projects with other City capital priorities.
- Multi-modal integration to meet CTP goals and targets.
- Revising the revenue/cost ratio.
- Opportunities for low or zero emissions vehicles.

The RouteAhead 10-Year Update presents an opportunity to inform Council's four-year budget cycle planning by identifying key transit capital investments. The updated plan may also aim to

address current gaps addressed in RouteAhead, including operational funding commitments and ridership growth in new communities.

Council approved a revised RouteAhead Rapid Transit Project Prioritization list in December 2020. The RouteAhead 10-Year update will contain an updated project prioritization list and involve collaborative work across the Corporation. A key aspect of the updated prioritization list will be to rethink and enhance infrastructure investment coordination by packaging individual transit projects with other business unit projects into broader corporate programs. This approach will enable The City to drive best value for Calgarians throughout the life of capital infrastructure.

The RouteAhead 10-Year Update will not involve:

- Changes or revisions to the three core principles/sections of RouteAhead (customer experience, network planning, financing transit).
- Updates to RouteAhead requiring amendments to the CTP or MDP.
- Reviewing the specifics of individual routes or individual capital project/rapid transit network planning in detail. Routes will be discussed as part of the overall network.
- Review of specific services (i.e. Park and Ride, CTA).
- Specific service delivery models (i.e. P3).
- Extension of the downtown free fare zone or introduction of fare-free public transit.

Calgary Transit is anticipating to return to Council no later than Q4 2022 with the RouteAhead 10-Year Review and associated updated rapid transit project prioritization list.

Green Line Stage 1 & SE Calgary Operating Investments

Local bus routes that feed into Green Line stations from nearby communities are an important component of the overall transit network and help support Green Line ridership. Along with capital construction of the Green Line, the bus network in SE Calgary will undergo a redesign to optimize connections to Green Line stations and improve overall transit efficiency. Currently, there is a shortfall in operating funding in SE Calgary compared to some other parts of the city. An investment of approximately \$25M in bus operating costs is required in advance of Green Line opening day to ensure the local bus network is attractive to customers and maximizes the benefit provided by the new Green Line. The \$25M investment is expected to be partially offset by revenue generation from ridership and bus efficiency savings upon opening of Green Line.

Fall 2021 Service Reintroduction

Effective August 30, 2021 Calgary Transit focussed on strategically restoring some of the service that was reduced due to the COVID-19 pandemic. Transit service hours were reduced by 30 per cent in May 2020 to account for changing travel behaviors and to implement cost savings. The easing of health restrictions and growing ridership in 2021 led to August 30, 2021 service levels reaching approximately 85 per cent of pre-pandemic service. The fall service changes saw many express and school express routes restored as in-person learning for elementary and high schools and post-secondary institutions was reinstated.

Before the COVID-19 pandemic began, Calgary Transit had been reviewing several express routes to see if they're providing the best value for Calgarians. Several SE routes were identified for improvement. During fall 2021 service changes, four express routes were consolidated in Douglasdale, Douglas Glen, McKenzie Lake and Cranston to one express route: Route 131 – East Bow Express. The new route provides similar coverage for the area while being more resilient to changes in ridership. There will be less risk of service being reduced or suspended and more flexibility to add service or use larger buses, depending on customer needs.

Calgary Transit also launched service to the City of Chestermere in the fall of 2021. The service is an extension of MAX Purple for two-trips twice a day (two trips during a.m. peak and two during p.m. peak). The trips see MAX Purple continuing its route past East Hills where it currently stops and then on to Chestermere. From start of service August 30, 2021 until mid-January 2022, the service averaged 16 daily boardings. Existing Calgary bus routes are not impacted, and all incremental costs for the service area covered by the City of Chestermere.

On Demand

In 2018 Calgary Transit initiated a pilot project to investigate the benefits and challenges associated with On Demand transit service in the Calgary context. On Demand transit service is a technology-based solution that matches customer trip requests with transit operators/vehicles to provide shared-ride trips in an efficient and timely manner. Research from other jurisdictions indicated a mix of positive and negative outcomes for this service model depending on a variety of factors. In the Calgary context, it was determined this service had the potential to provide positive outcomes in terms of reducing operating costs, introducing service in new communities, improving customer experience, and reducing greenhouse gas emissions.

The Carrington/Livingston pilot area, the first to be implemented, is a developing suburban community that has not previously had public transit service. The service was introduced in 2019 August to connect residents in the primarily residential community to higher-order transit services (bus rapid transit at North Pointe Terminal) and a regional commercial/institutional centre.

The Springbank Hill service area is a developed suburban area that had fixed-route service in place. With the beginning of the pilot project, four low ridership fixed-route services were replaced with On Demand, and four other routes remain in service. On Demand connects residents in these primarily residential communities with higher-order transit services (light rail transit at 69 Street SW) and regional commercial/institutional centres. This pilot was implemented during the COVID-19 pandemic in 2020 October.

An interim evaluation of the two pilot projects indicates On Demand service is:

- Viable in the Calgary context.
- A good first/last kilometre solution to connect Calgarians with the rapid transit network.
- Able to reduce greenhouse gas emissions.
- A good solution to connect Calgarians to services within their communities.

- An ideal way to implement introductory transit service in new/developing residential communities.
- Able to replace low ridership fixed-route services in existing/developed communities.
- Able to respond quickly to changing ridership patterns (i.e. seasonal ridership changes, work from home directives, public health guidelines, operator absences, etc.),
- Accessible to customers without a smart phone/data package.

Challenges identified in the evaluation indicate On Demand service is:

- A challenge for customers who already have/use fixed-route service in their community, and have to transition to the On Demand model; and
- Frustrating for customers expecting a taxi service (direct trip from origin to destination with no stops), when this is a shared-ride service (can include circuitous trip and stops to pick-up/drop-off multiple customers).

Pilot project metrics of 'new accounts' (indicating new customers signing up for the service/mobile app), 'ridership', and 'average cost per trip' were all met or exceeded through Fall 2021 as ridership increased compared to earlier months in the year. 'Customer satisfaction' is below the target in the Springbank Hill service area with an overall rating of 4.4 out of 5.0 (the target is 4.5 out of 5.0), and steps are being taken to improve this metric. Carrington/Livingstone customer satisfaction scores are exceeding goals with averaging 4.85/5.0.

As ridership recovered with the pandemic recovery and Carrington/Livingston continue to develop, Calgary Transit introduced fixed-route service into portion of Carrington/Livingston via route 124 in Fall 2021. On Demand remains in Carrington/Livingston to fill gaps in service; however, an organic transfer has been observed with customers shifting to the fixed-route service. Calgary Transit is therefore planning to introduce regular bus service to Carrington/Livingston in Fall 2022. Similarly, SW Calgary has seen an increase in demand and is now at approximately 120% of initial October 2020 ridership upon launch of the pilot. Springbank Hill will see the reintroduction of fixed-route service in Fall 2022 as ridership demand continues to recover. On Demand will remain an important service option for transit in new communities and areas with lower ridership demand in the future.

Mobility as a Service (MaaS)

The City of Calgary's Transportation Department is exploring mobility as a service (MaaS). MaaS is the integration of various shared transportation modes (public transit, car-share, bike-share, scooter-share, transportation network companies, etc.) into one single digital application that can be used to trip plan, book trips, and pay for services. Calgary Transit is in the initial phases of implementing the framework of how this can be applied in Calgary and the approach will be thoughtful and pragmatic.

Aspects of MaaS that have been implemented, or are underway, include:

- Conducting the On Demand pilot projects in Carrington/Livingston and Springbank Hill.
- Procuring the next generation of customer mobile app with integrated fare payment and multimodal trip planning features (procurement underway).

- Additional fare products available in the My Fare app.
- Bringing the shared scooter program into Calgary Transit's portfolio.
- Upgrading customer-facing technologies such as real-time bus/CTrain information, and service design/planning technologies, such as automated passenger counters.
- Reviewing existing and future CTrain station designs to better integrate customers connecting to transit using e-scooters, bike-share, and car-share.
- Promoting integrated mobility connections with bike racks on buses.

The research shows MaaS can improve the customer experience by providing multimodal trip plans (use the right vehicle for the trip, or portion of the trip), integrating fare payment (pay a single fare to use multiple modes/service providers), and providing the information customers need (what shared-ride service(s) will get me to my destination fastest, cheapest, using accessible vehicles). The research also shows MaaS may promote increased ridership (making it easy to find the information/trips our customers need) and support societal objectives (such as reducing greenhouse gas emissions).

Regional Transit

Calgary Transit played an integral role in helping develop the Calgary Metropolitan Region Board (CMRB) Growth and Servicing Plans, which provide high-level policy direction for future regional transit services. The plans were submitted to the Minister of Municipal Affairs in June 2021 and are currently awaiting approval. Future work on regional transit through the CMRB is anticipated in the future, including development of a Regional Transportation and Transit Master Plan.

Building on lessons learned from the extension of transit service to Chestermere, from the direction of Council, Administration is developing a Council Policy on Regional Transit Service Provision to guide decision making and processes for the potential future provision of regional transit service and to ensure consistency when The City receives transit service requests from regional partners.

Calgary Transit is also closely monitoring the Banff regional rail and Edmonton rail projects to ensure integration with existing and planned future transit services within Calgary and to enable these systems.

52 Street East Transit Improvements

52 Street East is an important Primary Transit Network Corridor. It is the longest most direct north-south corridor in Calgary. As part of The Province's Municipal Stimulus Program, The City received \$12.3 million in funding to design and build transit improvements on 52 Street E in 2021. The project consists of transit improvements along 52 Street E to improve transit service between the communities of Saddlestone and Seton. The 52 Street E Transit Improvements project will benefit the current Route 23 and BRT Route 302 and build important enhancements for a future MAX line that will run along 52 Street E.

The improvements give buses priority travel along 52 Street, which means fewer delays for customers, and will also include bus queue jumps and transit signal priority measures at 10 intersections along the route. Pedestrian enhancements will also be made along 52 Street E. The anticipated average bus travel time savings is approximately 5 min per trip without any negative impact on regular traffic. As the project is pending full completion, further analysis to determine actual travel time savings will be done at a later date. Buses began using the intersection upgrades in November 2021, and the project is expected to be fully complete in early 2022.

Greening Fleet

The RouteAhead plan contributes to The City's Climate Resilience Strategy by enabling sustainable transportation and land use, and by introducing initiatives to improve the environmental performance of public transit service delivery. Recent initiatives described below help advance the greening of Calgary Transit's service delivery.

The recent declaration of a Climate Emergency by The City of Calgary, in combination with other orders of government commitments like the Government of Canada's Zero Emission Transit Fund, will increase Calgary Transit's green fleet goals significantly above the initiatives delivered over the past decade. These future investments will target reductions of greenhouse gas (GHG) emission to net zero by 2050.

In February 2020, Calgary Transit signed a funding agreement with Emissions Reduction Alberta to work on introducing electric buses to Calgary through a pilot project. The pilot aims to test electric bus technology and evaluate the operational, economic and environmental benefits of using electric buses in the system. The pilot is part of The City's Green Fleet initiative to evaluate and incorporate fully electric, electric hybrid, and other low-carbon vehicle technologies to reduce greenhouse gas emissions.

In spring 2021, the procurement contract for electric buses was awarded to Vicinity Motor Corp. to supply 14 battery electric shuttle buses. The purchased buses are shorter than existing shuttles (28 feet versus 30 feet). The buses can carry up to 22 passengers and have a maximum range of about 200 km. Delivery of the vehicles is expected by late 2022.

Calgary Transit selected engineering firm Burns & McDonnell to supply, design, and install electric bus charging station infrastructure for the pilot project. A charging station will be installed inside the Springs Gardens garage in 2022. The site was selected for the charging station because it stores and dispatches the existing shuttle bus fleet, and the garage has capacity to accommodate the 14 new electric buses. The charging station will enable simultaneous charging of the 14 buses with capacity to charge 28 buses in the future. The chargers will deliver fast charging and will need approximately two-hours to fully charge the buses. Special charge management system software will manage power to the chargers, so the facility's electrical capacity limits are not exceeded.

It is important to note that a transition to green fleet requires a significant capital investment in both vehicles and supporting infrastructure and should consider existing vehicle lifecycles and opportunities for storage and maintenance facility retrofitting. In addition to the electric shuttle

pilot, Calgary Transit has been actively engaging the Canada Infrastructure Bank's Zero Emission Transit Fund regarding the process to access capital grant funding. With 353 40-foot buses up for lifecycle replacement in the next budget cycle, there is an opportunity to replace some fleet with battery electric buses if funding is available. Cost estimates range between \$80 million and \$600 million depending on the number of buses purchased, facility chosen to house the buses, and facility upgrades required to accommodate battery electric buses and charging infrastructure. It is also noted while Calgary Transit is undertaking an electric shuttle pilot, full sized electric buses have yet to be tested in Calgary.

Calgary Transit works to achieve emissions reduction targets by right-sizing fleet for service demand and buying 100 per cent of the power for CTrains from renewable sources. Transit Operators are also trained on Green Driving techniques such as smooth acceleration and braking and preparing early for turns and stops.

Stoney Transit Garage opened in 2019. The bus storage and maintenance facility was specifically designed for Compressed Natural Gas (CNG) vehicles and is the largest indoor CNG fueling station in North America. CNG fuel burns cleaner and quieter than traditional diesel, making it an important contributor to Calgary's climate change commitments.

Looking ahead to alternative fuels, a \$1.3 billion investment was recently announced for the first phase of a blue hydrogen project in Alberta. Blue hydrogen is derived from natural gas through the process of steam methane reforming (SMR) and could be an opportunity for the Stoney CNG facility to also support hydrogen fuel cell buses in the future.

Financing Transit

Calgary Transit relies on two types of funding – operating and capital – to provide transit service. Operating funds are used to run the day-to-day business including wages and maintenance. Capital funds are used for infrastructure such as new CTrain stations and lifecycle refurbishment of existing infrastructure. Capital funds are usually provided by the federal or provincial governments for a specific purpose and are a one-time source of funding. They cannot be used to fund operations. Although they are separate, capital and operating funds co-exist hand-in-hand. Bus service could not be provided without a capital investment in buses. Likewise, capital investments could not be made without an operations investment in operators, peace officers, maintenance staff, station cleaners and others. Calgary Transit requires both types of funding to be successful.

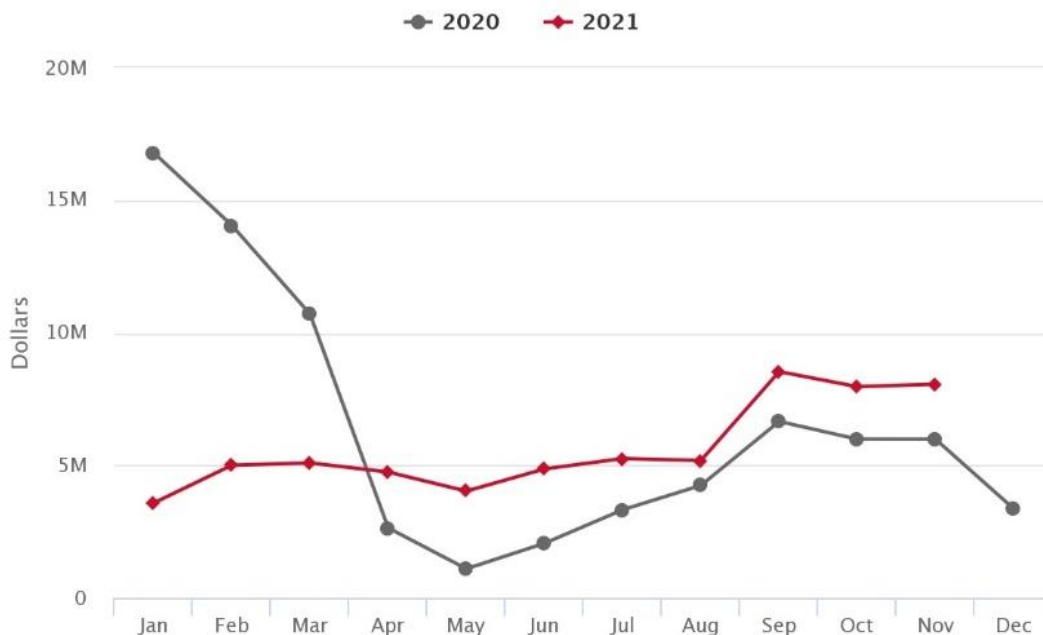
Calgary Transit's goal, set by Council, is for transit fares to cover approximately half of Calgary Transit's operating costs, with a small portion coming from advertising, parking fees, and other sources. Municipal property taxes cover the remaining half of operating costs. Another way to describe this is Calgary Transit's ideal revenue/cost ratio is approximately 50/50 to 55/45. Other transit systems in Canada have different ratios; for example, Toronto Transit Commission covers approximately 70 per cent of costs from fares (pre-pandemic), while Edmonton Transit Service is closer to 40 per cent (pre-pandemic). The revenue/cost ratio reflects the social, environmental and economic benefits of transit to all Calgarians:

- Revitalization, redevelopment, and private sector investment in the city.

- Improved public health.
- Reduced congestion, greenhouse gas emissions, land consumption and energy consumption.
- Expanded transportation options and choice.
- The provision of low-cost mobility for those who cannot drive.

Since the financial downturn in 2016, Calgary Transit’s revenue/cost ratio has not met the 50/50 goal, for example covering only 43 per cent of operating costs in 2019. Decreased ridership has led to lower revenues as seen in Figure 9, while operating costs continue to increase due to the rising costs of labour and materials. The COVID-19 pandemic further contributed to lower transit revenues as ridership dropped and fare collection was suspended for several months in 2020. Though ridership grew steadily in 2021 to approximately 40 per cent of pre-pandemic levels, a large revenue gap persists. Even with cost saving measures implemented, fare revenues covered an estimated 23 per cent of operating expenditures in 2021.

Figure 9: Calgary Transit Fare Revenue Comparison for 2020 and 2021.



Ensuring the financial sustainability of Calgary Transit requires a thoughtful balance between revenues and operating expenditures. The level of transit service is strongly linked to ridership. Investments in transit service are likely to lead to increased ridership and therefore increased fare revenues, while decreasing transit service to save operating costs risks decreased ridership and even lower fare revenues. However, ridership also takes time to build. If there is a desire for increased transit service with no guarantee of increased fare revenue, money may have to come from other sources, such as the tax base.

Since the start of the COVID-19 pandemic, Calgary Transit has experienced significant impacts to its ridership. Although ridership is slowly returning, the overall impacts of the pandemic are expected to continue in 2022 and beyond, with ridership returning gradually and depending on a number of external factors. It is expected it will take some time to return to full pre-pandemic ridership levels.

Calgary Transit experienced a revenue loss of \$93M in 2020, which was offset by a reduction of \$60M in cost reduction through various measures. For 2021, the projected revenue shortfall of approximately \$106M will be offset by cost reduction of approximately \$82M, numbers are still to be finalized. Although the ridership is slowly returning, the overall impacts of the pandemic are expected to continue in 2022, with ridership projected to return to 60-75 per cent of pre-pandemic levels by the end of 2022. There is a projected revenue shortfall of approximately \$89M in 2022 if ridership returns to 60 per cent, and approximately \$63M if ridership returns to 75 per cent. In 2022, \$33M of this shortfall is projected to be mitigated through continued cost reduction and cost avoidance initiatives. It should be noted Calgary Transit updates projections with changes to public health measures, work from home guidance, return to school, and observed travel behaviors. Projections are subject to change as new information becomes available about the current state of pandemic recovery, and numbers stated now may not be relevant in the future.

Below are key initiatives to help Calgary Transit cover some of the expected revenue shortfall:

- Continued service adjustments to optimize expenditures due to ongoing service demand impacts.
- User fee adjustments for 2022 which were originally approved for 2021.
- Service investments reflecting increase in ridership.

Calgary Transit's deficit in 2020 and 2021 was covered by provincial and federal government support; however, there is no guarantee of continued support in 2022. Calgary Transit is closely monitoring ridership and demand to plan 2022 service levels effectively and proactively. It is anticipated ridership will eventually return, but not in the same patterns due to changing travel behaviors with work, school, and activities. As ridership demand continues to suppress revenues, it is important to note there are projected cost savings from not returning to 100 per cent of pre-pandemic service levels, while also acknowledging the risk that reduced service comes with reduced ridership. Investments in key areas such as the Primary Transit Network (PTN) and new/developing communities are being considered. Calgary Transit is also exploring ways to improve service efficiency in some areas with modest to no additional investments required. As part of Calgary Transit's performance monitoring plan, adjustments will be made to service to respond to demand and improve connections between routes where possible.

Prioritizing State of Good Repair

In addition to operating costs, capital costs to maintain good state of repair for transit fleet and infrastructure is an integral component of providing a safe and reliable transit service. Proper maintenance also leads to cost savings over the lifecycle of vehicles, equipment and infrastructure. While decreased service hours and therefore decreased vehicle kilometres

traveled contributed to some savings in 2021, parts, fuel, and labour remain the largest expenditures in maintaining Calgary Transit's fleet.

Of Transit's 575 regular sized buses, 59 were approaching retirement age in Q3 2021, with an additional 38 older than their planned life. All 34 of Transit's ARBOC Diesel model Shuttle fleet and all 39 of Transit's U2 model Light Rail Vehicles are older than their planned life, and 72 per cent of Calgary Transit Access Shuttles are either older than their planned life or approaching retirement. Calgary Transit uses a preventative maintenance program to help ensure the safety and reliability of fleet; however, aging fleet leads to increased maintenance, hard to find parts, and therefore increased costs.

Fares

While Calgary Transit suspended fare collection for a few months in 2020, increases to transit fares were also paused in 2021, with 2021 fares remaining at 2020 levels. As part of the 2022 budget re-alignment, the already approved user fee adjustments for 2021 will be applied for 2022, as seen Figure 10. The approximate 2.3 per cent increase to user fees will result in \$4.1M of additional revenue.

Figure 10: Calgary Transit Fare Structure.

Regular Fares	2019	2020	2021	2022	% Increase
Adult Single Ride	3.40	3.50	3.50	3.60	2.9%
Youth Single Ride	2.35	2.40	2.40	2.45	2.1%
Adult Monthly Pass	106.00	109.00	109.00	112.00	2.8%
Youth Monthly Pass	77.00	79.00	79.00	82.00	3.8% *
Adult Ticket Book (10 tickets)	34.00	35.00	35.00	36.00	2.9%
Youth Ticket Book (10 tickets)	23.50	24.00	24.00	24.50	2.1%
Adult Day Pass (unlimited trips)	7.75	8.00	8.00	8.25	3.1%
Senior Annual Pass	140.00	145.00	145.00	150.00	3.4%
Airport Boarding Pass	10.75	11.00	11.00	11.25	2.3%
Discounted Fares	2019	2020	2021	2022	% Increase
Band A: LITP (95% discount of Adult Monthly Pass)	5.30	5.45	5.45	5.6	2.8%
Band B: LITP (65% discount of Adult Monthly Pass)	37.10	38.15	38.15	39.00	2.2%
Band C: LITP (50% discount of Adult Monthly Pass)	53.00	54.50	54.50	56.00	2.8%
Senior Annual Pass (Low Income)	25.00	25.00	25.00	30.00	20%
UPass Fall Session	151.00	155.00	155.00	160.00	3.2%*
UPass Winter Session	145.00	151.00	151.00	155.00	0.0%
Other User Fees	2019	2020	2021	2022	% Increase
Monthly Reserved Parking	85.00	85.00	85.00	85.00	0.0%
*Increase applied in September 2022					

In February 2020, the Government of Alberta and The City of Calgary established an agreement for the sustainment of the Fair Entry Low-Income Transit Pass program, including the sliding scale (different fare prices for different income levels). Increasing fare subsidies are a challenge

to maintaining funding for transit service. The existing agreement expires in March 2023; therefore, discussions with the Province will occur in mid-2022 to ensure financial sustainability of the program.